NPTEL : Natural Language Processing (Computer Science and Engineering)

Co-ordinators : Prof. Pushpak Bhattacharya

NPTEL : Design and Analysis of Algorithms (Computer Science and Engineering)

Co-ordinators : Prof. Sundar Viswanathan, Prof. Ajit A Diwan, Prof. Abhiram G Ranade

NPTEL : Software Engineering (Computer Science and Engineering)

Co-ordinators : Prof. N.L. Sarda, Prof. Umesh Bellur, Prof. Rushikesh K Joshi

NPTEL : NOC:Software Testing (2017) (Computer Science and Engineering)

Co-ordinators : Prof. Meenakshi D'souza

NPTEL : NOC:Design and Pedagogy of the Introductory Programming Course (Computer Science and Engineering)

Co-ordinators : Prof. Abhiram G Ranade

NPTEL : NOC:An Introduction to Programming through C++ (Computer Science and Engineering)

Co-ordinators : Prof. Abhiram G Ranade

NPTEL : NOC:Demystifying Networking (Computer Science and Engineering)

Co-ordinators : Prof.Sridhar Iyer

Lecture 32 - Addressing in Pubilc and Private Networks

Lecture 33 - Verifying Connectivity using Ping

Lecture 34 - Using network address translation to communicate on internet

Lecture 35 - Using Sub nets and Summary of addressing

Lecture 36 - Summary of the week

Lecture 37 - Analogy for the week 2

Lecture 38 - Discussion on dabbawala analogy

Lecture 39 - From dabbawalas to routers and switches

Lecture 40 - What is routing ?

Lecture 41 - Static routing in a router in CPT

Lecture 42 - How does a switch forwards packets CPT

Lecture 43 - How to add static route in a router? (CPT)

Lecture 44 - Traveler's dilemma

Lecture 45 - Duscussing the Traveler's dilemma

Lecture 46 - From Traveler's dilemma to Dynamic Routing

Lecture 47 - Dynamic Routing with Distance Vector

Lecture 48 - Distance Vector Routing in Detail

Lecture 49 - Dynamic Routing with Link State

Lecture 50 - Setting up dynamic routing in Packet Tracer

Lecture 51 - Summary of the week

Lecture 52 - Introduction to analogy for week 3

Lecture 53 - Analogy for week 3

Lecture 54 - Questions on analogy for week 3

Lecture 55 - Understanding the new order requirements

Lecture 56 - Introduction to Tranport Layer

Lecture 57 - Introduction to TCP

Lecture 58 - Introduction to UDP

Lecture 59 - Exploring UDP on Cisco Packet Tracer

Lecture 60 - TCP Connection Establishment

Lecture 61 - TCP Connection Closure

Lecture 62 - Summay of TCP and UDP on Cisco Packet Tracer

Lecture 63 - The story of the delivery fiasco

Lecture 64 - From delivery fisaco to Port Numbers

Lecture 65 - Application Layer in depth

Lecture 66 - Port number in Wireshark

Lecture 67 - Summary of port number and PAT

Lecture 68 - Summary of the entire TCP IP stack

Lecture 69 - Introducing the analogy for week 4

Lecture 70 - The secret box

Lecture 71 - Questions on analogy for week 4

Lecture 72 - Secret of the secret box

Lecture 73 - From secret box to encryption

Lecture 74 - Introduction to security and CIA

Lecture 75 - Information Security and Defence in Depth

Lecture 76 - Information Classification and Access Control

Lecture 77 - Process Management

Lecture 78 - Introduction to Network Security

Lecture 79 - Network Breach and Countermeasures

Lecture 80 - Internet Security

Lecture 81 - Securing the Internet Usage

Lecture 82 - Internet Security Products

Lecture 83 - Personal Computing Device Recommendations

Lecture 84 - Responsible Behavior on the Internet

Lecture 85 - Best practices for home Network and Media Devices

Lecture 86 - Closing thoughts on security

Lecture 87 - The story of a family trip

Lecture 88 - The troubleshooting approach

Lecture 89 - Troubleshooting Physical and Data Link Layers

Lecture 90 - Troubleshooting Network Layer

Lecture 91 - Troubleshooting Transport and Application Layers

Lecture 92 - Troubleshooting Summary

Lecture 93 - Troubleshooting Heuristics

Lecture 94 - Troubleshooting Challenge - 1

Lecture 95 - Troubleshooting challenge - 2

Lecture 96 - Troubleshooting Challenge - 3

Lecture 97 - Thats How we Troubleshoot

NPTEL : NOC:Learning Analytics Tools (Computer Science and Engineering)

Co-ordinators : Prof. Ramkumar Rajendran

NPTEL : NOC:Design and Engineering of Computer Systems (Computer Science and Engineering)

Co-ordinators : Prof. Mythili Vutukuru

Lecture 32 - Internet Routing and Forwarding

Lecture 33 - Transport protocols

Lecture 34 - Application layer protocols

Lecture 35 - Network Security

Lecture 36 - Week 5: Tutorial 1

Lecture 37 - Week 5: Tutorial 2

Lecture 38 - Multithreaded application design

Lecture 39 - Inter-process communication

Lecture 40 - Multi-tier application design

Lecture 41 - Examples of end-to-end systems design

Lecture 42 - Deployment of computer systems

Lecture 43 - Week 6: Tutorial 1

Lecture 44 - Week 6: Tutorial 2

Lecture 45 - Performance measurement

Lecture 46 - Performance analysis

Lecture 47 - Performance profiling and optimization

Lecture 48 - Caching

Lecture 49 - Performance scalability

Lecture 50 - Week 7: Tutorial 1

Lecture 51 - Fault tolerance and reliability

Lecture 52 - Replication and consistency

Lecture 53 - Atomicity

Lecture 54 - Distributed transactions

Lecture 55 - Case studies of distributed systems design

NPTEL : NOC:Software Conceptual Design (Computer Science and Engineering)

Co-ordinators : Prof. Sridhar Iyer, Prof. Prajish Prasad, Prof. T. G. Lakshmi

NPTEL : NOC:Introduction to Game Theory and Mechanism Design (Computer Science and Engineering)

Co-ordinators : Prof. Swaprava Nath

NPTEL : NOC:Introduction to Computer and Network Performance Analysis using Queuing Systems (Computer Science and Engineering)

Co-ordinators : Prof. Varsha Apte

NPTEL : Computational Geometry (Computer Science and Engineering)

Co-ordinators : Prof. Sandeep Sen

NPTEL : Logic for CS (Computer Science and Engineering)

Co-ordinators : Prof. S. Arun Kumar

NPTEL : Computer Architecture (Prof. Anshul Kumar) (Computer Science and Engineering)

Co-ordinators : Prof. Anshul Kumar

NPTEL : Data Structures And Algorithms (Computer Science and Engineering)

Co-ordinators : Prof. Naveen Garg

NPTEL : Introduction to Computer Graphics (Computer Science and Engineering)

Co-ordinators : Prof. Prem K Kalra

NPTEL : Principles of Programming Languages (Computer Science and Engineering)

Co-ordinators : Prof. S. Arun Kumar

Lecture 32 - Monomorphism

Lecture 33 - Polymorphism

Lecture 34 - Type Checking

Lecture 35 - Contexts

Lecture 36 - Abstracts

Lecture 37 - Procedures

Lecture 38 - Meanings

Lecture 39 - Parameters

Lecture 40 - The Future

NPTEL : Parallel Computing (Computer Science and Engineering)

Co-ordinators : Dr. Subodh Kumar

NPTEL : Operating Systems (Computer Science and Engineering)

Co-ordinators : Prof. Sorav Bansal

NPTEL : NOC:Computer Architecture (2017) (Computer Science and Engineering)

Co-ordinators : Prof. Smruti R.Sarangi

NPTEL : NOC:Introduction to Parallel Programming in OpenMP (Computer Science and Engineering)

Co-ordinators : Dr. Yogish Sabharwal

NPTEL : NOC:Synthesis of Digital Systems (Computer Science and Engineering)

Co-ordinators : Prof. Preeti Ranjan Panda

NPTEL : NOC:An Introduction to Artificial Intelligence (Computer Science and Engineering)

Co-ordinators : Prof. Mausam

Lecture 32 - Adversarial Search: Analysis of Alpha Beta Pruning

Lecture 33 - Adversarial Search: Analysis of Alpha Beta Pruning (Continued...)

Lecture 34 - Adversarial Search: Horizon Effect, Game Databases and Other Ideas

Lecture 35 - Adversarial Search: Summary and Other Games

Lecture 36 - Constraint Satisfaction Problems: Representation of the atomic state

Lecture 37 - Constraint Satisfaction Problems: Map coloring and other examples of CSP

Lecture 38 - Constraint Satisfaction Problems: Backtracking Search

Lecture 39 - Constraint Satisfaction Problems: Variable and Value Ordering in Backtracking Search

Lecture 40 - Constraint Satisfaction Problems: Inference for detecting failures early

Lecture 41 - Constraint Satisfaction Problems: Exploiting problem structure

Lecture 42 - Logic in AI : Different Knowledge Representation systems - Part 1

Lecture 43 - Logic in AI : Syntax - Part 2

Lecture 44 - Logic in AI : Semantics - Part 3

Lecture 45 - Logic in AI : Forward Chaining - Part 4

Lecture 46 - Logic in AI : Resolution - Part 5

Lecture 47 - Logic in AI : Reduction to Satisfiability Problems - Part 6

Lecture 48 - Logic in AI : SAT Solvers: DPLL Algorithm - Part 7

Lecture 49 - Logic in AI : Sat Solvers: WalkSAT Algorithm - Part 8

Lecture 50 - Uncertainty in AI: Motivation

Lecture 51 - Uncertainty in AI: Basics of Probability

Lecture 52 - Uncertainty in AI: Conditional Independence and Bayes Rule

Lecture 53 - Bayesian Networks: Syntax

Lecture 54 - Bayesian Networks: Factoriziation

Lecture 55 - Bayesian Networks: Conditional Independences and d-Separation

Lecture 56 - Bayesian Networks: Inference using Variable Elimination

Lecture 57 - Bayesian Networks: Reducing 3-SAT to Bayes Net

Lecture 58 - Bayesian Networks: Rejection Sampling

Lecture 59 - Bayesian Networks: Likelihood Weighting

Lecture 60 - Bayesian Networks: MCMC with Gibbs Sampling

Lecture 61 - Bayesian Networks: Maximum Likelihood Learning

Lecture 62 - Bayesian Networks: Maximum a-Posteriori LearningÂ

Lecture 63 - Bayesian Networks: Bayesian Learning

Lecture 64 - Bayesian Networks: Structure Learning and Expectation Maximization

NPTEL : NOC:Advanced Computer Architecture (2021) (Computer Science and Engineering)

Co-ordinators : Prof. Smruti R. Sarangi

Lecture 1 - Introduction

Lecture 2 - Out-of-Order Pipelines - Part I

Lecture 3 - Out-of-Order Pipelines - Part II

Lecture 4 - Out-of-Order Pipelines - Part III

Lecture 5 - The Fetch and Decode Stages - Part I

Lecture 6 - The Fetch and Decode Stages - Part II

Lecture 7 - The Fetch and Decode Stages - Part III

Lecture 8 - The Issue, Execute, and Commit Stages - Part I

Lecture 9 - The Issue, Execute, and Commit Stages - Part II

Lecture 10 - The Issue, Execute, and Commit Stages - Part III

Lecture 11 - The Issue, Execute, and Commit Stages - Part IV

Lecture 12 - Alternative Approaches to Issue and Commit - Part I

Lecture 13 - Alternative Approaches to Issue and Commit - Part II

Lecture 14 - Alternative Approaches to Issue and Commit - Part III

Lecture 15 - Alternative Approaches to Issue and Commit - Part IV

Lecture 16 - Graphics Processors - Part I

Lecture 17 - Graphics Processors - Part II

Lecture 18 - Graphics Processors - Part III

Lecture 19 - Caches - Part I

Lecture 20 - Caches - Part II

Lecture 21 - Caches - Part III

Lecture 22 - Caches - Part IV

Lecture 23 - Caches - Part V

Lecture 24 - Caches - Part VI

Lecture 25 - Multicore Systems - Part I

Lecture 26 - Multicore Systems - Part II

Lecture 27 - Multicore Systems - Part III

Lecture 28 - Multicore Systems - Part IV

Lecture 29 - Multicore Systems - Part V

Lecture 30 - Multicore Systems - Part VI

Lecture 31 - Multicore Systems - Part VII

NPTEL : NOC:Advanced Distributed systems (Computer Science and Engineering)

Co-ordinators : Prof. Smruti R. Sarangi

NPTEL : Design Verification and Test of Digital VLSI Circuits (Computer Science and Engineering)

Co-ordinators : Dr. Santosh Biswas, Prof. Jatindra Kumar Deka

Lecture 32 - Fault Simulation - 2

Lecture 33 - Fault Simulation - 3

Lecture 34 - Testability Measures (SCOAP)

Lecture 35 - Introduction to Automatic Test Pattern Generation (ATPG) and ATPG Algebras

Lecture 36 - D-Algorithm - 1

Lecture 37 - D-Algorithm - 2

Lecture 38 - ATPG for Synchronous Sequential Circuits

Lecture 39 - Scan Chain based Sequential Circuit Testing - 1

Lecture 40 - Scan Chain based Sequential Circuit Testing - 2

Lecture 41 - Built in Self Test - 1

Lecture 42 - Built in Self Test - 2

Lecture 43 - Memory Testing - 1

Lecture 44 - Memory Testing - 2

NPTEL : NOC:Computer Organization and Architecture - A Pedagogical Aspect (Computer Science and Engineering)

Co-ordinators : Prof.Arnab sarkar, Prof.Jatindra Kumar Deka, Dr. Santosh Biswas

NPTEL : NOC:Embedded Systems-Design Verification and Test (Computer Science and Engineering)

Co-ordinators : Prof.Jatindra Kumar Deka, Dr. Santosh Biswas, Prof.Arnab Sarkar

NPTEL : NOC:Multi-Core Computer Architecture-Storage and Interconnects (Computer Science and Engineering)

Co-ordinators : Prof. John Jose

NPTEL : NOC:Multi-Core Computer Architecture (Computer Science and Engineering)

Co-ordinators : Prof. John Jose

Lecture 32 - Introduction to DRAM System

Lecture 33 - DRAM Controllers and Address Mapping

Lecture 34 - Secondary Storage Systems

Lecture 35 - Design Concepts in Storage Systems

Lecture 36 - Introduction to Tiled Chip Multicore Processors

Lecture 37 - Routing Techniques in Network On Chip

Lecture 38 - Network On Chip Router Micro-Architecture

Lecture 39 - Concepts in Network on Chip

Lecture 40 - Energy Efficient Bufferless NoC Routers

Lecture 41 - Sidebuffered Deflection Routers

Lecture 42 - Concepts in Deflection Routers [T]

Lecture 43 - QoS of NoC and Caches in TCMP Systems

Lecture 44 - Emerging Trends in Network On Chips

Lecture 45 - Domain Specific Accelarators

Lecture 46 - Introduction to VEGA Microprocessors (Case Study)

Lecture 47 - Concepts in TCMP Systems

Lecture 48 - How to Explore Computer Architecture?

NPTEL : NOC:Randomized Algorithms (Computer Science and Engineering)

Co-ordinators : Prof. Benny George K

NPTEL : NOC:Parallel Algorithms (Computer Science and Engineering)

Co-ordinators : Prof. Sajith Gopalan

NPTEL : NOC:Discrete Mathematics (Prof. Sajith Gopalan) (Computer Science and Engineering)

Co-ordinators : Prof. Benny George K

NPTEL : NOC:Advanced Computer Architecture (Computer Science and Engineering)

Co-ordinators : Prof. John Jose

NPTEL : NOC:User-centric Computing for Human-Computer Interaction (Computer Science and Engineering)

Co-ordinators : Prof. Samit Bhattacharya

NPTEL : NOC:Computer Graphics (Computer Science and Engineering)

Co-ordinators : Prof. Samit Bhattacharya

Lecture 1 - Introduction to graphics

Lecture 2 - Historical evolution, issues and challenges

Lecture 3 - Basics of a graphics system

Lecture 4 - Introduction to 3D graphics pipeline

Lecture 5 - Introduction and overview on object representation techniques

Lecture 6 - Various Boundary Representation Techniques

Lecture 7 - Spline representation - I

Lecture 8 - Spline representation - II

Lecture 9 - Space representation methods

Lecture 10 - Introduction to modeling transformations

Lecture 11 - Matrix representation and composition of transformations

Lecture 12 - Transformations in 3D

Lecture 13 - Color computation - basic idea

Lecture 14 - Simple lighting model

Lecture 15 - Shading models

Lecture 16 - Intensity mapping

Lecture 17 - Color models and texture synthesis

Lecture 18 - View transformation

Lecture 19 - Projection transformation

Lecture 20 - Windows-to-viewport transformation

Lecture 21 - Clipping introduction and 2D point and line clipping

Lecture 22 - 2D fill-area clipping and 3D clipping

Lecture 23 - Hidden surface removal - I

Lecture 24 - Hidden surface removal - II

Lecture 25 - Scan conversion of basic shapes - I

Lecture 26 - Scan conversion of basic shapes - II

Lecture 27 - Fill area and character scan conversion

Lecture 28 - Anti-aliasing techniques

Lecture 29 - Graphics I/O Devices

Lecture 30 - Introduction to GPU and Shaders

Lecture 31 - Programming with OpenGL

NPTEL : NOC:C-Based VLSI Design (Computer Science and Engineering)

Co-ordinators : Prof. Chandan Karfa

NPTEL : NOC:Design and Implementation of Human-Computer Interfaces (Computer Science and Engineering)

Co-ordinators : Prof. Samit Bhattacharya

NPTEL : Computer Algorithms - 2 (Computer Science and Engineering)

Co-ordinators : Prof. Shashank K. Mehta

NPTEL : Theory of Computation (Computer Science and Engineering)

Co-ordinators : Prof. Somenath Biswas

Lecture 1 - What is theory of computation? Set membership problem, basic notions like alphabet, strings, formal languages

Lecture 2 - Introduction to finite automaton

Lecture 3 - Finite automata continued, deterministic finite automata(DFAs), language accepted by a DFA

Lecture 4 - Regular languages, their closure properties

Lecture 5 - DFAs solve set membership problems in linear time, pumping lemma

Lecture 6 - More examples of nonregular languages, proof of pumping lemma, pumping lemma as a game, converse of pumping lemma does not hold

Lecture 7 - A generalization of pumping lemma, nondeterministic finite automata (NFAs), computation trees for NFAs

Lecture 8 - Formal description of NFA, language accepted by NFA, such languages are also regular

Lecture 9 - 'Guess and verify' paradigm for nondeterminism

Lecture 10 - NFA's with epsilon transitions

Lecture 11 - Regular expressions, they denote regular languages

Lecture 12 - Construction of a regular expression for a language given a DFA accepting it. Algebraic closure properies of regular languages

Lecture 13 - Closure properties (Continued...)

Lecture 14 - Closure under reversal, use of closure properties

Lecture 15 - Decision problems for regular languages

Lecture 16 - About minimization of states of DFAs. Myhill-Nerode theorem

Lecture 17 - Continuation of proof of Myhill-Nerode theorem

Lecture 18 - Application of Myhill-Nerode theorem. DFA minimization

Lecture 19 - DFA minimization (Continued...)

Lecture 20 - Introduction to context free languages (cfls) and context free grammars (cfgs). Derivation of strings by cfgs

Lecture 21 - Languages generated by a cfg, leftmost derivation, more examples of cfgs and cfls

Lecture 22 - Parse trees, inductive proof that L is L(G). All regular languages are context free

Lecture 23 - Towards Chomsky normal forms: elimination of useless symbols, analysis of reachable symbols, generating nonterminals, order of substeps matter

Lecture 24 - Simplification of cfgs continued, Removal of epsilon productions: algorithm and its correctness

Lecture 25 - Elimination of unit productions. Converting a cfg into Chomsky normal form. Towards pumping lemma for cfls

Lecture 26 - Pumping lemma for cfls. Adversarial paradigm

Lecture 27 - Completion of pumping lemma proof. Examples of use of pumping lemma. Converse of lemma does not hold. Closure properties of cfls

Lecture 28 - Closure properties continued. cfls not closed under complementation

Lecture 29 - Another example of a cfl whose complement is not a cfl. Decision problems for cfls

NPTEL : Introduction to Problem Solving and Programming (Computer Science and Engineering)

Co-ordinators : Prof. D. Gupta

NPTEL : Riemann Hypothesis and its Applications (Computer Science and Engineering)

Co-ordinators : Prof. Manindra Agrawal

NPTEL : Biometrics (Computer Science and Engineering)

Co-ordinators : Prof. Phalguni Gupta

NPTEL : Parallel Algorithm (Computer Science and Engineering)

Co-ordinators : Prof. Phalguni Gupta

Lecture 1 - Parallel Algorithm

Lecture 2 - Parallel Algorithm

Lecture 3 - Parallel Algorithm

Lecture 4 - Parallel Algorithm

Lecture 5 - Parallel Algorithm

Lecture 6 - Parallel Algorithm

Lecture 7 - Parallel Algorithm

Lecture 8 - Parallel Algorithm

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Lecture 21 - Parallel Algorithm

Lecture 22 - Parallel Algorithm

Lecture 23 - Parallel Algorithm

Lecture 24 - Parallel Algorithm

Lecture 25 - Parallel Algorithm

NPTEL : Computer Architecture (Dr. Mainak Chaudhuri) (Computer Science and Engineering)

Co-ordinators : Dr. Mainak Chaudhuri

NPTEL : Compiler Design (Prof. Sanjeev K Aggarwal) (Computer Science and Engineering)

Co-ordinators : Prof. Sanjeev K Aggarwal

NPTEL : NOC : Introduction to programming in C (Computer Science and Engineering)

Co-ordinators : Prof. Satyadev Nandakumar

NPTEL : NOC:Fundamentals of Database Systems (Computer Science and Engineering)

Co-ordinators : Dr. Arnab Bhattacharya

NPTEL : NOC:Theory of Computation (Computer Science and Engineering)

Co-ordinators : Prof. Raghunath Tewari

NPTEL : NOC:Modern Algebra (Computer Science and Engineering)

Co-ordinators : Prof. Manindra Agrawal

NPTEL : NOC:Advanced Graph Theory (Computer Science and Engineering)

Co-ordinators : Dr.Rajiv Misra

NPTEL : NOC:Cloud Computing and Distributed Systems (Computer Science and Engineering)

Co-ordinators : Dr.Rajiv Misra

NPTEL : NOC:Big Data Computing (Computer Science and Engineering)

Co-ordinators : Dr. Rajiv Misra

NPTEL : NOC:Introduction to Blockchain Technology and Applications (Computer Science and Engineering)

Co-ordinators : Prof. Sandeep Shukla

NPTEL : NOC:Arithmetic Circuit Complexity (Computer Science and Engineering)

Co-ordinators : Prof. Nitin Saxena

Lecture 1 - Turing Machines and Introduction to Arithmetic Circuits

Lecture 2 - Arithmetic complexity classes

Lecture 3 - Determinant is in VP

Lecture 4 - Determinant vs Arithmetic Branching Programs (ABP)

Lecture 5 - Determinant as signed sum of clow sequence

Lecture 6 - Determinant has small ABP and Strassen's homogenization

Lecture 7 - Depth reduction for arithmetic formulas

Lecture 8 - Depth reduction for arithmetic circuits

Lecture 9 - Depth 4 reduction

Lecture 10 - Depth 3 reduction

Lecture 11 - Equivalence of Formulas and Width 3 ABP

Lecture 12 - Width-2 ABP Chasm

Lecture 13 - Grigoriev-Karpinski Measure

Lecture 14 - Lower Bound of Depth-3 circuit over finite fields

Lecture 15 - Lower Bound for depth 3 Multilinear Circuits

Lecture 16 - Lower Bound for Constant depth Multilinear Circuits

Lecture 17 - Structural lemma for constant depth multilinear circuits

Lecture 18 - Extending the proof for multilinear formulas

Lecture 19 - Shifted Partial Derivative Measure

Lecture 20 - Exponential Lower Bound for General depth-4 CIrcuits

Lecture 21 - Lower Bound on Homogeneous Depth-4 circuits

Lecture 22 - Introduction to PIT

Lecture 23 - Hitting Set and Hitting Set Generator

Lecture 24 - PIT vs Lower Bounds

NPTEL : NOC:Computational Complexity Theory (Computer Science and Engineering)

Co-ordinators : Prof. Raghunath Tewari

NPTEL : NOC:Randomized Methods in Complexity (Computer Science and Engineering)

Co-ordinators : Prof. Nitin Saxena

NPTEL : NOC:Probability for Computer Science (Computer Science and Engineering)

Co-ordinators : Prof. Nitin Saxena

Lecture 32 - Streaming Algorithms - II

NPTEL : NOC:Circuit Complexity Theory (Computer Science and Engineering)

Co-ordinators : Prof. Raghunath Tewari

NPTEL : NOC:Foundation of Cloud IoT Edge ML (Computer Science and Engineering)

Co-ordinators : Prof. Rajiv Misra

NPTEL : Cryptography and Network Security (Computer Science and Engineering)

Co-ordinators : Dr. Debdeep Mukhopadhyay

Lecture 32 - Discrete Logarithm Problem (DLP)

Lecture 33 - The Diffie-Hellman Problem and Security of ElGamal Systems

Lecture 34 - An Introduction to Elliptic Curve Cryptography

Lecture 35 - Application of Elliptic Curves to Cryptography

Lecture 36 - Implementation of Elliptic Curve Cryptography

Lecture 37 - Secret Sharing Schemes

Lecture 38 - A Tutorial on Network Protocols

Lecture 39 - System Security

Lecture 40 - Firewalls and Intrusion Detection Systems

Lecture 41 - Side Channel Analysis of Cryptographic Implementations

NPTEL : High Performance Computer Architecture (Computer Science and Engineering)

Co-ordinators : Prof. Ajit Pal

NPTEL : Low Power VLSI Circuits and Systems (Computer Science and Engineering)

Co-ordinators : Prof. Ajit Pal

NPTEL : Real Time Systems (Computer Science and Engineering)

Co-ordinators : Prof. Rajib Mall

Lecture 32 - Few Basic Issues in Real - Time Communications

Lecture 33 - Review of Computer Networking

Lecture 34 - Real - Time Communication in a LAN

Lecture 35 - Real - Time Communication in a LAN (Continued.)

Lecture 36 - Performance of Two Real -Time Communication Protocols

Lecture 37 - Real - Time Communication over Packet Switched Networks

Lecture 38 - Real - Time Communication over Packet Switched Networks (Continued.)

Lecture 39 - Real - Time Communication over Packet Switched Networks (Continued.)

Lecture 40 - Real - Time Databases

NPTEL : Artificial Intelligence (Prof. Anupam Basu) (Computer Science and Engineering)

Co-ordinators : Prof. Sudeshna Sarkar, Prof. Anupam Basu

Lecture 32 - Introduction to Learning - I

Lecture 33 - Introduction to Learning - II

Lecture 34 - Rule Induction and Decision Trees - I

Lecture 35 - Rule Induction and Decision Trees - II

Lecture 36 - Learning Using neural Networks - I

Lecture 37 - Learning Using Neural Networks - II

Lecture 38 - Probabilistic Learning

Lecture 39 - Natural Language Processing - I

Lecture 40 - Natural Language Processing - II

NPTEL : Artificial Intelligence (Prof. P. Dasgupta) (Computer Science and Engineering)

Co-ordinators : Prof. P. Dasgupta

Lecture 1 - Introduction to Artificial Intelligence

Lecture 2 - Problem Solving by Search

Lecture 3 - Searching with Costs

Lecture 4 - Informed State Space Search

Lecture 5 - Heuristic Search: A* and Beyond

Lecture 6 - Problem Reduction Search: AND/OR Graphs

Lecture 7 - Searching Game Trees

Lecture 8 - Knowledge Based Systems: Logic and Deduction

Lecture 9 - First Order Logic

Lecture 10 - Inference in First Order Logic

Lecture 11 - Resolution - Refutation Proofs

Lecture 12 - Resolution Refutation Proofs

Lecture 13 - Logic Programming : Prolog

Lecture 14 - Prolog Programming

Lecture 15 - Prolog: Exercising Control

Lecture 16 - Additional Topics

Lecture 17 - Introduction to Planning

Lecture 18 - Partial Order Planning

Lecture 19 - GraphPLAN and SATPlan

Lecture 20 - SATPlan

Lecture 21 - Reasoning under uncertainty

Lecture 22 - Bayesian Networks

Lecture 23 - Reasoning with Bayes Networks

Lecture 24 - Reasoning with Bayes networks (Contd.)

Lecture 25 - Reasoning under uncertainty: Issues

Lecture 26 - Learning : Decision Trees

Lecture 27 - Learning : Neural Networks

Lecture 28 - Back Propagation Learning

NPTEL : Computer Networks (Computer Science and Engineering)

Co-ordinators : Prof. Sujoy Ghosh

NPTEL : Data Communication (Computer Science and Engineering)

Co-ordinators : Prof. Ajit Pal

NPTEL : Electronic Design Automation (Computer Science and Engineering)

Co-ordinators : Prof. Indranil Sengupta

NPTEL : Internet Technology (Computer Science and Engineering)

Co-ordinators : Prof. Indranil Sengupta

Lecture 1 - Introduction To Internet

Lecture 2 - Review Of Network Technologies

Lecture 3 - TCP/IP - Part-I

Lecture 4 - TCP/IP - Part-II

Lecture 5 - TCP/IP - Part-III

Lecture 6 - IP Subnetting and Addressing

Lecture 7 - Internet Routing Protocol - Part-I

Lecture 8 - Internet Routing Protocol - Part-II

Lecture 9 - Client Server Concepts DNS, Telnet, FTP

Lecture 10 - Electronic Mail

Lecture 11 - World Wide Web - Part-I

Lecture 12 - World Wide Web - Part-II

Lecture 13 - HTML : Part-I

Lecture 14 - HTML : Part-II

Lecture 15 - HTML : Part-III

Lecture 16 - Extensible Markup Language (XML)

Lecture 17 - HTML Forms

Lecture 18 - Image Maps

Lecture 19 - CGI Scripts

Lecture 20 - Other Technologies

Lecture 21 - PERL - Part-I

Lecture 22 - PERL - Part II

Lecture 23 - PERL - Part III

Lecture 24 - PERL - Part IV

Lecture 25 - Javascript : Part-I

Lecture 26 - Javascript Examples (Continued)

Lecture 27 - Using Cookies

Lecture 28 - Java Applets : Part-I

Lecture 29 - Java Applets : Part-II

Lecture 30 - Client-Server Programming In Java

Lecture 31 - Intranet, Extranet, Firewall

NPTEL : Programming and Data Structure (Computer Science and Engineering)

Co-ordinators : Dr. P.P. Chakraborty

Lecture 32 - Conclusions

NPTEL : NOC:Software Testing (Computer Science and Engineering)

Co-ordinators : Prof. Rajib Mall

NPTEL : NOC:Programming in C++ (Computer Science and Engineering)

Co-ordinators : Prof. Partha Pratim Das

Lecture 32 - Module 17 : friend Function and friend Class

Lecture 33 - Module 18 : Overloading Operator for User Defined Types - Part I

Lecture 34 - Module 19 : Overloading Operator for User Defined Types - Part II

Lecture 35 - Module 20 : Namespace

Lecture 36 - Module 21 : Inheirtnace - Part I

Lecture 37 - Module 22 : Inheritance - Part II

Lecture 38 - Module 23 : Inheritance - Part III

Lecture 39 - Module 24 : Inheritance - Part IV

Lecture 40 - Module 25 : Inheritance - Part V

Lecture 41 - Module 26 : Dynamic Binding - Part I

Lecture 42 - Module 27 : Dynamic Binding (Polymorphism) - Part II

Lecture 43 - Module 28 : Dynamic Binding (Polymorphism) - Part III

Lecture 44 - Module 29 : Dynamic Binding (Polymorphism) - Part IV

Lecture 45 - Module 30 : Dynamic Binding (Polymorphism) - Part V

Lecture 46 - Module 31 : Virtual Function Table

Lecture 47 - Module 32 : Type casting and cast operators - Part I

Lecture 48 - Module 33 : Type casting and cast operators - Part II

Lecture 49 - Module 34 : Type casting and cast operators - Part III

Lecture 50 - Module 35 : Multiple Inheritance

Lecture 51 - Module 35 : Multiple Inheritance (Continued...)

Lecture 52 - Module 36 : Exceptions (Error Handling in C) - Part I

Lecture 53 - Module 37 : Exceptions (Error Handling in C) - Part II

Lecture 54 - Module 38 : Template (Function Template) - Part I

Lecture 55 - Module 39 : Template (Function Template) - Part II

Lecture 56 - Module 40 : Closing Comments

NPTEL : NOC:Introduction to Machine Learning (Computer Science and Engineering)

Co-ordinators : Prof. S. Sarkar

Lecture 1 - Introduction

Lecture 2 - Different Types of Learning

Lecture 3 - Hypothesis Space and Inductive Bias

Lecture 4 - Evaluation and Cross-Validation

Lecture 5 - Tutorial - I

Lecture 6 - Linear Regression

Lecture 7 - Introduction to Decision Trees

Lecture 8 - Learning Decision Tree

Lecture 9 - Overfitting

Lecture 10 - Python Exercise on Decision Tree and Linear Regression

Lecture 11 - Tutorial - II

Lecture 12 - k-Nearest Neighbour

Lecture 13 - Feature Selection

Lecture 14 - Feature Extraction

Lecture 15 - Collaborative Filtering

Lecture 16 - Python Exercise on kNN and PCA

Lecture 17 - Tutorial - III

Lecture 18 - Bayesian Learning

Lecture 19 - Naive Bayes

Lecture 20 - Bayesian Network

Lecture 21 - Python Exercise on Naive Bayes

Lecture 22 - Tutorial - IV

Lecture 23 - Logistic Regression

Lecture 24 - Introduction Support Vector Machine

Lecture 25 - SVM : The Dual Formulation

Lecture 26 - SVM : Maximum Margin with Noise

Lecture 27 - Nonlinear SVM and Kennel Function

Lecture 28 - SVM : Solution to the Dual Problem

Lecture 29 - Python Exercise on SVM

Lecture 30 - Introduction

Lecture 31 - Multilayer Neural Network

NPTEL : NOC:Object-Oriented Analysis and Design (Computer Science and Engineering)

Co-ordinators : Prof. Partha Pratim Das

NPTEL : NOC:Complex Network : Theory and Application (Computer Science and Engineering)

Co-ordinators : Prof. Animesh Mukherjee

Lecture 1 - Introduction

Lecture 2 - Network Analysis - I

Lecture 3 - Network Analysis - II

Lecture 4 - Network Analysis - III

Lecture 5 - Network Analysis - IV

Lecture 6 - Network Analysis - V

Lecture 7 - Network Analysis - VI

Lecture 8 - Social Network Principles - I

Lecture 9 - Social Network Principles - II

Lecture 10 - Social Network Principles - III

Lecture 11 - Social Network Principles - IV

Lecture 12 - Community Analysis - I

Lecture 13 - Community Analysis - II

Lecture 14 - Community Analysis - III

Lecture 15 - Community Analysis - IV

Lecture 16 - Community Analysis - V

Lecture 17 - Community Analysis - VI

Lecture 18 - Citation Analysis - I

Lecture 19 - Citation Analysis - II

Lecture 20 - Citation Analysis - III

Lecture 21 - Citation Analysis - IV

NPTEL : Fundamental Algorithms:Design and Analysis (Computer Science and Engineering)

Co-ordinators : Prof.Sourav Mukhopadhyay

NPTEL : NOC:Natural Language Processing (Computer Science and Engineering)

Co-ordinators : Prof. Pawan Goyal

Lecture 65 - Aspect - Based Sentiment Analysis

NPTEL : NOC:Embedded Systems Design (Computer Science and Engineering)

Co-ordinators : Prof. Anupam Basu

NPTEL : NOC:Wireless Ad Hoc and Sensor Networks (Computer Science and Engineering)

Co-ordinators : Prof. Sudip Misra

NPTEL : NOC:VLSI Physical Design (Computer Science and Engineering)

Co-ordinators : Prof. Indranil Sengupta

Lecture 1 - Introduction

Lecture 2 - Design Representation

Lecture 3 - VLSI Design Styles - Part 1

Lecture 4 - VLSI Design Styles - Part 2

Lecture 5 - VLSI Physical Design Automation - Part 1

Lecture 6 - VLSI Physical Design Automation - Part 2

Lecture 7 - Partitioning

Lecture 8 - Floor planning

Lecture 9 - Floor planning Algorithms

Lecture 10 - Pin Assignment

Lecture 11 - Placement - Part 1

Lecture 12 - Placement - Part 2

Lecture 13 - Placement - Part 3

Lecture 14 - Placement - Part 4

Lecture 15 - Grid Routing - Part 1

Lecture 16 - Grid Routing - Part 2

Lecture 17 - Grid Routing - Part 3

Lecture 18 - Global Routing - Part 1

Lecture 19 - Global Routing - Part 2

Lecture 20 - Detailed Routing - Part 1

Lecture 21 - Detailed Routing - Part 2

Lecture 22 - Detailed Routing - Part 3

Lecture 23 - Detailed Routing - Part 4

Lecture 24 - Clock Design - Part 1

Lecture 25 - Clock Design - Part 2

Lecture 26 - Clock Design - Part 3

Lecture 27 - Clock Network Synthesis - Part 1

Lecture 28 - Clock Network Synthesis - Part 2

Lecture 29 - Clock Network Synthesis - Part 3

Lecture 30 - Clock Network Synthesis - Part 4

Lecture 31 - Power and Ground Routing

NPTEL : NOC:Cryptography And Network Security (Computer Science and Engineering)

Co-ordinators : Prof. Sourav Mukhopadhyay

NPTEL : NOC:Computer Architecture and Organization (Computer Science and Engineering)

Co-ordinators : Prof. Indranil Sengupta, Prof. Kamalika Datta

NPTEL : NOC:Introduction to Algorithms and Analysis (Computer Science and Engineering)

Co-ordinators : Prof. Sourav Mukhopadhyay

Lecture 1 - Insertion sort

Lecture 2 - Analysis of Insertion Sort

Lecture 3 - Asymptotic Analysis

Lecture 4 - Recurrence of Merge Sort

Lecture 5 - Substitution Method

Lecture 6 - The Master Method

Lecture 7 - Divide-and-Conquer

Lecture 8 - Divide-and-Conquer (Continued...)

Lecture 9 - Straseen's Algorithms

Lecture 10 - QuickSort

Lecture 11 - Analysis of Quicksort

Lecture 12 - Randomized Quicksort

Lecture 13 - Heap

Lecture 14 - Heap Sort

Lecture 15 - Decision Tree

Lecture 16 - Linear time Sorting

Lecture 17 - Radix Sort and Bucket Sort

Lecture 18 - Order Statistics

Lecture 19 - Randomised Order Statistics

Lecture 20 - Worst case linear time order statistics

Lecture 21 - Hash Function

Lecture 22 - Open Addressing

Lecture 23 - Universal Hashing

Lecture 24 - Perfect Hashing

Lecture 25 - Binary Search Tree (BST) Sort

Lecture 26 - Randomly build BST

Lecture 27 - Red Black Tree

Lecture 28 - Red Black Tree (Continued...)

Lecture 29 - Augmentation of data structure

Lecture 30 - Interval trees

Lecture 31 - Fixed universe successor

NPTEL : NOC:Hardware Modeling using Verilog (Computer Science and Engineering)

Co-ordinators : Prof. Indranil Sengupta

Lecture 32 - Basic Pipelining Concepts

Lecture 33 - Pipeline Modeling - Part 1

Lecture 34 - Pipeline Modeling - Part 2

Lecture 35 - Switch Level Modeling - Part 1

Lecture 36 - Switch Level Modeling - Part 2

Lecture 37 - Pipeline Implementation Of A Processor - Part 1

Lecture 38 - Pipeline Implementation Of A Processor - Part 2

Lecture 39 - Pipeline Implementation Of A Processor - Part 3

Lecture 40 - Verilog Modeling Of The Processor - Part 1

Lecture 41 - Verilog Modeling Of The Processor - Part 2

NPTEL : NOC:Introduction to Internet of Things (Computer Science and Engineering)

Co-ordinators : Prof. Sudip Misra

Lecture 1 - Introduction to IoT- Part I

Lecture 2 - Introduction to IoT- Part II

Lecture 3 - Sensing

Lecture 4 - Actuation

Lecture 5 - Basics of IoT Networking - Part I

Lecture 6 - Basics of IoT Networking - Part II

Lecture 7 - Basics of IoT Networking - Part III

Lecture 8 - Basics of IoT Networking - Part IV

Lecture 9 - Connectivity Technologies - Part I

Lecture 10 - Connectivity Technologies - Part II

Lecture 11 - Connectivity Technologies - Part III

Lecture 12 - Connectivity Technologies - Part IV

Lecture 13 - Connectivity Technologies - Part V

Lecture 14 - Sensor Networks - I

Lecture 15 - Sensor Networks - II

Lecture 16 - Sensor Networks - III

Lecture 17 - Sensor Networks - IV

Lecture 18 - Sensor Networks - V

Lecture 19 - UAV Networks

Lecture 20 - Machine to Machine Communication

Lecture 21 - Interoperability in Internet of Things

Lecture 22 - Introduction to Arduino - I

Lecture 23 - Introduction to Arduino - II

Lecture 24 - Integration of Sensor and Actuators with Arduino - I

Lecture 25 - Integration of Sensor and Actuators with Arduino - II

Lecture 26 - Introduction to Python Programming - I

Lecture 27 - Introduction to Python Programming - II

Lecture 28 - Introduction to Raspberry Pi - I

Lecture 29 - Introduction to Raspberry Pi - II

Lecture 30 - Implementation of IoT with Raspberry Pi - I

Lecture 31 - Implementation of IoT with Raspberry Pi - II

Lecture 32 - Implementation of IoT with Raspberry Pi - III

Lecture 33 - Software Defined Networking - Part I

Lecture 34 - Software Defined Networking - Part II

Lecture 35 - Software Defined IoT Networking - I

Lecture 36 - Software Defined IoT Networking - II

Lecture 37 - Cloud Computing-Fundamental

Lecture 38 - Cloud Computing-Service Model

Lecture 39 - Cloud Computing-Service Management and Security

Lecture 40 - Cloud Computing - Case Studies

Lecture 41 - Cloud Computing - Practical

Lecture 42 - Sensor-Cloud - I

Lecture 43 - Sensor-Cloud - II

Lecture 44 - Fog Computing - I

Lecture 45 - Fog Computing - II

Lecture 46 - Smart Cities and Smart Homes - I

Lecture 47 - Smart Cities and Smart Homes - II

Lecture 48 - Smart Cities and Smart Homes - III

Lecture 49 - Connected Vehicles - I

Lecture 50 - Connected Vehicles - II

Lecture 51 - Smart Grid - I

Lecture 52 - Smart Grid - II

Lecture 53 - Industrial Internet of Things - I

Lecture 54 - Industrial Internet of Things - II

Lecture 55 - Data Handling and Analytics - I

Lecture 56 - Data Handling and Analytics - II

Lecture 57 - Case Study: Agriculture

Lecture 58 - Case Study: Healthcare

Lecture 59 - Case Study: Activity Monitoring - I

Lecture 60 - Case Study: Activity Monitoring - II

NPTEL : NOC:Cloud Computing (Computer Science and Engineering)

Co-ordinators : Prof. Soumya Kanti Ghosh

NPTEL : NOC:Problem Solving through Programming in C (Computer Science and Engineering)

Co-ordinators : Prof.Arnab sarkar, Prof.Jatindra Kumar Deka, Dr. Santosh Biswas

Lecture 32 - Character Array and Strings

Lecture 33 - String Operations

Lecture 34 - 2-D Array Operation

Lecture 35 - Introducing Functions

Lecture 36 - More on Functions

Lecture 37 - Function (Continued...)

Lecture 38 - Scanf and Printf Functions; Function Prototype

Lecture 39 - Parameter Passing in Function Revision

Lecture 40 - Parameter Passing in Function Revision (Continued...)

Lecture 41 - Substitution of # include and Macro

Lecture 42 - search as a function

Lecture 43 - Binary Search

Lecture 44 - Binary Search (Continued...)

Lecture 45 - Sorting Methods

Lecture 46 - Bubble Sort (Continued...)

Lecture 47 - Use of Pointer in Function : Context Bubble Sort

Lecture 48 - Arrays at Strings

Lecture 49 - Data Representation

Lecture 50 - Bisection Method

Lecture 51 - Interpolation

Lecture 52 - Trapezoidal Rule and Runge-Kutta Method

Lecture 53 - Recursion

Lecture 54 - Recursion (Continued...)

Lecture 55 - Structure

Lecture 56 - Structure (Continued...)

Lecture 57 - Structure with typedef

Lecture 58 - Pointer

Lecture 59 - Pointer (Continued...)

Lecture 60 - Pointer in Structures

Lecture 61 - Dynamic Allocation and File

NPTEL : NOC:Real Time Operating System (Computer Science and Engineering)

Co-ordinators : Prof. Rajib Mall

NPTEL : NOC:Introduction to Soft Computing (Computer Science and Engineering)

Co-ordinators : Prof. Debasis Samanta

Lecture 1 - Introduction to soft computing

Lecture 2 - Introduction to Fuzzy Logic

Lecture 3 - Fuzzy membership functions (Continued...) and Defining Membership functions

Lecture 4 - Fuzzy operations

Lecture 5 - Fuzzy relations

Lecture 6 - Fuzzy Relations (Continued...) and Fuzzy propositions

Lecture 7 - Fuzzy implications

Lecture 8 - Fuzzy Inferences

Lecture 9 - Defuzzification techniques (Part-I)

Lecture 10 - Defuzzification Techniques (Part-I) (Continued...)

Lecture 11 - Fuzzy logic controller

Lecture 12 - Fuzzy Logic Controller (Continued...)

Lecture 13 - Fuzzy logic controller (Continued...)

Lecture 14 - Concept of Genetic Algorithm

Lecture 15 - Concept of Genetic Algorithm (Continued...) and GA Strategies

Lecture 16 - GA Operator : Encoding schemes

Lecture 17 - GA operator : encoding scheme (Continued...)

Lecture 18 - GA Operator : Selection

Lecture 19 - GA Operator : Selection (Continued...)

Lecture 20 - GA Operator : Crossover techniques

Lecture 21 - GA Operator : Crossover (Continued...)

Lecture 22 - GA Operator : Crossover (Continued...)

Lecture 23 - GA Operator : Mutation and others

Lecture 24 - Multi-objective optimization problem solving

Lecture 25 - Multi-objective optimization problem solving (Continued...)

Lecture 26 - Concept of domination

Lecture 27 - Non-Pareto based approaches to solve MOOPs

Lecture 28 - Non-Pareto based approaches to solve MOOPs (Continued...)

Lecture 29 - Pareto-Based approaches to solve MOOPs

Lecture 30 - Pareto-based approaches to solve MOOPs (Continued....)

Lecture 31 - Pareto-based approach to solve MOOPs

NPTEL : NOC:Data Mining (Computer Science and Engineering)

Co-ordinators : Prof. Pabitra Mitra

NPTEL : NOC:Data Base Management System (Computer Science and Engineering)

Co-ordinators : Prof. Partha Pratim Das

Lecture 32 - Transactions/2 : Serializability

Lecture 33 - Transactions/3 : Recoverability

Lecture 34 - Concurrency Control/1

Lecture 35 - Concurrency Control/2

Lecture 36 - Recovery/1

Lecture 37 - Recovery/2

Lecture 38 - Query Processing and Optimization/1 : Processing

Lecture 39 - Query Processing and Optimization/2 : Optimization

Lecture 40 - Course Summarization

Lecture 41 - Live Session

Lecture 42 - Live Session - 2

NPTEL : NOC:Software Engineering (Computer Science and Engineering)

Co-ordinators : Prof. Rajib Mall

NPTEL : NOC:Computer Networks and Internet Protocol (Computer Science and Engineering)

Co-ordinators : Prof. Sandip Chakraborty, Prof. Soumya Kanti Ghosh

Lecture 32 - Internet QoS - II (Basic QoS Architecture)

Lecture 33 - Internet QoS - III (Traffic Policing and Traffic Shaping)

Lecture 34 - Internet QoS - IV (Traffic Scheduling)

Lecture 35 - Internet QoS - V (Integrated and Differentiated Service Architecture)

Lecture 36 - IP Routing Table

Lecture 37 - Routing in the Internet I - Intra-domain routing

Lecture 38 - Routing in the Internet II - Routing protocols

Lecture 39 - Routing in the Internet III - Inter-domain Routing

Lecture 40 - Routing in the Internet IV - Border Gateway Protocol

Lecture 41 - IP Routers

Lecture 42 - IP Routers Demo

Lecture 43 - Software Defined Networking - I (Basics)

Lecture 44 - Software Defined Networking - II (Open Flow)

Lecture 45 - Software Defined Networking - III (Demo)

Lecture 46 - Data Link Layer - Overview

Lecture 47 - Data Link Layer - Basic Concepts

Lecture 48 - Data Link Layer - Ethernet

Lecture 49 - Data Link Layer - Ethernet (Continued...)

Lecture 50 - Data Link Layer - Flow and Error Control

Lecture 51 - ARP-RAPP-BOOTP-DHCP

Lecture 52 - ARP-RAPP-BOOTP-DHCP (Continued...)

Lecture 53

Lecture 54 - Wireless LANs

Lecture 55 - Layer 1: Physical Layer

Lecture 56 - Layer 1: Physical Layer - II

Lecture 57 - Layer 1: Physical Layer - III

Lecture 58 - Network Security - Overview

Lecture 59 - Network Security - II

Lecture 60 - Network Security - III [TCP/IP Security]

NPTEL : NOC:Blockchain Architecture Design and Use Cases (Computer Science and Engineering)

Co-ordinators : Praveen Jayachandran, Prof. Sandip Chakraborty

Lecture 32 - Blockchain in Financial Service - II (Compliance and Mortgage)

Lecture 33 - Blockchain in Financial Service - III (Financial Trade)

Lecture 34 - Revolutionizing Global Trade

Lecture 35 - Blockchain in Supply Chain - I

Lecture 36 - Blockchain in Supply Chain - II

Lecture 37 - Blockchain in Other Industries

Lecture 38 - Blockchain in Government - I (Advantages)

Lecture 39 - Blockchain in Government - II (Use Cases)

Lecture 40 - Blockchain in Government - III (Digital Identity)

Lecture 41 - Blockchain in Government - IV (Hyperledger Indy)

Lecture 42 - Blockchain in Government - V (Tax Payments and Land Registry Records)

Lecture 43 - Blockchain Security - I (Overview)

Lecture 44 - Blockchain Security - II (Membership and Access control in Fabric)

Lecture 45 - Blockchain Security - III (Privacy in Fabric)

Lecture 46 - Blockchain Security - III (Fabric SideDB)

Lecture 47 - Research Aspects - I (Consensus Scalability)

Lecture 48 - Research Aspects - II (Bitcoin-NG)

Lecture 49 - Research Aspects - III (Collective Signing)

Lecture 50 - Research Aspects - IV (Byzcoin)

Lecture 51 - Research Aspects - V (Algorand)

Lecture 52 - Research Aspects - VI (Cross Fault Tolerance)

Lecture 53 - Research Aspects - VII (Secured Multi-Party Computation)

Lecture 54 - Blockchain for Science - I (Blockchain for Big Data)

Lecture 55 - Blockchain for Science - II (Blockchain and AI)

Lecture 56 - Comparing Ecosystems - Ethereum

Lecture 57 - Comparing Ecosystems - Ethereum development tools and Quorum

Lecture 58 - Comparing Ecosystems - Corda Part 1

Lecture 59 - Comparing Ecosystems - Corda Part 2

Lecture 60 - Concluding the course

NPTEL : NOC:Switching Circuits and Logic Design (Computer Science and Engineering)

Co-ordinators : Prof. Indranil Sengupta

NPTEL : NOC:Scalable Data Science (Computer Science and Engineering)

Co-ordinators : Prof. Sourangshu Bhattacharya, Prof. Anirban Dasgupta

Lecture 32 - Spark (Continued...)

Lecture 33 - Distributed Machine Learning and Optimization: Introduction

Lecture 34 - SGD+Proof

Lecture 35 - SGD+Proof (Continued...)

Lecture 36 - Distributed Machine Learning and Optimization:ADMM + applications

Lecture 37 - Distributed Machine Learning and Optimization:ADMM + applications (Continued...)

Lecture 38 - Clustering

Lecture 39 - Clustering (Continued...)

Lecture 40 - Conclusion

NPTEL : NOC:Compiler Design (Computer Science and Engineering)

Co-ordinators : Prof. Santanu Chattopadhyay

NPTEL : NOC:Programming in Java (Computer Science and Engineering)

Co-ordinators : Prof. Debasis Samanta

Lecture 1 - Introduction

Lecture 2 - Java Programming Steps

Lecture 3 - Java Tools and Resources

Lecture 4 - Demonstration - I

Lecture 5 - Java Applet Programming

Lecture 6 - Demonstration - II

Lecture 7 - Encapsulation

Lecture 8 - Demonstration - III

Lecture 9 - Java Programming Insights

Lecture 10 - Demonstration - IV

Lecture 11 - Java Static Scope Rule

Lecture 12 - Demonstration - V

Lecture 13 - Inheritance

Lecture 14 - Demonstration - VI

Lecture 15 - Information Hiding

Lecture 16 - Demonstration - VII

Lecture 17 - Packages - I

Lecture 18 - Packages - II

Lecture 19 - Demonstration - VIII

Lecture 20 - Interface - I

Lecture 21 - Interface - II

Lecture 22 - Demonstration - IX

Lecture 23 - Exception Handling - I

Lecture 24 - Exception Handling - II

Lecture 25 - Exception Handling - III

Lecture 26 - Demonstration - X

Lecture 27 - Multithreading - I

Lecture 28 - Multithreading - II

Lecture 29 - Demonstration - XI

Lecture 30 - I-O Stream - I

Lecture 31 - I-O Stream - II

NPTEL : NOC:Discrete Structures (Computer Science and Engineering)

Co-ordinators : Prof. Dipanwita Roychowdhury

Lecture 32 - Recurrence relations (Continued...)

Lecture 33 - Recurrence relations (Continued...)

Lecture 34 - Recurrence relations (Continued...)

Lecture 35 - Recurrence relations (Continued...)

Lecture 36 - Counting Techniques and Pigeonhole Principle

Lecture 37 - Counting Techniques and Pigeonhole Principle (Continued...)

Lecture 38 - Counting Techniques and Pigeonhole Principle (Continued...)

Lecture 39 - Counting Techniques and Pigeonhole Principle (Continued...)

Lecture 40 - Counting Techniques and Pigeonhole Principle (Continued...)

Lecture 41 - Combinatorics

Lecture 42 - Combinatorics (Continued...)

Lecture 43 - Combinatorics (Continued...)

Lecture 44 - Combinatorics (Continued...)

Lecture 45 - Combinatorics (Continued...)

Lecture 46 - Algebraic Structures

Lecture 47 - Algebraic Structures (Continued...)

Lecture 48 - Algebraic Structures (Continued...)

Lecture 49 - Algebraic Structures (Continued...)

Lecture 50 - Algebraic Structures (Continued...)

Lecture 51 - Ring and Modular Arithmetic

Lecture 52 - Ring and Modular Arithmetic (Continued...)

Lecture 53 - Ring and Modular Arithmetic (Continued...)

Lecture 54 - Ring and Modular Arithmetic (Continued...)

Lecture 55 - Ring and Modular Arithmetic (Continued...)

Lecture 56 - Finite Field and Applications

Lecture 57 - Finite Field and Applications (Continued...)

Lecture 58 - Finite Field and Applications (Continued...)

Lecture 59 - Finite Field and Applications (Continued...)

Lecture 60 - Finite Field and Applications (Continued...)

NPTEL : NOC:Embedded System Design with ARM (Computer Science and Engineering)

Co-ordinators : Prof. Indranil Sengupta, Prof. Kamalika Datta

NPTEL : NOC:Hardware Security (Computer Science and Engineering)

Co-ordinators : Dr. Debdeep Mukhopadhyay

Lecture 32 - Power Analysis - Part VIII

Lecture 33 - Power Analysis - Part IX

Lecture 34 - Power Analysis - Part X

Lecture 35 - Power Analysis - Part XI

Lecture 36

Lecture 37

Lecture 38

Lecture 39

Lecture 40

Lecture 41 - Power Analysis - Part XVII

Lecture 42 - Power Analysis - Part XVIII

Lecture 43 - Power Analysis Countermeasures

Lecture 44 - Power Analysis Countermeasures (Continued...)

Lecture 45 - Power Analysis Countermeasures (Continued...)

Lecture 46 - Fault Analysis of Cryptosystems

Lecture 47 - Improved DFA of AES

Lecture 48 - Multi-Byte and key Scheduling Based Fault Analysis of AES

Lecture 49 - Multi-Byte and key Scheduling Based Fault Analysis of AES (Continued...)

Lecture 50 - Redundaney Based Fault Intensity

Lecture 51 - Reundancy Base Fault Countermeasures and Differential Faut Intensity Attacks (Continued...)

Lecture 52 - Infective Countermeasures for DFA

Lecture 53 - Infective Countermeasures for DFA (Continued...)

Lecture 54 - Infective Countermeasures for DFA (Continued...)

Lecture 55 - Microarchitectural attacks: Part I cache Timing attacks on Block ciphers

Lecture 56 - Microarchitectural attacks: Part I cache Timing attacks on Block ciphers (Continued...)

Lecture 57 - Microarchitectural attacks: Part II Branch Prediction Attacks

Lecture 58 - Microarchitectural attacks: Part II Branch Prediction Attacks (Continued...)

Lecture 59 - Microarchitectural attacks: Part III Row Hammer Attacks

Lecture 60 - Microarchitectural attacks: Part III Row Hammer Attacks (Continued...)

NPTEL : NOC:Introduction to Industry 4.0 and Industrial Internet of Things (Computer Science and Engineering)

Co-ordinators : Prof. Sudip Misra

Lecture 65 - Steel Technology Lab

NPTEL : NOC:Introduction to Automata, Languages and Computation (Computer Science and Engineering)

Co-ordinators : Prof. Sourav Mukhopadhyay

NPTEL : NOC:Operating System Fundamentals (Computer Science and Engineering)

Co-ordinators : Prof. Santanu Chattopadhyay

NPTEL : NOC:Deep Learning (Prof. P.K. Biswas) (Computer Science and Engineering)

Co-ordinators : Prof. P.K. Biswas

NPTEL : NOC:Computer Vision (Computer Science and Engineering)

Co-ordinators : Prof. Jayanta Mukhopadhyay

NPTEL : NOC:Ethical Hacking (Computer Science and Engineering)

Co-ordinators : Prof. Indranil Sengupta

NPTEL : NOC:Software Project Management (Computer Science and Engineering)

Co-ordinators : Prof. Durga Prasad Mohapatra

NPTEL : NOC:Spatial Informatics (Computer Science and Engineering)

Co-ordinators : Prof. Soumya Kanti Ghosh

NPTEL : NOC:GPU Architectures and Programming (Computer Science and Engineering)

Co-ordinators : Prof. Soumyajit Dey

Lecture 1 - Review of basic COA w.r.t. performance

Lecture 2 - Review of basic COA w.r.t. performance

Lecture 3 - Review of basic COA w.r.t. performance

Lecture 4 - Review of basic COA w.r.t. performance

Lecture 5 - Intro to GPU architectures

Lecture 6 - Intro to GPU architectures

Lecture 7 - Intro to GPU architectures

Lecture 8 - Intro to GPU architectures

Lecture 9 - Intro to CUDA programming

Lecture 10 - Intro to CUDA programming (Continued...)

Lecture 11 - Intro to CUDA programming (Continued...)

Lecture 12 - Intro to CUDA programming (Continued...)

Lecture 13 - Multi-dimensional mapping of dataspace; Synchronization

Lecture 14 - Multi-dimensional mapping of dataspace; Synchronization (Continued...)

Lecture 15 - Multi-dimensional mapping of dataspace; Synchronization (Continued...)

Lecture 16 - Warp Scheduling and Divergence

Lecture 17 - Warp Scheduling and Divergence (Continued...)

Lecture 18 - Warp Scheduling and Divergence (Continued...)

Lecture 19 - Memory Access Coalescing

Lecture 20 - Memory Access Coalescing (Continued...)

Lecture 21 - Memory Access Coalescing (Continued...)

Lecture 22 - Memory Access Coalescing (Continued...)

Lecture 23 - Memory Access Coalescing (Continued...)

Lecture 24 - Memory Access Coalescing (Continued...)

Lecture 25 - Memory Access Coalescing (Continued...)

Lecture 26 - Memory Access Coalescing (Continued...)

Lecture 27 - Memory Access Coalescing (Continued...)

Lecture 28 - Optimizing Reduction Kernels

Lecture 29 - Optimizing Reduction Kernels (Continued...)

Lecture 30 - Optimizing Reduction Kernels (Continued...)

Lecture 31 - Optimizing Reduction Kernels (Continued...)

Lecture 32 - Optimizing Reduction Kernels (Continued...)

Lecture 33 - Optimizing Reduction Kernels (Continued...)

Lecture 34 - Optimizing Reduction Kernels (Continued...)

Lecture 35 - Kernel Fusion, Thread and Block Coarsening

Lecture 36 - Kernel Fusion, Thread and Block Coarsening (Continued...)

Lecture 37 - Kernel Fusion, Thread and Block Coarsening (Continued...)

Lecture 38 - Kernel Fusion, Thread and Block Coarsening (Continued...)

Lecture 39 - Kernel Fusion, Thread and Block Coarsening (Continued...)

Lecture 40 - Kernel Fusion, Thread and Block Coarsening (Continued...)

Lecture 41 - OpenCL - Runtime System

Lecture 42 - OpenCL - Runtime System (Continued...)

Lecture 43 - OpenCL - Runtime System (Continued...)

Lecture 44 - OpenCL - Runtime System (Continued...)

Lecture 45 - OpenCL - Runtime System (Continued...)

Lecture 46 - OpenCL - Runtime System (Continued...)

Lecture 47 - OpenCL - Runtime System (Continued...)

Lecture 48 - OpenCL - Heterogeneous Computing

Lecture 49 - OpenCL - Heterogeneous Computing (Continued...)

Lecture 50 - OpenCL - Heterogeneous Computing (Continued...)

Lecture 51 - OpenCL - Heterogeneous Computing (Continued...)

Lecture 52 - OpenCL - Heterogeneous Computing (Continued...)

Lecture 53 - OpenCL - Heterogeneous Computing (Continued...)

Lecture 54 - Efficient Neural Network Training/Inferencing

Lecture 55 - Efficient Neural Network Training/Inferencing (Continued...)

Lecture 56 - Efficient Neural Network Training/Inferencing (Continued...)

Lecture 57 - Efficient Neural Network Training/Inferencing (Continued...)

Lecture 58 - Efficient Neural Network Training/Inferencing (Continued...)

Lecture 59 - Efficient Neural Network Training/Inferencing (Continued...)

Lecture 60 - Efficient Neural Network Training/Inferencing (Continued...)

Lecture 61 - Efficient Neural Network Training/Inferencing (Continued...)

Lecture 62 - Efficient Neural Network Training/Inferencing (Continued...)

Lecture 63 - Efficient Neural Network Training/Inferencing (Continued...)

NPTEL : NOC:Google Cloud Computing Foundation Course (Computer Science and Engineering)

Co-ordinators : Prof. Soumya Kanti Ghosh

NPTEL : NOC:Object Oriented System Development using UML, Java and Patterns (Computer Science and Engineering)

Co-ordinators : Prof. Rajib Mall

Lecture 32 - Example Application of OOAD

Lecture 33 - CRD Cards

Lecture 34 - Open/Closed Principle

Lecture 35 - LSP, ISP Principles

Lecture 36 - DIP Principle

Lecture 37 - Introduction to Design Pattern

Lecture 38 - GRASP Pattern: Introduction

Lecture 39 - Expert and Creator Pattern

Lecture 40 - Pure Fabrication, Law of Demeter

Lecture 41 - Introduction to GOF Patterns

Lecture 42 - Facade Pattern

Lecture 43 - Observer Pattern - I

Lecture 44 - Observer Pattern - II

Lecture 45 - Singleton Pattern - I

Lecture 46 - Singleton Pattern - II

Lecture 47 - State Pattern - I

Lecture 48 - State Pattern - II

Lecture 49 - Composite Pattern - I

Lecture 50 - Composite Pattern - II

Lecture 51 - Adapter Pattern - I

Lecture 52 - Adapter Pattern - II

Lecture 53 - Bridge Pattern - I

Lecture 54 - Bridge Pattern - II

Lecture 55 - Proxy Pattern - I

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Lecture 57 - Decorator Pattern - I

Lecture 58 - Decorator Pattern - II

Lecture 59 - Decorator Pattern - III

Lecture 60 - Iterator Pattern

NPTEL : NOC:Data Structure and Algorithms using Java (Computer Science and Engineering)

Co-ordinators : Prof. Debasis Samanta

NPTEL : NOC:Real-Time Systems (Computer Science and Engineering)

Co-ordinators : Prof. Rajib Mall

Lecture 1 - Introduction

Lecture 2 - Introduction

Lecture 3 - Characteristics of a real-time embedded system

Lecture 4 - Characteristics of a real-time embedded system

Lecture 5 - Types of real-time tasks

Lecture 6 - Events in a Real-Time System

Lecture 7 - Types of time constraints

Lecture 8 - Basics of Real-Time Task scheduling

Lecture 9 - Clock-driven schedulers

Lecture 10 - Basics of Cyclic schedulers

Lecture 11 - Cyclic Scheduler

Lecture 12 - Frame size constraints

Lecture 13 - Frame size selection: Examples

Lecture 14 - Event-driven scheduling

Lecture 15 - EDF scheduler

Lecture 16 - Variants of EDF and Rate Monotonic Scheduling

Lecture 17 - Rate Monotonic Schedulability Analysis

Lecture 18 - Rate Monotonic Schedulability Analysis

Lecture 19 - Rate Monotonic Scheduling: Miscellaneous issues

Lecture 20 - RMS Generalizations

Lecture 21 - RMS Generalizations

Lecture 22 - Handling aperiodic and sporadic tasks in rate monotonic scheduling

Lecture 23 - Handling aperiodic and sporadic tasks in rate monotonic scheduling

Lecture 24 - Coping up with Insufficient number of priorities

Lecture 25 - Handling task jitter and precedence ordering

Lecture 26 - Resource Sharing Among Real-Time Tasks

Lecture 27 - Basic priority inheritance protocol (PIP)

Lecture 28 - Highest Locker Protocol (HLP)

Lecture 29 - Priority Ceiling Protocol (PCP)

Lecture 30 - Working of Priority Ceiling Protocol

Lecture 31 - Analysis of Priority Ceiling Protocol

NPTEL : NOC:Algorithms for Protein Modelling and Engineering (Computer Science and Engineering)

Co-ordinators : Prof. Pralay Mitra

NPTEL : NOC:Programming in Modern C++ (Computer Science and Engineering)

Co-ordinators : Prof. Partha Pratim Das

Lecture 32 - Inheritance: Part 5: private and protected Inheritance

Lecture 33 - Tutorial 5: Mixing C and C++ Code: Part 1: Issues and Resolutions

Lecture 34 - Polymorphism: Part 1: Type Casting

Lecture 35 - Polymorphism: Part 2: Static and Dynamic Binding

Lecture 36 - Polymorphism: Part 3: Abstract Base Class

Lecture 37 - Polymorphism: Part 4: Staff Salary Processing using C

Lecture 38 - Polymorphism: Part 5: Staff Salary Processing using C++

Lecture 39 - Tutorial 6: Mixing C and C++ Code: Part 2: Project Example

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Lecture 41 - Type Casting and Cast Operators: Part 1

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Lecture 43 - Type Casting and Cast Operators: Part 3

Lecture 44 - Multiple Inheritance

Lecture 45 - Tutorial 7: How to design a UDT like built-in types?: Part 1: Fraction UDT

Lecture 46 - Exceptions (Error handling in C): Part 1

Lecture 47 - Exceptions (Error handling in C++): Part 2

Lecture 48 - Template (Function Template): Part 1

Lecture 49 - Template (Class Template): Part 2

Lecture 50 - Functors: Function Objects

Lecture 51 - Tutorial 8: How to design a UDT like built-in types?: Part 2: Int and Poly UDT

Lecture 52 - Input-Output: File Handling in C

Lecture 53 - Input-Output: Streams in C++

Lecture 54 - C++ Standard Library: Part 1 (Generic Programming)

Lecture 55 - C++ Standard Library: Part 2 (STL)

Lecture 56 - C++ Standard Library: Part 3 (STL)

Lecture 57 - Tutorial 9: How to design a UDT like built-in types?: Part 3: Updates and Mixes of UDTs

Lecture 58 - C++11 and beyond: General Features: Part 1

Lecture 59 - C++11 and beyond: General Features: Part 2

Lecture 60 - C++11 and beyond: General Features: Part 3

Lecture 61 - C++11 and beyond: General Features: Part 4: Rvalue and Move/1

Lecture 62 - C++11 and beyond: General Features: Part 5: Rvalue and Move/2

Lecture 63 - Tutorial 10: How to optimize C++11 programs using Rvalue and Move Semantics?

Lecture 64 - C++11 and beyond: General Features: Part 6: Rvalue and Perfect Forwarding

Lecture 65 - C++11 and beyond: General Features: Part 7: Lambda in C++/1

Lecture 66 - C++11 and beyond: General Features: Part 8: Lambda in C++/2

Lecture 67 - C++11 and beyond: Class Features

Lecture 68 - C++11 and beyond: Non-class Types and Template Features

Lecture 69 - Tutorial 11: Compatibility of C and C++: Part 1: Significant Features

Lecture 70 - C++11 and beyond: Resource Management by Smart Pointers: Part 1

Lecture 71 - C++11 and beyond: Resource Management by Smart Pointers: Part 2

Lecture 72 - C++11 and beyond: Concurrency: Part 1

Lecture 73 - C++11 and beyond: Concurrency: Part 2

Lecture 74 - Closing Comments

Lecture 75 - Tutorial 12: Compatibility of C and C++: Part 2: Summary

NPTEL : NOC:Blockchain and its Applications (Computer Science and Engineering)

Co-ordinators : Prof. Sandip Chakraborty, Prof. Shamik Sural

Lecture 32 - Safety and Liveness of PBFT

Lecture 33 - Enterprise Blockchains

Lecture 34 - Hyperledger Fabric 1

Lecture 35 - Hyperledger Fabric 2

Lecture 36 - Hyperledger Fabric 3

Lecture 37 - Hyperledger Fabric 4

Lecture 38 - Consensus Scalability

Lecture 39 - Bitcoin-NG

Lecture 40 - Collective Signing (CoSi)

Lecture 41 - ByzCoin

Lecture 42 - Algorand

Lecture 43 - Identity Management - I

Lecture 44 - Identity Management - II

Lecture 45 - Identity Management - III

Lecture 46 - Blockchain Interoperability - I

Lecture 47 - Blockchain Interoperability - II

Lecture 48 - Blockchain Interoperability - III

Lecture 49 - Hyperledger Indy - I

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Lecture 52 - Blockchain Security - I

Lecture 53 - Blockchain Security - II

Lecture 54 - Blockchain Security - III

Lecture 55 - Use Cases

Lecture 56 - A Potential Use Case From a Critics Perspective

Lecture 57 - Blockchain in Financial Services

Lecture 58 - Public Sector Use Cases

Lecture 59 - Blockchain for Decentralized Marketplace - Part 1

Lecture 60 - Blockchain for Decentralized Marketplace - Part 2

NPTEL : NOC:Algorithmic Game Theory (Computer Science and Engineering)

Co-ordinators : Prof. Palash Dey

NPTEL : NOC:Machine Learning for Earth System Sciences (Computer Science and Engineering)

Co-ordinators : Prof. Adway Mitra

NPTEL : NOC:Statistical Learning for Reliability Analysis (Computer Science and Engineering)

Co-ordinators : Prof. Monalisa Sarma

Lecture 32 - ANOVA - I

Lecture 33 - ANOVA - II

Lecture 34 - ANOVA - III

Lecture 35 - ANOVA - IV

Lecture 36 - ANOVA - V

Lecture 37 - ANOVA - VI

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Lecture 39 - Correlation Analysis - Part II

Lecture 40 - Regression Analysis - Part I

Lecture 41 - Regression Analysis - Part II

Lecture 42 - Regression Analysis - Part III

Lecture 43 - Tutorial on Relation Analysis

Lecture 44 - Auto-Regression Analysis

Lecture 45 - Logistic Regression - Part I

Lecture 46 - Logistic Regression - Part II

Lecture 47 - Logistic Regression - Part III

Lecture 48 - Tutorial on Logistic Regression

Lecture 49 - Introduction

Lecture 50 - Bayesian Classification - Part I

Lecture 51 - Bayesian Classification - Part II

Lecture 52 - k-Nearest Neighbor Classification

Lecture 53 - Tutorial on Classification Techniques

Lecture 54 - Support Vector Machine - Part I

Lecture 55 - Support Vector Machine - Part II

Lecture 56 - Support Vector Machine - Part III

Lecture 57 - Support Vector Machine - Part IV

Lecture 58 - Support Vector Machine - Part V

Lecture 59 - Support Vector Machine - Part VI

Lecture 60 - Tutorial on SVM

NPTEL : NOC:Foundations of Cyber Physical Systems (Computer Science and Engineering)

Co-ordinators : Prof. Soumyajit Dey

Lecture 1 - CPS: Motivational examples and compute platforms

Lecture 2 - CPS: Motivational examples and compute platforms (Continued...)

Lecture 3 - CPS: Motivational examples and compute platforms (Continued...)

Lecture 4 - CPS: Motivational examples and compute platforms (Continued...)

Lecture 5 - CPS: Motivational examples and compute platforms (Continued...)

Lecture 6 - Real time sensing and communication for CPS

Lecture 7 - Real time sensing and communication for CPS (Continued...)

Lecture 8 - Real time sensing and communication for CPS (Continued...)

Lecture 9 - Real time sensing and communication for CPS (Continued...)

Lecture 10 - Real time task scheduling for CPS

Lecture 11 - Real time task scheduling for CPS (Continued...)

Lecture 12 - Real time task scheduling for CPS (Continued...)

Lecture 13 - Real time task scheduling for CPS (Continued...)

Lecture 14 - Real time task scheduling for CPS (Continued...)

Lecture 15 - Real time task scheduling for CPS (Continued...)

Lecture 16 - Real time task scheduling for CPS (Continued...)

Lecture 17 - Real time task scheduling for CPS (Continued...)

Lecture 18 - Dynamical system modeling, stability, controller design

Lecture 19 - Dynamical system modeling, stability, controller design (Continued...)

Lecture 20 - Dynamical system modeling, stability, controller design (Continued...)

Lecture 21 - Dynamical system modeling, stability, controller design (Continued...)

Lecture 22 - Dynamical system modeling, stability, controller design (Continued...)

Lecture 23 - Dynamical system modeling, stability, controller design (Continued...)

Lecture 24 - Delay-aware Design; Platform effect on Stability/Performance

Lecture 25 - Delay-aware Design; Platform effect on Stability/Performance (Continued...)

Lecture 26 - Delay-aware Design; Platform effect on Stability/Performance (Continued...)

Lecture 27 - Delay-aware Design; Platform effect on Stability/Performance (Continued...) Corrigendum

Lecture 28 - Hybrid Automata based modelling of CPS

Lecture 29 - Hybrid Automata based modelling of CPS (Continued...)

Lecture 30 - Hybrid Automata based modelling of CPS (Continued...)

Lecture 31 - Hybrid Automata based modelling of CPS (Continued...)

NPTEL : NOC:Selected Topics in Algorithms (Computer Science and Engineering)

Co-ordinators : Prof. Palash Dey

Lecture 32 - Turing Reduction, Karp Reduction

Lecture 33 - NP - Completeness of 3SAT

Lecture 34 - NP - Completeness of Independent Set

Lecture 35 - NP - Completeness of vertex cover and clique

Lecture 36 - NP - Completeness of 3-coloring

Lecture 37 - NP - Completeness of Subset sum and Knapsack

Lecture 38 - NP - Completeness of set cover, Weak and Strong NP - completeness

Lecture 39 - Self Reduction

Lecture 40 - Randomized Approximation Algorithm

Lecture 41 - Derandomization

Lecture 42 - Travelling Salesman Problem

Lecture 43 - 2-Factor Approximation Algorithm for Metric TSP

Lecture 44 - 1.5-Factor Approximation Algorithm for Metric TSP

Lecture 45 - Approximation Algorithm for Set Cover

Lecture 46 - FPTAS for Knapsack

Lecture 47 - Introduction to Linear Program

Lecture 48 - Introduction to Linear Program (Continued...,)

Lecture 49 - Dual Fitting

Lecture 50 - Dual Fitting (Continued...)

Lecture 51 - Dual Fitting

Lecture 52 - Set Cover using LP rounding

Lecture 53 - Vertex Cover using reduction to set cover

Lecture 54 - Vertex Cover LP

Lecture 55 - Randomized Rounding

Lecture 56 - Primal Dual Scheme

Lecture 57 - Introduction to Parameterized Algorithm

Lecture 58 - Faster FPT Algorithm for Vertex Cover

Lecture 59 - Introduction to Kernelization

Lecture 60 - Linear Programming Based Kernels

NPTEL : NOC:Foundations and Applications of Machine Learning (Bengali) (Computer Science and Engineering)

Co-ordinators : Prof. Adway Mitra

NPTEL : Pattern Recognition (Computer Science and Engineering)

Co-ordinators : Prof. Sukhendu Das, Prof. C.A. Murthy

Lecture 32 - Feature Selection Criteria Function: Probabilistic Separability Based

Lecture 33 - Feature Selection Criteria Function: Interclass Distance Based

Lecture 34 - Principal Components

Lecture 35 - Comparison Between Performance of Classifiers

Lecture 36 - Basics of Statistics, Covariance, and their Properties

Lecture 37 - Data Condensation, Feature Clustering, Data Visualization

Lecture 38 - Probability Density Estimation

Lecture 39 - Visualization and Aggregation

Lecture 40 - Support Vector Machine (SVM)

Lecture 41 - FCM and Soft-Computing Techniques

Lecture 42 - Examples of Uses or Application of Pattern Recognition; And When to do clustering

Lecture 43 - Examples of Real-Life Dataset

NPTEL : Performance Evaluation of Computer Systems (Computer Science and Engineering)

Co-ordinators : Prof. Krishna Moorthy Sivalingam

NPTEL : Theory of Automata, Formal Languages and Computation (Computer Science and Engineering)

Co-ordinators : Prof. Kamala Krithivasan

Lecture 32 - Problems and Instances, Universal TM, Decidability

Lecture 33 - RICE'S Theorem, Linear Bounded Automata, Properties of TM

Lecture 34 - POST'S Correspondence Problems

Lecture 35 - POST'S Correspondence Problems (Continued.), Time and Tape Complexity of TM

Lecture 36 - NP - Complete Problems, Cook's Theorem

Lecture 37 - NP - Complete Problems (Continued.)

Lecture 38 - Regulated Rewriting

Lecture 39 - L-Systems

Lecture 40 - Grammar Systems

Lecture 41 - DNA Computing

Lecture 42 - Membrane Computing

NPTEL : Computer Graphics (Computer Science and Engineering)

Co-ordinators : Prof. Sukhendu Das

NPTEL : Computer Organization (Computer Science and Engineering)

Co-ordinators : Prof. S. Raman

NPTEL : Database Design (Computer Science and Engineering)

Co-ordinators : Dr. S. Srikanth, Prof. D. Janaki Ram

Lecture 1 - Introduction to Database Management System

Lecture 2 - Conceptual Designs

Lecture 3 - Conceptual Designs

Lecture 4 - Relational Model

Lecture 5 - Relational Model

Lecture 6 - Structured Query Language - I

Lecture 7 - Structured Query Language - II

Lecture 8 - ER Model to Relational Mapping

Lecture 9 - Functional Dependencies and Normal Form

Lecture 10 - ER Model to Relational Model Mapping

Lecture 11 - Storage Structures

Lecture 12 - Indexing Techniques Single Level

Lecture 13 - Indexing Techniques Multi Level

Lecture 14 - Constraints and Triggers

Lecture 15 - Query Processing and Optimization

Lecture 16 - Query Processing and Optimization - II

Lecture 17 - Query Processing and Optimization - III

Lecture 18 - Transaction Processing Concepts

Lecture 19 - Transaction Processing and Database Manager

Lecture 20 - Foundation for Concurrency Control

Lecture 21 - Concurrency Control Part - 1

Lecture 22 - Concurrency Control Part - 2

Lecture 23 - Concurrency Control Part - 3

Lecture 24 - Concurrency Control Part - 4

Lecture 25 - Distributed Transaction Models

Lecture 26 - Basic 2-Phase and 3-phase commit protocol

Lecture 27 - Concurrency Control for Distributed Transaction

Lecture 28 - Introduction to Transaction Recovery

Lecture 29 - Recovery Mechanisms - II

Lecture 30 - Recovery Mechanisms - III

Lecture 31 - Introduction to Data Warehousing and OLAP

Lecture 32 - Introduction to Data Warehousing and OLAP

Lecture 33 - Case Study : MySQL

Lecture 34 - Case Study ORACLE and Microsoft Access

Lecture 35 - Data Mining and Knowledge Discovery

Lecture 36 - Data Mining and Knowledge Discovery Part - II

Lecture 37 - Object Oriented Databases

Lecture 38 - Object Oriented Databases - II

Lecture 39 - XML - Introductory Concepts

Lecture 40 - XML - Advanced Concepts

Lecture 41 - XML - Databases

Lecture 42 - Case Study - Part One - Database Design

Lecture 43 - Case Study - Part Two - Database Design

NPTEL : Discrete Mathematical Structures (Computer Science and Engineering)

Co-ordinators : Prof. Kamala Krithivasan

NPTEL : Artificial Intelligence (Prof. Deepak Khemani) (Computer Science and Engineering)

Co-ordinators : Prof. Deepak Khemani

Lecture 32 - Rete Algorithm

Lecture 33 - Planning

Lecture 34 - Planning FSSP, BSSP

Lecture 35 - Goal Stack Planning. Sussman's Anomaly

Lecture 36 - Non-linear planning

Lecture 37 - Plan Space Planning

Lecture 38 - GraphPlan

Lecture 39 - Constraint Satisfaction Problems

Lecture 40 - CSP continued

Lecture 41 - Knowledge-based systems

Lecture 42 - Knowledge-based Systems, PL

Lecture 43 - Propositional Logic

Lecture 44 - Resolution Refutation for PL

Lecture 45 - First-order Logic (FOL)

Lecture 46 - Reasoning in FOL

Lecture 47 - Backward chaining

Lecture 48 - Resolution for FOL

NPTEL : NOC:Programming, Data Structures and Algorithms (Computer Science and Engineering)

Co-ordinators : Prof. Hema A Murthy, Prof. Shankar Balachandran, Dr. N.S. Narayanaswamy

NPTEL : NOC:Introduction to Information Security I (Computer Science and Engineering)

Co-ordinators : Prof. V. Kamakoti

Lecture 32 - Module 3 - Part 1

Lecture 33 - Module 3 - Part 2

Lecture 34 - Module 3 - Part 3

Lecture 35 - Module 3 - Part 4

Lecture 36 - Module 3 - Part 5

Lecture 37 - Module 3 - Part 6

Lecture 38 - Module 3 - Part 7

Lecture 39 - Module 3 - Part 8

Lecture 40 - Module 3 - Part 9

Lecture 41 - Module 4 - Part 1

Lecture 42 - module 4 - Part 2

Lecture 43 - Module 4 - Part 3

Lecture 44 - Module 4 - Part 4

Lecture 45 - Module 4 - Part 5

Lecture 46 - Module 4 - Part 6

Lecture 47 - Module 4 - Part 7

Lecture 48 - Module 4 - Part 8

Lecture 49 - Module 4 - Part 9

Lecture 50 - Module 4 - Part 10

Lecture 51 - Module 5 - Part 1

Lecture 52 - Module 5 - Part 2

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Lecture 58 - Module 6 - Part 1

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Lecture 60 - Module 6 - Part 3

Lecture 61 - Module 6 - Part 4

Lecture 62 - Module 6 - Part 5

Lecture 63 - Module 6 - Part 6

Lecture 64 - Module 6 - Part 7

Lecture 65 - Module 6 - Part 8

NPTEL : NOC:Programming and Data structures (PDS) (Computer Science and Engineering)

Co-ordinators : Dr. N S. Narayanaswamy

NPTEL : NOC:Design and Analysis of Algorithms (Computer Science and Engineering)

Co-ordinators : Prof. Madhavan Mukund

Lecture 1 - Course Outline

Lecture 2 - Example: Air Travel

Lecture 3 - Example: Xerox shop

Lecture 4 - Example: Document similarity

Lecture 5 - Introduction and motivation

Lecture 6 - Input size, worst case, average case

Lecture 7 - Quantifying efficiency: O( ), Omega( ), Theta( )

Lecture 8 - Examples: Analysis of iterative and recursive algorithms

Lecture 9 - Arrays and lists

Lecture 10 - Searching in an array

Lecture 11 - Selection Sort

Lecture 12 - Insertion sort

Lecture 13 - Merge sort

Lecture 14 - Merge sort - analysis

Lecture 15 - Quicksort

Lecture 16 - Quicksort - analysis

Lecture 17 - Sorting - Concluding remarks

Lecture 18 - Introduction to graphs

Lecture 19 - Representing graphs

Lecture 20 - Breadth first search (BFS)

Lecture 21 - Depth first search (DFS)

Lecture 22 - Applications of BFS and DFS

Lecture 23 - Directed acylic graphs: topological sort

Lecture 24 - Directed acylic graphs: longest paths

Lecture 25 - Single source shortest paths: Dijkstras algorithm

Lecture 26 - Dijkstras algorithm: analysis

Lecture 27 - Negative edge weights: Bellman-Ford algorithm

Lecture 28 - All pairs shortest paths

Lecture 29 - Minimum Cost Spanning Trees

Lecture 30 - Prims Algorithm

Lecture 31 - Kruskals algorithm

Lecture 32 - Union-Find using arrays

Lecture 33 - Union-Find using pointers

Lecture 34 - Priority queues

Lecture 35 - Heaps

Lecture 36 - Heaps: Updating values, sorting

Lecture 37 - Counting inversions

Lecture 38 - Closest pair of points

Lecture 39 - Binary Search Trees

Lecture 40 - Balanced search trees

Lecture 41 - Interval scheduling

Lecture 42 - Scheduling with deadlines: minimizing lateness

Lecture 43 - Huffman codes

Lecture 44 - Introduction to dynamic programming

Lecture 45 - Memoization

Lecture 46 - Grid Paths

Lecture 47 - Common subwords and subsequences

Lecture 48 - Edit distance

Lecture 49 - Matrix multiplication

Lecture 50 - Linear Programming

Lecture 51 - LP modelling: Production Planning

Lecture 52 - LP modelling: Bandwidth allocation

Lecture 53 - Network Flows

Lecture 54 - Reductions

Lecture 55 - Checking Algorithms

Lecture 56 - P and NP

NPTEL : NOC:Programming, Data Structures and Algorithms (Aricent) (Computer Science and Engineering)

Co-ordinators : Dr. N S. Narayanaswamy, Prof. Shankar Balachandran, Prof. Hema A Murthy

NPTEL : NOC:Computer Architecture (Computer Science and Engineering)

Co-ordinators : Prof.Madhu Mutyam

NPTEL : NOC:Model Checking (Computer Science and Engineering)

Co-ordinators : Prof. B. Srivathsan

Lecture 32 - Summary.....

Lecture 33 - Module 1 - Introduction to LTL

Lecture 34 - Module 2 - Semantics of LTL

Lecture 35 - Module 3 - A puzzle

Lecture 36 - Summary.

Lecture 37 - Module 1 - Automata based LTL model-checking

Lecture 38 - Module 2 - LTL to NBA

Lecture 39 - Module 3 - Automaton construction

Lecture 40 - Summary..

Lecture 41 - Module 1 - Tree view of a transition system

Lecture 42 - Module 2 - CTL*

Lecture 43 - Module 3 - CTL

Lecture 44 - summary...

Lecture 45 - Module 1 - Adequate CTL formulae

Lecture 46 - Module 2 - EX, EU, EG

Lecture 47 - Module 3 - Final algorithm

Lecture 48 - Module 4 - State-space explosion

Lecture 49 - Summary....

Lecture 50 - Module 1 - Introduction to BDDs

Lecture 51 - Module 2 - Ordered BDDs

Lecture 52 - Module 3 - Representing transition systems as OBDDs

Lecture 53 - Summary.....

Lecture 54 - Timed transition systems

Lecture 55 - Concluding remarks

NPTEL : NOC:Functional Programming in Haskell (Computer Science and Engineering)

Co-ordinators : Prof. Madhavan Mukund, Prof. S P Suresh

NPTEL : Virtual Reality ()

NPTEL : NOC:Introduction to Machine Learning (Sponsored by Arihant) (Computer Science and Engineering)

Co-ordinators : Dr. Balaraman Ravindran

Lecture 32 - Early Models

Lecture 33 - Backpropogation - I

Lecture 34 - Backpropogation - II

Lecture 35 - Initialization, Training and Validation

Lecture 36 - Maximum Likelihood Estimate

Lecture 37 - Priors and MAP Estimate

Lecture 38 - Bayesian Parameter Estimation

Lecture 39 - Introduction

Lecture 40 - Regression Trees

Lecture 41 - Stopping Criteria and Pruning

Lecture 42 - Loss Functions for Classification

Lecture 43 - Categorical Attributes

Lecture 44 - Multiway Splits

Lecture 45 - Missing Values, Imputation and Surrogate Splits

Lecture 46 - Instability, Smoothness and Repeated Subtrees

Lecture 47 - Tutorial

Lecture 48 - Evaluation Measures I

Lecture 49 - Bootstrapping and Cross Validation

Lecture 50 - 2 Class Evaluation Measures

Lecture 51 - The ROC Curve

Lecture 52 - Minimum Description Length and Exploratory Analysis

Lecture 53 - Introduction to Hypothesis Testing

Lecture 54 - Basic Concepts

Lecture 55 - Sampling Distributions and the Z Test

Lecture 56 - Student's t-test

Lecture 57 - The Two Sample and Paired Sample t-tests

Lecture 58 - Confidence Intervals

Lecture 59 - Bagging, Committee Machines and Stacking

Lecture 60 - Boosting

Lecture 61 - Gradient Boosting

Lecture 62 - Random Forest

Lecture 63 - Naive Bayes

Lecture 64 - Bayesian Networks

NPTEL : NOC:Artificial Intelligence: Knowledge Representation and Reasoning (Computer Science and Engineering)

Co-ordinators : Prof. Deepak Khemani

Lecture 65 - Describing Family Relations

Lecture 66 - Recursive Descriptions

Lecture 67 - Abstract Entities

Lecture 68 - Reification: Units of Measurement

Lecture 69 - Semantic Nets and Knowledge Graphs

Lecture 70 - DL: Description Logics

Lecture 71 - Defining New Concepts and Roles

Lecture 72 - The Sentences in DL

Lecture 73 - A Family of Logics

Lecture 74 - DL: Some Examples

Lecture 75 - ALC Tableau

Lecture 76 - Model Checking in ALC

Lecture 77 - ALC Tableau: Examples

Lecture 78 - Language Independent Represntation

Lecture 79 - Conceptual Dependency Theory

Lecture 80 - CD States

Lecture 81 - Inferences in MARGIE

Lecture 82 - CD: Actions

Lecture 83 - English to CD

Lecture 84 - Representing Complex Verbs

Lecture 85 - Semantic Parsing of Language

Lecture 86 - Knowledge Structures

Lecture 87 - Scripts

Lecture 88 - SAM: Script Apploer Mechanism

Lecture 89 - A VIP Visit

Lecture 90 - Invoking Scripts

Lecture 91 - Goals, Plans, and Actions

Lecture 92 - Goal Interactions

Lecture 93 - Explanation Driven Understanding

Lecture 94 - Tussle Over a Bicycle

Lecture 95 - Plan Applier Mechanism (PAM)

Lecture 96 - Requests and Rule Instances

Lecture 97 - Managing Rule Instances

Lecture 98 - Knowledge Structures: Frames

Lecture 99 - Inheritance

Lecture 100 - A Frame System for Travel Planning

Lecture 101 - Inheritance in Taxonomies

Lecture 102 - Default Reasoning

Lecture 103 - Closed World Assumption

Lecture 104 - Circumscription

Lecture 105 - Default Logic

Lecture 106 - Autoepistemic Reasoning

Lecture 107 - The Event Calculus

Lecture 108 - The Effects of Events

Lecture 109 - Epistemic Logic

Lecture 110 - Kripke Structures: Possible Worlds Semantics

Lecture 111 - The Muddy Children Puzzle

Lecture 112 - The Effects of Epistemic Actions

Lecture 113 - Reasoning with Beliefs

NPTEL : NOC:Information Security - II (Computer Science and Engineering)

Co-ordinators : Prof. V. Kamakoti

Lecture 1 - Experimental Setup: Video Tutorial

Lecture 2 - Need for Secure Systems

Lecture 3 - Ignorance of A is Sin of B

Lecture 4 - Function calls and Stacks

Lecture 5 - Stack Smashing

Lecture 6 - Virtual Machine Based Rootkits

Lecture 7 - Security and Architecture: Introduction

Lecture 8 - Structured Computer Organization Completed

Lecture 9 - X86 ISA - Part1

Lecture 10 - X86 ISA - Part 2

Lecture 11 - X86 Protected Mode

Lecture 12 - X86 Memory Segmentation

Lecture 13 - Process Isolation using Segmentation

Lecture 14 - Paging and Virtual Memory

Lecture 15 - Task Switching and Interrupt Service

Lecture 16 - Memory Segmentation Deep dive - Part 1

Lecture 17 - Memory Segmentation Deep dive - Part 2

Lecture 18 - Memory Segmentation Deep dive - Part 3

Lecture 19 - Memory Segmentation Deep dive - Part 4

Lecture 20 - Segmentation Recap

Lecture 21 - Lab 1 - Part 1

Lecture 22 - Lab 1 - Part 2

Lecture 23 - Lab 1 - Part 3

Lecture 24 - ISR Recap

Lecture 25 - Lab 2 - Part 1

Lecture 26 - Lab 2 - Part 2

Lecture 27 - Memory Management Recap

Lecture 28 - Lab 3 - Part 1

Lecture 29 - Lab 3 - Part 2

Lecture 30 - Task Switch recap

Lecture 31 - Lab 4 - Part 1

NPTEL : NOC:Algorithms for Big Data (Computer Science and Engineering)

Co-ordinators : Prof. John Augustine

Lecture 1 - Basic definitions

Lecture 2 - Conditional probability

Lecture 3 - Example problems

Lecture 4 - Karger's mincut algorithm

Lecture 5 - Analysis of Karger's mincut algorithm

Lecture 6 - Random variables

Lecture 7 - Randomized quicksort

Lecture 8 - Problem solving video - The rich get richer

Lecture 9 - Problem solving video - Monty Hall problem

Lecture 10 - Bernoulli, Binomial and Geometric distributions

Lecture 11 - Tail Bounds

Lecture 12 - Application of Chernoff bound

Lecture 13 - Application of Chebyshev's inequality

Lecture 14 - Intro to Big Data Algorithms

Lecture 15 - SAT Problem

Lecture 16 - Classification of States

Lecture 17 - Stationary Distribution of a Markov Chain

Lecture 18 - Celebrities Case Study

Lecture 19 - Random Walks on Undirected Graphs

Lecture 20 - Intro to Streaming, Morris Algorithm

Lecture 21 - Reservoir Sampling

Lecture 22 - Approximate Median

Lecture 23 - Overview

Lecture 24 - Balls, bins, hashing

Lecture 25 - Chain hashing, SUHA, Power of Two choices

Lecture 26 - Bloom filter

Lecture 27 - Pairwise independence

Lecture 28 - Estimating expectation of continuous function

Lecture 29 - Universal hash functions

Lecture 30 - Perfect hashing

Lecture 31 - Count-min filter for heavy hitters in data streams

Lecture 32 - Problem solving video - Doubly Stochastic Transition Matrix

Lecture 33 - Problem solving video - Random Walks on Linear Structures

Lecture 34 - Problem solving video - Lollipop Graph

Lecture 35 - Problem solving video - Cat And Mouse

Lecture 36 - Estimating frequency moments

Lecture 37 - Property testing framework

Lecture 38 - Testing Connectivity

Lecture 39 - Enforce and Test Introduction

Lecture 40 - Testing if a graph is a biclique

Lecture 41 - Testing bipartiteness

Lecture 42 - Property testing and random walk algorithms

Lecture 43 - Testing if a graph is bipartite (using random walks)

Lecture 44 - Graph streaming algorithms: Introduction

Lecture 45 - Graph streaming algorithms: Matching

Lecture 46 - Graph streaming algorithms: Graph sparsification

Lecture 47 - MapReduce

Lecture 48 - K-Machine Model (aka Pregel Model)

NPTEL : NOC:Reinforcement Learning (Computer Science and Engineering)

Co-ordinators : Dr. B. Ravindran

Lecture 32 - Control in Monte Carlo

Lecture 33 - Off Policy MC

Lecture 34 - UCT

Lecture 35 - TD(0)

Lecture 36 - TD(0) Control

Lecture 37 - Q-Learning

Lecture 38 - Afterstate

Lecture 39 - Eligibility Traces

Lecture 40 - Backward View of Eligibility Traces

Lecture 41 - Eligibility Trace Control

Lecture 42 - Thompson Sampling Recap

Lecture 43 - Function Approximation

Lecture 44 - Linear Parameterization

Lecture 45 - State Aggregation Methods

Lecture 46 - Function Approximation and Eligibility Traces

Lecture 47 - LSTD and LSTDQ

Lecture 48 - LSPI and Fitted Q

Lecture 49 - DQN and Fitted Q-Iteration

Lecture 50 - Policy Gradient Approach

Lecture 51 - Actor Critic and REINFORCE

Lecture 52 - REINFORCE (cont'd)

Lecture 53 - Policy Gradient with Function Approximation

Lecture 54 - Hierarchical Reinforcement Learning

Lecture 55 - Types of Optimality

Lecture 56 - Semi Markov Decision Processes

Lecture 57 - Options

Lecture 58 - Learning with Options

Lecture 59 - Hierarchical Abstract Machines

Lecture 60 - MAXQ

Lecture 61 - MAXQ Value Function Decomposition

Lecture 62 - Option Discovery

Lecture 63 - POMDP Introduction

Lecture 64 - Solving POMDP

NPTEL : NOC:Introduction to Operating Systems (Computer Science and Engineering)

Co-ordinators : Prof. Chester Rebeiro

Lecture 1 - Intro to the Course

Lecture 2 - Introduction to OS

Lecture 3 - PC Hardware

Lecture 4 - From Programs to Processes

Lecture 5 - Sharing the CPU

Lecture 6 - Introduction

Lecture 7 - Virtual Memory

Lecture 8 - MMU Mapping

Lecture 9 - Segmentation

Lecture 10 - Memory Management in xv6

Lecture 11 - PC Booting

Lecture 12 - Week 3 Introduction

Lecture 13 - Create Execute and Exit from Processes

Lecture 14 - System Calls for Process Management

Lecture 15 - Interrupts

Lecture 16 - Interrupt Handling

Lecture 17 - Software Interrupts and System calls

Lecture 18 - CPU Context switching

Lecture 19 - CPU Scheduling

Lecture 20 - Priority Based Scheduling Algorithms

Lecture 21 - Multi-Processor Scheduling

Lecture 22 - Scheduling in Linux

Lecture 23 - Completely Fair Scheduling

Lecture 24 - Inter Process Communication

Lecture 25 - Synchronization

Lecture 26 - Software solutions for critical sections

Lecture 27 - Bakery Algorithm

Lecture 28 - Hardware Locks

Lecture 29 - Mutexes

Lecture 30 - Semaphores

Lecture 31 - Dining Philosophers Problem

NPTEL : NOC:Programming, Data Structures and Algorithms in Python (Computer Science and Engineering)

Co-ordinators : Prof. Madhavan Mukund

NPTEL : NOC:Privacy and Security in Online Social Networks (Computer Science and Engineering)

Co-ordinators : Prof. Ponnurangam Kumaraguru

Lecture 1 - Intro to Course

Lecture 2 - Intro to Course

Lecture 3 - Incidents

Lecture 4 - Tutorial 1 - Part 1 Ubuntu

Lecture 5 - Tutorial 1 - Part 2 Python

Lecture 6 - OSM APIs and tools for data collection

Lecture 7 - Tutorial 2 - Part 1 Facebook API

Lecture 8 - Tutorial 2 - Part 2 Facebook API

Lecture 9 - Trust and Credibility on OSM

Lecture 10 - Misinformation on Social Media

Lecture 11 - Privacy and Social Media

Lecture 12 - Tutorial 3 - Part 1 Twitter API

Lecture 13 - Tutorial 3 - Part 2 MySQL

Lecture 14 - Tutorial 3 - Part 3 MongoDB

Lecture 15 - Privacy and Pictures on Online Social Media

Lecture 16 - Policing and Online Social Media

Lecture 17 - Policing and Online Social Media

Lecture 18 - Policing and Online Social Media

Lecture 19 - eCrime on Online Social Media

Lecture 20 - eCrime on Online Social Media

Lecture 21 - Tutorial 4 - Social Network Analysis

Lecture 22 - Link Farming in Online Social Media

Lecture 23 - Nudges

Lecture 24 - Semantic attacks: Spear phishing

Lecture 25 - Tutorial 5 - Analyzing text using Python NLTK

Lecture 26 - Profile Linking on Online Social Media

Lecture 27 - Anonymous Networks

Lecture 28 - Tutorial 6 - Gephi Network Visualization

Lecture 29 - Privacy in Location Based Social Networks - Part 1

Lecture 30 - Privacy in Location Based Social Networks - Part 2

Lecture 31 - Tutorial 7 - Visualization - Highcharts

NPTEL : NOC:Mobile Computing (Computer Science and Engineering)

Co-ordinators : Prof. Pushpendra Singh

NPTEL : NOC:Introduction to Modern Application Development (Computer Science and Engineering)

Co-ordinators : Tanmai Gopal, Prof. Gaurav Raina

NPTEL : NOC:Information Security-3 (Computer Science and Engineering)

Co-ordinators : Prof. V. Kamakoti

Lecture 32 - Shell Examples

Lecture 33 - Shell Functions

Lecture 34 - Shell File Test

Lecture 35 - Shell Loop Control

Lecture 36 - Shell Script Variations

Lecture 37 - Shell Pattern Matching

Lecture 38 - Shell Case Statements

Lecture 39 - Shell Co-routines

Lecture 40 - Shell Signals and Traps

Lecture 41 - Shell Subshell

Lecture 42 - Shell Declarations

Lecture 43 - Shell Examples 2

Lecture 44 - Shell Review

Lecture 45 - An Introduction

Lecture 46 - Structure of a Network

Lecture 47 - Network Core - Definition

Lecture 48 - Network Access and Physical Media

Lecture 49 - Structure of ISP and Packet Delays

Lecture 50 - Network Protocol Layers

Lecture 51 - Network Devices

Lecture 52 - Network Security - An Introduction

Lecture 53 - Public Key Cryptography

Lecture 54 - Digital Signatures

Lecture 55 - Security in Practise

Lecture 56 - Security in Practise (Continued...)

Lecture 57 - Wireshark

Lecture 58 - Snort

Lecture 59 - Review I

Lecture 60 - Review II

NPTEL : NOC:AI:Constraint Satisfaction (Computer Science and Engineering)

Co-ordinators : Prof. Deepak Khemani

NPTEL : NOC:Computer Organization (Computer Science and Engineering)

Co-ordinators : Prof. V. Kamakoti

NPTEL : NOC:Introduction to Wireless and Cellular Communications (Computer Science and Engineering)

Co-ordinators : Prof. David Kovil Pillai

NPTEL : NOC:Distributed Systems (Computer Science and Engineering)

Co-ordinators : Dr. Rajiv Misra

NPTEL : NOC:Social Networks (Computer Science and Engineering)

Co-ordinators : Prof. Sudarshan Iyengar

Lecture 32 - Embededness

Lecture 33 - Structural Holes

Lecture 34 - Social Capital

Lecture 35 - Finding Communities in a graph (Brute Force Method)

Lecture 36 - Community Detection Using Girvan Newman Algorithm

Lecture 37 - Visualising Communities using Gephi

Lecture 38 - Tie Strength, Social Media and Passive Engagement

Lecture 39 - Betweenness Measures and Graph Partitioning

Lecture 40 - Strong and Weak Relationship - Summary

Lecture 41 - Introduction to Homophily - Should you watch your company ?

Lecture 42 - Selection and Social Influence

Lecture 43 - Interplay between Selection and Social Influence

Lecture 44 - Homophily - Definition and measurement

Lecture 45 - Foci Closure and Membership Closure

Lecture 46 - Introduction to Fatman Evolutionary model

Lecture 47 - Fatman Evolutionary Model - The Base Code (Adding people)

Lecture 48 - Fatman Evolutionary Model - The Base Code (Adding Social Foci)

Lecture 49 - Fatman Evolutionary Model - Implementing Homophily

Lecture 50 - Quantifying the Effect of Triadic Closure

Lecture 51 - Fatman Evolutionary Model - Implementing Closures

Lecture 52 - Fatman Evolutionary Model - Implementing Social Influence

Lecture 53 - Fatman Evolutionary Model - Storing and analyzing longitudnal data

Lecture 54 - Spatial Segregation : An Introduction

Lecture 55 - Spatial Segregation : Simulation of the Schelling Model

Lecture 56 - Spatial Segregation : Conclusion

Lecture 57 - Schelling Model Implementation - 1 (Introduction)

Lecture 58 - Schelling Model Implementation - 2 (Base Code)

Lecture 59 - Schelling Model Implementation - 3 (Visualization and Getting a list of boundary and internal nodes)

Lecture 60 - Schelling Model Implementation - 4 (Getting a list of unsatisfied nodes)

Lecture 61 - Schelling Model Implementation - 5 (Shifting the unsatisfied nodes and visualizing the final graph)

Lecture 62 - Chapter - 5 Positive and Negative Relationships (Introduction)

Lecture 63 - Structural Balance

Lecture 64 - Enemy'S Enemy is a Friend

Lecture 65 - Characterizing the Structure of Balanced Networks

Lecture 66 - Balance Theorem

Lecture 67 - Proof of Balance Theorem

Lecture 68 - Introduction to positive and negative edges

Lecture 69 - Outline of implemantation

Lecture 70 - Creating graph, displaying it and counting unstable triangles

Lecture 71 - Moving a network from an unstable to stable state

Lecture 72 - Forming two coalitions

Lecture 73 - Forming two coalitions (Continued...)

Lecture 74 - Visualizing coalitions and the evolution

Lecture 75 - The Web Graph

Lecture 76 - Collecting the Web Graph

Lecture 77 - Equal Coin Distribution

Lecture 78 - Random Coin Dropping

Lecture 79 - Google Page Ranking Using Web Graph

Lecture 80 - Implementing PageRank Using Points Distribution Method - 1

Lecture 81 - Implementing PageRank Using Points Distribution Method - 2

Lecture 82 - Implementing PageRank Using Points Distribution Method - 3

Lecture 83 - Implementing PageRank Using Points Distribution Method - 4

Lecture 84 - Implementing PageRank Using Random Walk Method - 1

Lecture 85 - Implementing PageRank Using Random Walk Method - 2

Lecture 86 - DegreeRank versus PageRank

Lecture 87 - We Follow

Lecture 88 - Why do we Follow?

Lecture 89 - Diffusion in Networks

Lecture 90 - Modeling Diffusion

Lecture 91 - Modeling Diffusion (Continued...)

Lecture 92 - Impact of Commmunities on Diffusion

Lecture 93 - Cascade and Clusters

Lecture 94 - Knowledge, Thresholds and the Collective Action

Lecture 95 - An Introduction to the Programming Screencast (Coding 4 major ideas)

Lecture 96 - The Base Code

Lecture 97 - Coding the First Big Idea - Increasing the Payoff

Lecture 131 - Simple Branching Process for Modeling Epidemics (Continued...)

Lecture 132 - Basic Reproductive Number

Lecture 133 - Modeling epidemics on complex networks

Lecture 134 - SIR and SIS spreading models

Lecture 135 - Comparison between SIR and SIS spreading models

Lecture 136 - Basic Reproductive Number Revisited for Complex Networks

Lecture 137 - Percolation model

Lecture 138 - Analysis of basic reproductive number in branching model (The problem statement)

Lecture 139 - Analyzing basic reproductive number - 2

Lecture 140 - Analyzing basic reproductive number - 3

Lecture 141 - Analyzing basic reproductive number - 4

Lecture 142 - Analyzing basic reproductive number - 5

Lecture 143 - Small World Effect - An Introduction

Lecture 144 - Milgram's Experiment

Lecture 145 - The Reason

Lecture 146 - The Generative Model

Lecture 147 - Decentralized Search - I

Lecture 148 - Decentralized Search - II

Lecture 149 - Decentralized Search - III

Lecture 150 - Programming illustration- Small world networks : Introduction

Lecture 151 - Base code

Lecture 152 - Making homophily based edges

Lecture 153 - Adding weak ties

Lecture 154 - Plotting change in diameter

Lecture 155 - Programming illustration- Myopic Search : Introduction>

Lecture 156 - Myopic Search

Lecture 157 - Myopic Search comparision to optimal search

Lecture 158 - Time Taken by Myopic Search

Lecture 159 - PseudoCores : Introduction

Lecture 160 - How to be Viral

Lecture 161 - Who are the right key nodes?

Lecture 162 - finding the right key nodes (the core)

Lecture 163 - Coding K-Shell Decomposition

NPTEL : NOC:An Introduction to Probability in Computing (Computer Science and Engineering)

Co-ordinators : Prof. John Augustine

NPTEL : NOC:Introduction to Human Computer Interaction (Computer Science and Engineering)

Co-ordinators : Prof. Ponnurangam Kumaraguru

Lecture 1 - Introduction to Human Computer Interaction

Lecture 2 - What is HCI? Commonalities and Differences in Interfaces

Lecture 3 - Door handle, Elevators, Contextual Inquiry, Affinity Diagrams

Lecture 4 - Lab Session Contextual Inquiry

Lecture 5 - Lab Session Affinity Diagram

Lecture 6 - Tutorial on Photoshop

Lecture 7 - Tutorial on UI Designing using Photoshop

Lecture 8 - Institutional Review Board, Ethics committee, IRB documents / application, consent form

Lecture 9 - Tutorial on Proto.io

Lecture 10 - Tutorial on Lookback

Lecture 11 - How to understand user needs? Surveys, Questionnaire

Lecture 12 - How to understand user needs? Surveys, Questionnaire - Continues

Lecture 13 - Prototyping: Low fidelity and High fidelity

Lecture 14 - User-Centered Design

Lecture 15 - Lab Session: Task Analysis

Lecture 16 - Design Patterns

Lecture 17 - Lab Session: Material Design

Lecture 18 - Usable security

Lecture 19 - Lab Session: Task Analysis - 2

Lecture 20 - Continuity of Usable Security

Lecture 21 - Visual Design

Lecture 22 - Visual Design - 2

Lecture 23 - Crypto price Tracker App

Lecture 24 - Interacto

Lecture 25 - Tech Hinder

Lecture 26 - busKARO

Lecture 27 - MayMayMe

Lecture 28 - noWhinge

NPTEL : NOC:Information Security-IV (Computer Science and Engineering)

Co-ordinators : Prof.M J Shankar Raman, Prof. V. Kamakoti, Prof.Vasan

Lecture 32 - Web Attacks - Tools in Kali Linux - 1

Lecture 33 - Web Attacks - Tools in Kali Linux - 2

Lecture 34 - Penetration Testing Attacks - Defensive Countermeasures

Lecture 35 - Technical Fundamentals for Evidence Acquisition - 1

Lecture 36 - Technical Fundamentals for Evidence Acquisition - 2

Lecture 37 - Packet Capture Tools and Methods

Lecture 38 - Wireshark Introduction

Lecture 39 - Packet Analysis

Lecture 40 - Flow Analysis

Lecture 41 - Case study 1

Lecture 42 - Case study 1 (Continued...)

Lecture 43 - Wireless Forensics - Technology

Lecture 44 - Wireless Network Security Framework

Lecture 45 - Wireless Access Points - Security issues

Lecture 46 - Case Study 2 - Use of tools

Lecture 47 - Network Security Devices - IDS

Lecture 48 - IDS Evidence Acquistion and SNORT

Lecture 49 - SNORT Rules

Lecture 50 - SNORT Installation

Lecture 51 - SNORT Configuration and Demonstration

Lecture 52 - Evidence collection in Switches and Routers

Lecture 53 - Evidence collection in Routers and Firewalls

Lecture 54 - IPTables rules and tool usage

Lecture 55 - Logs, Rules and Automated Tools

Lecture 56 - Re-cap of All Topics

Lecture 57 - Introduction to Meltdown Attack

Lecture 58 - Introduction to Meltdown - Address Space Basics

Lecture 59 - Meltdown Attack - Out of Order Execution

Lecture 60 - Meltdown Attack - Recovering from Exception

NPTEL : NOC:Data Science for Engineers (Computer Science and Engineering)

Co-ordinators : Prof. Shankar Narasimhan, Prof. Ragunathan Rengasamy

Lecture 32 - Linear Regression

Lecture 33 - Model Assessment

Lecture 34 - Diagnostics to Improve Linear Model Fit

Lecture 35 - Simple Linear Regression Model Building

Lecture 36 - Simple Linear Regression Model Assessment

Lecture 37 - Simple Linear Regression Model Assessment (Continued...)

Lecture 38 - Muliple Linear Regression

Lecture 39 - Cross Validation

Lecture 40 - Multiple Linear Regression Modelling Building and Selection

Lecture 41 - Classification

Lecture 42 - Logisitic Regression

Lecture 43 - Logisitic Regression (Continued...)

Lecture 44 - Performance Measures

Lecture 45 - Logisitic Regression Implementation in R

Lecture 46 - K-Nearest Neighbors (kNN)

Lecture 47 - K-Nearest Neighbors implementation in R

Lecture 48 - K-means Clustering

Lecture 49 - K-means implementation in R

Lecture 50 - Data Science for engineers - Summary

NPTEL : NOC:The Joy of Computing using Python (Computer Science and Engineering)

Co-ordinators : Prof. Sudarshan Iyengar

Lecture 32 - Introductions to loops

Lecture 33 - Loops: Sum of numbers

Lecture 34 - Loops: Sum of numbers (Continued...)

Lecture 35 - Loops: Multiplication Tables

Lecture 36 - Introducction to While Loop

Lecture 37 - Lists Part 1 : Introduction

Lecture 38 - Lists Part 2 : Manipulation

Lecture 39 - Lists Part 3 : Operations

Lecture 40 - Lists Part 4 : Slicing

Lecture 41 - Loops and Conditionals : Fizzbuzz 01

Lecture 42 - Loops and Conditionals : Fizzbuzz 02

Lecture 43 - Crowd Computing - Just estimate 01

Lecture 44 - Crowd Computing - Just estimate 02

Lecture 45 - Crowd Computing - Just estimate 03

Lecture 46 - Crowd Computing - Just estimate 04

Lecture 47 - Crowd Computing - Just estimate 05

Lecture 48 - Crowd Computing - Just estimate 06

Lecture 49 - Permutations - Jumbled Words 01

Lecture 50 - Permutations - Jumbled Words 02

Lecture 51 - Permutations - Jumbled Words 03

Lecture 52 - Theory of Evolution 01

Lecture 53 - Theory of Evolution 02

Lecture 54 - Theory of Evolution 03

Lecture 55 - Theory of Evolution 04

Lecture 56 - Practice is the key

Lecture 57 - Magic Square Hit and Trial 01

Lecture 58 - Magic Square Hit and Trial 02

Lecture 59 - Magic Square Hit and Trial 03

Lecture 60 - Magic Square Hit and Trial 04

Lecture 61 - Magic Square Hit and Trial 05

Lecture 62 - Let's program and play

Lecture 63 - Dobble Game - Spot the similarity 01

Lecture 64 - Dobble Game - Spot the similarity 02

Lecture 65 - Dobble Game - Spot the similarity 03

Lecture 66 - Dobble Game - Spot the similarity 04

Lecture 67 - What is your date of birth?

Lecture 68 - Birthday Paradox - Find your twin 01

Lecture 69 - Birthday Paradox - Find your twin 02

Lecture 70 - Birthday Paradox - Find your twin 03

Lecture 71 - Birthday Paradox - Find your twin 04

Lecture 72 - Birthday Paradox - Find your twin 05

Lecture 73 - What's your favourite movie?

Lecture 74 - Guess the Movie Name 01

Lecture 75 - Guess the Movie Name 02

Lecture 76 - Guess the Movie Name 03

Lecture 77 - Guess the Movie Name 04

Lecture 78 - Guess the Movie Name 05

Lecture 79 - Guess the Movie Name 06

Lecture 80 - Dictionaries

Lecture 81 - Speech to Text : No need to write 01

Lecture 82 - Speech to Text : No need to write 02

Lecture 83 - Speech to Text : No need to write 03

Lecture 84 - Monte Hall : 3 doors and a twist 01

Lecture 85 - Monte Hall : 3 doors and a twist 02

Lecture 86 - Rock, Paper and Scissor : Cheating not allowed !! 01

Lecture 87 - Rock, Paper and Scissor : Cheating not allowed !! 02

Lecture 88 - Rock, Paper and Scissor : Cheating not allowed !! 03

Lecture 89 - Rock, Paper and Scissor : Cheating not allowed !! 04

Lecture 90 - Sorting and Searching : 20 questions game 01

Lecture 91 - Sorting and Searching : 20 questions game 02

Lecture 92 - Sorting and Searching : 20 questions game 03

Lecture 93 - Sorting and Searching : 20 questions game 04

Lecture 94 - Sorting and Searching : 20 questions game 05

Lecture 95 - Sorting and Searching : 20 questions game 06

Lecture 96 - Sorting and Searching : 20 questions game 07

Lecture 97 - Sorting and Searching : 20 questions game 08

Lecture 98 - Substitution Cipher -The science of secrecy

Lecture 99 - Substitution Cipher -The science of secrecy 01

Lecture 100 - Substitution Cipher -The science of secrecy 02

Lecture 101 - Substitution Cipher -The science of secrecy 03

Lecture 102 - Tic Tac Toe - Down the memory Lane

Lecture 103 - Tic Tac Toe - Down the memory Lane 01

Lecture 104 - Tic Tac Toe - Down the memory Lane 02

Lecture 105 - Tic Tac Toe - Down the memory Lane 03

Lecture 106 - Tic Tac Toe - Down the memory Lane 04

Lecture 107 - Tic Tac Toe - Down the memory Lane 05

Lecture 108 - Recursion

Lecture 109 - Recursion 01

Lecture 110 - Recursion 02

Lecture 111 - Recursion 03

Lecture 112 - Recursion 04

Lecture 113 - Recursion 05

Lecture 114 - Recursion 06

Lecture 115 - Snakes and Ladders - Not on the Board

Lecture 116 - Snakes and Ladders - Not on the Board - Part 01

Lecture 117 - Snakes and Ladders - Not on the Board - Part 02

Lecture 118 - Snakes and Ladders - Not on the Board - Part 03

Lecture 119 - Snakes and Ladders - Not on the Board - Part 04

Lecture 120 - Snakes and Ladders - Not on the Board - Part 05

Lecture 121 - Snakes and Ladders - Not on the Board - Part 06

Lecture 122 - Spiral Traversing - Let's Animate

Lecture 123 - Spiral Traversing - Let's Animate - Part 01

Lecture 124 - Spiral Traversing - Let's Animate - Part 02

Lecture 125 - Spiral Traversing - Let's Animate - Part 03

Lecture 126 - Spiral Traversing - Let's Animate - Part 04

Lecture 127 - Spiral Traversing - Let's Animate - Part 05

Lecture 128 - Spiral Traversing - Let's Animate - Part 06

Lecture 129 - Spiral Traversing - Let's Animate - Part 07

Lecture 130 - GPS - Track the route

Lecture 131 - GPS - Track the route - Part 01

Lecture 132 - GPS - Track the route - Part 02

Lecture 133 - GPS - Track the route - Part 03

Lecture 134 - GPS - Track the route - Part 04

Lecture 135 - Tuples- Python Data Structure

Lecture 136 - Lottery Simulation - Profit or Loss

Lecture 137 - Lottery Simulation - Profit or Loss - Part 01

Lecture 138 - Lottery Simulation - Profit or Loss - Part 02

Lecture 139 - Lottery Simulation - Profit or Loss - Part 03

Lecture 140 - Lottery Simulation - Profit or Loss - Part 04

Lecture 141 - Lottery Simulation - Profit or Loss - Part 05

Lecture 142 - Lottery Simulation - Profit or Loss - Part 06

Lecture 143 - Image Processing - Enhance your images

Lecture 144 - Image Processing - Enhance your images - Part 01

Lecture 145 - Image Processing - Enhance your images - Part 02

Lecture 146 - Image Processing - Enhance your images - Part 03

Lecture 147 - Anagrams

Lecture 148 - Anagrams - Part 01

Lecture 149 - Anagrams - Part 02

Lecture 150 - Anagrams - Part 03

Lecture 151 - Anagrams - Part 04

Lecture 152 - Facebook Sentiment Analysis

Lecture 153 - Facebook Sentiment Analysis - Part 01

Lecture 154 - Facebook Sentiment Analysis - Part 02

Lecture 155 - Facebook Sentiment Analysis - Part 03

Lecture 156 - Facebook Sentiment Analysis - Part 04

Lecture 157 - Natural Language Processing - Author Stylometry

Lecture 158 - Natural Language Processing - Author Stylometry - Part 01

Lecture 159 - Natural Language Processing - Author Stylometry - Part 02

Lecture 160 - Natural Language Processing - Author Stylometry - Part 03

Lecture 161 - Natural Language Processing - Author Stylometry - Part 04

Lecture 162 - Natural Language Processing - Author Stylometry - Part 05

Lecture 163 - Natural Language Processing - Author Stylometry - Part 06

Lecture 164 - Natural Language Processing - Author Stylometry - Part 07

Lecture 165 - Natural Language Processing - Author Stylometry - Part 08

Lecture 166 - Natural Language Processing - Author Stylometry - Part 09

Lecture 167 - Natural Language Processing - Author Stylometry - Part 10

Lecture 168 - Introduction to Networkx - Part 01

Lecture 169 - Introduction to Networkx - Part 02

Lecture 170 - Six Degrees of Separation : Meet your favourites

Lecture 171 - Six Degrees of Separation : Meet your favourites - Part 01

Lecture 172 - Six Degrees of Separation : Meet your favourites - Part 02

Lecture 173 - Six Degrees of Separation : Meet your favourites - Part 03

Lecture 174 - Area Calculation - Don't Measure

Lecture 175 - Area Calculation - Don't Measure - Part 01

Lecture 176 - Area Calculation - Don't Measure - Part 02

Lecture 177 - Area Calculation - Don't Measure - Part 03

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NPTEL : NOC:Discrete Mathematics (Computer Science and Engineering)

Co-ordinators : Prof. Sudarshan Iyengar

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Lecture 409 - Rook Polynomial

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Lecture 454 - Example: Picking 4 letters from the word 'INDIAN'

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Lecture 458 - Uniqueness of the identity element

Lecture 459 - Formal definition of a Group

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NPTEL : NOC:Deep Learning (Computer Science and Engineering)

Co-ordinators : Prof.Mitesh Khapra

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Lecture 33 - Recap: Learning Parameters: Guess Work, Gradient Descent

Lecture 34 - Contours Maps

Lecture 35 - Momentum based Gradient Descent

Lecture 36 - Nesterov Accelerated Gradient Descent

Lecture 37 - Stochastic And Mini-Batch Gradient Descent

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Lecture 40 - Gradient Descent with Adaptive Learning Rate

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Lecture 42 - Eigenvalues and Eigenvectors

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Lecture 66 - Early stopping

Lecture 67 - Ensemble Methods

Lecture 68 - Dropout

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Lecture 70 - Unsupervised pre-training

Lecture 71 - Better activation functions

Lecture 72 - Better initialization strategies

Lecture 73 - Batch Normalization

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Lecture 76 - SVD for learning word representations

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Lecture 79 - Skip-gram model

Lecture 80 - Skip-gram model (Continued...)

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Lecture 82 - Hierarchical softmax

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Lecture 84 - Evaluating word representations

Lecture 85 - Relation between SVD and Word2Vec

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Lecture 87 - Relation between input size, output size and filter size

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Lecture 89 - Convolutional Neural Networks (Continued...)

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Lecture 91 - CNNs (success stories on ImageNet) (Continued...)

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Lecture 93 - Visualizing patches which maximally activate a neuron

Lecture 94 - Visualizing filters of a CNN

Lecture 95 - Occlusion experiments

Lecture 96 - Finding influence of input pixels using backpropagation

Lecture 97 - Guided Backpropagation

NPTEL : NOC:Foundations to Computer Systems Design (Computer Science and Engineering)

Co-ordinators : Prof. V. Kamakoti

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Lecture 33 - Assembler : Pass 2

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Lecture 36 - The VM Instruction Set Architecture

Lecture 37 - The execution of a VM Program

Lecture 38 - How powerful is the VM?

Lecture 39 - Project 7 : VM ISA to HACK Mnemonic Translation

Lecture 40 - Project 7 : Demo

Lecture 41 - Deep Understanding of VM ISA using VM Emulator

Lecture 42 - Virtual Machine II - Program flow commands and Introduction to Function Calls

Lecture 43 - Implementation of Function Call

Lecture 44 - Working of the Virtual Machine

Lecture 45 - Project 8 : Translation of Program Flow and Function Call to HACK Mnemonic

Lecture 46 - Handling Static Variables

Lecture 47 - Project 8 : Implementation tips in a Nut Shell

Lecture 48 - Introduction to The JACK Programming Language

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Lecture 53 - Application Development using JACK

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Lecture 62 - The Jack Compiler - Handling Expressions

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Lecture 64 - The Jack Compiler - Handling Objects

NPTEL : NOC:Machine Learning for Engineering and Science Applications (Computer Science and Engineering)

Co-ordinators : Prof. Ganapathy, Prof. Balaji Srinivasan

NPTEL : NOC:Information Security 5 - Secure Systems Engineering (Computer Science and Engineering)

Co-ordinators : Prof. Chester Rebeiro

Lecture 32 - Software fault isolation

Lecture 33 - Trusted Execution Environments

Lecture 34 - ARM Trustzone

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Lecture 41 - Flush+Reload Attacks

Lecture 42 - Prime+Probe

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Lecture 47 - Heap demo - 1

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Lecture 52 - FANCI : Identification of Stealthy Malicious Logic

Lecture 53 - Detecting Hardware Trojans in ICs

Lecture 54 - Protecting against Hardware Trojans

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NPTEL : NOC:Multimodal Interaction (Computer Science and Engineering)

Co-ordinators : Dr. Stefan Hillmann, Prof. Dr. Sebastian Moller

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Lecture 2 - Medium vs. Modality

Lecture 3 - Multimedia and Multimodality

Lecture 4 - Modality Relations

Lecture 5 - Characteristics of Multimodal Systems

Lecture 6 - Introduction

Lecture 7 - Speech Production

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Lecture 9 - Hearing - Perception

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Lecture 24 - Multimodal Dual-Tasks

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Lecture 52 - Ambisonics

Lecture 53 - Sound Field Synthesis

Lecture 54 - Challenges with Projection-based Systems

Lecture 55 - Capturing of Sound Scenes

Lecture 56 - Closing Remarks

NPTEL : NOC:Deep Learning - Part 2 (Computer Science and Engineering)

Co-ordinators : Prof.Mitesh Khapra

NPTEL : NOC:Machine Learning (Computer Science and Engineering)

Co-ordinators : Prof. Henrik Bostrom, Prof. Fredrik Kilander, Prof. Carl Gustaf Jansson

NPTEL : NOC:C Programming and Assembly Language (Computer Science and Engineering)

Co-ordinators : Prof. Janakiraman Viraraghavan

NPTEL : NOC:Applied Natural Language Processing (Computer Science and Engineering)

Co-ordinators : Prof. Ramaseshan R

Lecture 1 - Introduction

Lecture 2 - Operations on a Corpus

Lecture 3 - Probability and NLP

Lecture 4 - Vector Space models

Lecture 5 - Sequence Learning

Lecture 6 - Machine Translation

Lecture 7 - Preprocessing

Lecture 8 - Statistical Properties of Words - Part 1

Lecture 9 - Statistical Properties of Words - Part 2

Lecture 10 - Statistical Properties of Words - Part 3

Lecture 11 - Vector Space Models for NLP

Lecture 12 - Document Similarity - Demo, Inverted index, Exercise

Lecture 13 - Vector Representation of words

Lecture 14 - Contextual understanding of text

Lecture 15 - Co-occurence matrix, n-grams

Lecture 16 - Collocations, Dense word Vectors

Lecture 17 - SVD, Dimensionality reduction, Demo

Lecture 18 - Query Processing

Lecture 19 - Topic Modeling

Lecture 20 - Examples for word prediction

Lecture 21 - Introduction to Probability in the context of NLP

Lecture 22 - Joint and conditional probabilities, independence with examples

Lecture 23 - The definition of probabilistic language model

Lecture 24 - Chain rule and Markov assumption

Lecture 25 - Generative Models

Lecture 26 - Bigram and Trigram Language models - peeking indide the model building

Lecture 27 - Out of vocabulary words and curse of dimensionality

Lecture 28 - Exercise

Lecture 29 - Naive-Bayes, classification

Lecture 30 - Machine learning, perceptron, linearly separable

Lecture 31 - Linear Models for Claassification

Lecture 32 - Biological Neural Network

Lecture 33 - Perceptron

Lecture 34 - Perceptron Learning

Lecture 35 - Logical XOR

Lecture 36 - Activation Functions

Lecture 37 - Gradient Descent

Lecture 38 - Feedforward and Backpropagation Neural Network

Lecture 39 - Why Word2Vec?

Lecture 40 - What are CBOW and Skip-Gram Models?

Lecture 41 - One word learning architecture

Lecture 42 - Forward pass for Word2Vec

Lecture 43 - Matrix Operations Explained

Lecture 44 - CBOW and Skip Gram Models

Lecture 45 - Building Skip-gram model using Python

Lecture 46 - Reduction of complexity - sub-sampling, negative sampling

Lecture 47 - Binay tree, Hierarchical softmax

Lecture 48 - Mapping the output layer to Softmax

Lecture 49 - Updating the weights using hierarchical softmax

Lecture 50 - Discussion on the results obtained from word2vec

Lecture 51 - Recap and Introduction

Lecture 52 - ANN as a LM and its limitations

Lecture 53 - Sequence Learning and its applications

Lecture 54 - Introuduction to Recurrent Neural Network

Lecture 55 - Unrolled RNN

Lecture 56 - RNN - Based Language Model

Lecture 57 - BPTT - Forward Pass

Lecture 58 - BPTT - Derivatives for W,V and U

Lecture 59 - BPTT - Exploding and vanishing gradient

Lecture 60 - LSTM

Lecture 61 - Truncated BPTT

Lecture 62 - GRU

Lecture 63 - Introduction and Historical Approaches to Machine Translation

Lecture 64 - What is SMT?

Lecture 65 - Noisy Channel Model, Bayes Rule, Language Model

Lecture 66 - Translation Model, Alignment Variables

Lecture 67 - Alignments again!

Lecture 68 - IBM Model 1

Lecture 69 - IBM Model 2

Lecture 70 - Introduction to Phrase-based translation

Lecture 71 - Symmetrization of alignments

Lecture 72 - Extraction of Phrases

Lecture 73 - Learning/estimating the phrase probabilities using another Symmetrization example

Lecture 74 - Introduction to evaluation of Machine Translation

Lecture 75 - BLEU - A short Discussion of the seminal paper

Lecture 76 - BLEU Demo using NLTK and other Metrics

Lecture 77 - Encoder-Decoder model for Neural Machine Translation

Lecture 78 - RNN Based Machine Translation

Lecture 79 - Recap and Connecting Bloom Taxonomy with Machine Learning

Lecture 80 - Introduction to Attention based Translation

Lecture 81 - Research Paper discussion on Neural machine translation by jointly learning to align and translate

Lecture 82 - Typical NMT architecture architecture and models for multi-language translation

Lecture 83 - Beam Search, Stochatic Gradient Descend, Mini Batch, Batch

Lecture 84 - Beam Search, Stochatic Gradient Descend, Mini Batch, Batch

Lecture 85 - Introduction to Conversation Modeling

Lecture 86 - A few examples in Conversation Modeling

Lecture 87 - Some ideas to Implement IR-based Conversation Modeling

Lecture 88 - Discussion of some ideas in Question Answering

Lecture 89 - Hyperspace Analogue to Language - HAL

Lecture 90 - Correlated Occurence Analogue to Lexical Semantic - COALS

Lecture 91 - Global Vectors - Glove

Lecture 92 - Evaluation of Word vectors

NPTEL : NOC:Python for Data Science (Computer Science and Engineering)

Co-ordinators : Prof. Ragunathan Rengasamy

NPTEL : NOC:Practical Machine Learning with Tensorflow (Computer Science and Engineering)

Co-ordinators : Dr. B. Ravindran

NPTEL : NOC:Introduction to Database Systems (Computer Science and Engineering)

Co-ordinators : Prof. P.Sreenivasa Kumar

Lecture 1 - Introduction

Lecture 2 - Database Architecture

Lecture 3 - RDBMS Architecture

Lecture 4 - Introduction to ER Model

Lecture 5 - Entities and Relationships

Lecture 6 - Modelling Weak Entities and Design Choices

Lecture 7 - Relational Data Model and Notion of Keys

Lecture 8 - Introduction to Relational Algebra

Lecture 9 - Operators in Relational Model

Lecture 10 - Uses of Renaming, Join and Division in Relation Algebra

Lecture 11 - Example Queries in Relation Model and Outer Join Operation

Lecture 12 - Convert ER-Model to a Relational Model

Lecture 13 - Introduction to tuple relational calculus

Lecture 14 - Example TRC queries

Lecture 15 - Data definition using SQL

Lecture 16 - Basic SQL query block and subqueries

Lecture 17 - Correlated subqueries

Lecture 18 - Aggregate functions

Lecture 19 - Views

Lecture 20 - Programmatic access of SQL

Lecture 21 - Normal forms - Introduction

Lecture 22 - Deriving new functional dependencies

Lecture 23 - Proving soundness and completeness of Armstrong's Axioms

Lecture 24 - Normal forms - 2 NF, 3NF, BCNF

Lecture 25 - Properties of decompositions

Lecture 26 - Normal forms - 4NF, 5NF

Lecture 27 - Introduction to file orgranization

Lecture 28 - File orgranization methods

Lecture 29 - Dynamic File orgranization using Hashing

Lecture 30 - Index structures

Lecture 31 - B+ trees on Disks

NPTEL : NOC:Foundations of Cryptography (Computer Science and Engineering)

Co-ordinators : Prof. Ashish Choudhury

Lecture 1 - Introduction

Lecture 2 - Symmetric-key Encryption

Lecture 3 - Historical Ciphers and their Cryptanalysis

Lecture 4 - Perfect Security

Lecture 5 - Limitations of Perfect Security

Lecture 6 - Introduction to Computational Security

Lecture 7 - Semantic Security

Lecture 8 - Pseudo-random Generators (PRGs)

Lecture 9 - Operations on Pseudorandom Generators

Lecture 10 - Stream Ciphers

Lecture 11 - Provably-secure Instantiation of PRG

Lecture 12 - Practical Instantiations of PRG

Lecture 13 - CPA-security

Lecture 14 - Pseudo-random Functions (PRFs)

Lecture 15 - CPA-secure Encryption from PRF

Lecture 16 - Modes of Operations of Block Ciphers - Part I

Lecture 17 - Modes of Operations of Block Ciphers - Part II

Lecture 18 - Theoretical Constructions of Block Ciphers

Lecture 19 - Practical Constructions of Block Ciphers - Part I

Lecture 20 - Practical Constructions of Block Ciphers - Part II

Lecture 21 - From Passive to Active Adversary

Lecture 22 - Message Integrity and Authentication

Lecture 23 - Message Authentication for Long Messages - Part I

Lecture 24 - Message Authentication for Long Messages - Part II

Lecture 25 - Information-theoretic MACs - Part I

Lecture 26 - Information-theoretic MACs - Part II

Lecture 27 - Cryptographic Hash Functions - Part I

Lecture 28 - Cryptographic Hash Functions - Part II

Lecture 29 - Message Authentication Using Hash Functions

Lecture 30 - Generic Attacks on Hash Functions and Additional Applications of Hash Functions

Lecture 31 - Random Oracle Model - Part I

Lecture 32 - Random Oracle Model - Part II

Lecture 33 - Authenticated Encryption

Lecture 34 - Composing CPA-secure Cipher with a Secure MAC - Part I

Lecture 35 - Composing CPA-secure Cipher with a Secure MAC - Part II

Lecture 36 - Key-Exchange Protocols - Part I

Lecture 37 - Key-Exchange Protocols - Part II

Lecture 38 - Cyclic groups

Lecture 39 - Cryptographic Hardness Assumptions in the Cyclic Groups

Lecture 40 - Candidate Cyclic Groups for Cryptographic Purposes - Part I

Lecture 41 - Candidate Cyclic Groups for Cryptographic Purposes - Part II

Lecture 42 - Cryptographic Applications of the Discrete Log Assumption

Lecture 43 - Public-key Encryption

Lecture 44 - El Gamal Public-key Encryption Scheme

Lecture 45 - RSA Assumption

Lecture 46 - RSA Public-key Cryptosystem

Lecture 47 - Hybrid Public-key Cryptosystem

Lecture 48 - CCA-Secure Public-key Ciphers

Lecture 49 - CCA-Secure Public-key Ciphers Based on Diffie-Hellman Problems

Lecture 50 - CCA-Secure Public-key Ciphers Based on RSA Assumption

Lecture 51 - Digital Signatures

Lecture 52 - RSA Signatures

Lecture 53 - Identification Schemes

Lecture 54 - Schnorr Signature Scheme and TLS/SSL

Lecture 55 - Number Theory

Lecture 56 - Secret Sharing

Lecture 57 - Zero-Knowledge Protocols - Part I

Lecture 58 - Zero-Knowledge Protocols - Part II

Lecture 59 - Good Bye for Now

NPTEL : NOC:Modern Application Development (Computer Science and Engineering)

Co-ordinators : Prof. Madhavan Mukund, Prof. Abhijat Vichare, Prof. Aamod Sane

NPTEL : NOC:Deep Learning for Computer Vision (Computer Science and Engineering)

Co-ordinators : Prof. Vineeth N Balasubramanian

Lecture 32 - Convolutional Neural Networks: An Introduction - Part 2

Lecture 33 - Backpropagation in CNNs

Lecture 34 - Evolution of CNN Architectures for Image Classification - Part 1

Lecture 35 - Evolution of CNN Architectures for Image Classification - Part 2

Lecture 36 - Recent CNN Architectures

Lecture 37 - Finetuning in CNNs

Lecture 38 - Explaining CNNs: Visualization Methods

Lecture 39 - Explaining CNNs: Early Methods

Lecture 40 - Explaining CNNs: Class Attribution Map Methods

Lecture 41 - Explaining CNNs: Recent Methods - Part 1

Lecture 42 - Explaining CNNs: Recent Methods - Part 2

Lecture 43 - Going Beyond Explaining CNNs

Lecture 44 - CNNs for Object Detection-I - Part 1

Lecture 45 - CNNs for Object Detection-I - Part 2

Lecture 46 - CNNs for Object Detection-II

Lecture 47 - CNNs for Segmentation

Lecture 48 - CNNs for Human Understanding: Faces - Part 1

Lecture 49 - CNNs for Human Understanding: Faces - Part 2

Lecture 50 - CNNs for Human Understanding: Human Pose and Crowd

Lecture 51 - CNNs for Other Image Tasks

Lecture 52 - Recurrent Neural Networks: Introduction

Lecture 53 - Backpropagation in RNNs

Lecture 54 - LSTMs and GRUs

Lecture 55 - Video Understanding using CNNs and RNNs

Lecture 56 - Attention in Vision Models: An Introduction

Lecture 57 - Vision and Language: Image Captioning

Lecture 58 - Beyond Captioning: Visual QA, Visual Dialog

Lecture 59 - Other Attention Models

Lecture 60 - Self-Attention and Transformers

Lecture 61 - Deep Generative Models: An Introduction

Lecture 62 - Generative Adversarial Networks - Part 1

Lecture 63 - Generative Adversarial Networks - Part 2

Lecture 64 - Variational Autoencoders

NPTEL : NOC:Artificial Intelligence Search Methods For Problem Solving (Computer Science and Engineering)

Co-ordinators : Prof. Deepak Khemani

Lecture 32 - Emergent Systems

Lecture 33 - Ant Colony Optimization

Lecture 34 - Finding Optimal Paths

Lecture 35 - Branch and Bound

Lecture 36 - Algorithm A*

Lecture 37 - A*: An illustrated example

Lecture 38 - Is A* Admissible?

Lecture 39 - Admissibility of A*

Lecture 40 - Higher, Faster ...

Lecture 41 - B&B - A* - wA* - Best First

Lecture 42 - A*: Leaner Admissible Variations

Lecture 43 - The Monotone Condition

Lecture 44 - DNA Sequence Alignment

Lecture 45 - Divide and Conquer Frontier Search.

Lecture 46 - Smart Memory Graph Search

Lecture 47 - Variations on A*: The story so far

Lecture 48 - Breadth First Heuristic Search

Lecture 49 - Beam Stack Search

Lecture 50 - Game Theory

Lecture 51 - Popular Recreational Games

Lecture 52 - Board Games and Game Trees

Lecture 53 - The Evaluation Function in Board Games

Lecture 54 - Algorithm Minimax and Alpha-Beta Pruning

Lecture 55 - A Cluster of Strategies

Lecture 56 - SSS*: A Best First Algorithm

Lecture 57 - SSS*: A Detailed Example

Lecture 58 - Automated Domain Independent Planning

Lecture 59 - The Blocks World Domain

Lecture 60 - State Space Planning: Forward and Backward

Lecture 61 - Goal Stack Planning (GSP)

Lecture 62 - GSP: A Detailed Example

Lecture 63 - Plan Space Planning (PSP)

Lecture 64 - PSP: A Tiny Example

NPTEL : NOC:Computational Complexity (Computer Science and Engineering)

Co-ordinators : Prof. Subrahmanyam Kalyanasundaram

NPTEL : NOC:Parameterized Algorithms (Computer Science and Engineering)

Co-ordinators : Prof. Neeldhara Misra

NPTEL : NOC:Getting Started with Competitive Programming (Computer Science and Engineering)

Co-ordinators : Prof. Neeldhara Misra

Lecture 0 - Welcome and Initial Setup

Lecture 1 - Reversort

Lecture 2 - Engineering Reversort

Lecture 3 - Number Game

Lecture 4 - Will It Stop?

Lecture 5 - Trouble Sort

Lecture 6 - The Meeting Place Cannot Be Changed

Lecture 7 - Magic Ship

Lecture 8 - Simple Skewness

Lecture 9 - Pancake Flipping

Lecture 10 - Islands War

Lecture 11 - Stable Marriage - I

Lecture 12 - Stable Marriage - II

Lecture 13 - When Greedy Does Not Work - Coin Change

Lecture 14 - When Greedy Does Not Work - Guarding a Museum

Lecture 15 - When Greedy Does Not Work - Traveling Salesman

Lecture 16 - DSU - Definition and Motivation

Lecture 17 - DSU via Union by Rank and Path Compression

Lecture 18 - DSU - Implementation

Lecture 19 - Destroying Array - I (Problem Statement and Solution)

Lecture 20 - Destroying Array - II (Implementation)

Lecture 21 - War-I (Problem Statement)

Lecture 22 - War-II (Solution)

Lecture 23 - War-III (Implementation)

Lecture 24 - Graph Foundations

Lecture 25 - BFS and DFS

Lecture 26 - Mahmoud and Ehab and the bipartiteness

Lecture 27 - Cover It!

Lecture 28 - Diamond Inheritance

Lecture 29 - SSSP - Overview BFS Revisited

Lecture 30 - SSSP and Dijkstra's Algorithm

Lecture 31 - Sending Email

Lecture 32 - SSSP and Modified Dijkstra

Lecture 33 - SSSP with Negative Cycles - Bellman-Ford

Lecture 34 - Wormholes

Lecture 35 - APSP and Floyd-Warshall

Lecture 36 - Page Hopping

Lecture 37 - Introduction to MSTs

Lecture 38 - Prim's Algorithm

Lecture 39 - Kruskal's Algorithm

Lecture 40 - Cherries Mesh

Lecture 41 - Heirarchy

Lecture 42 - Island Hopping

Lecture 43 - Introduction to MaxFlow

Lecture 44 - Ford-Fulkerson for MaxFlow

Lecture 45 - Implementing Edmonds-Karp

Lecture 46 - Maximum Matching via MaxFlow

Lecture 47 - Sport Elimination via MaxFlow

Lecture 48 - Maxflow-Mincut Duality

Lecture 49 - Police Chase

Lecture 50 - Sam I AM and Vertex Covers

Lecture 51 - Top-Down Dynamic Programming with Frog 1 - Part A

Lecture 52 - Top-Down Dynamic Programming with Frog 1 - Part B

Lecture 53 - Bottom-Up Dynamic Programming with Dice Combinations

NPTEL : NOC:Introduction to Quantum Computing: Quantum Algorithms and Qiskit (Computer Science and Engineering)

Co-ordinators : Prof. Prabha Mandayam

NPTEL : NOC:Systems and Usable Security (Computer Science and Engineering)

Co-ordinators : Prof. Neminath Hubballi

NPTEL : NOC:Online Privacy (Computer Science and Engineering)

Co-ordinators : Prof. Ponnurangam Kumaraguru

Lecture 1 - Online Privacy

Lecture 2 - Privacy concepts and studies

Lecture 3 - Fair Information Practices

Lecture 4 - Right to Privacy Contextual Integrity

Lecture 5 - Privacy Policy - Part I

Lecture 6 - Privacy Policy - Part II

Lecture 7 - Privacy-based technologies and decision making

Lecture 8 - Social Media Privacy

Lecture 9 - Identity resolution

Lecture 10 - Privacy Nudges

Lecture 11 - Cookies

Lecture 12 - Ethics about studying Online Privacy

Lecture 13 - Anonymization techniques and Differential Privacy

Lecture 14 - Conducting (user, lab, online) studies

Lecture 15 - Research paper reading

Lecture 16 - Voter and Browser Privacy Leaks, Profiling form PII - Part I

Lecture 17 - Voter and Browser Privacy Leaks, Profiling form PII - Part II

Lecture 18 - Online Privacy Tools (Hands-on) - Part I

Lecture 19 - Online Privacy Tools (Hands-on) - Part II

Lecture 20 - Mobile numbers, home location, Location-based social networks

Lecture 21 - Location-based social networks

Lecture 22 - Privacy laws and regulations - Part I

Lecture 23 - Privacy laws and regulations - Part II

Lecture 24 - Privacy standards

Lecture 25 - Look back

NPTEL : NOC:Introduction to Machine Learning (Tamil) (Computer Science and Engineering)

Co-ordinators : Prof. Arun Rajkumar

Lecture 32 - Entropy and Information Gain

Lecture 33 - Generative vs Discriminative models

Lecture 34 - Naive Bayes classifier

Lecture 35 - Conditional Independence

Lecture 36 - Classifying the test point and summary

Lecture 37 - Discriminative models

Lecture 38 - Logistic Regression

Lecture 39 - Summary and big picture

Lecture 40 - Maximum likelihood estimation

Lecture 41 - Linear separability

Lecture 42 - Perceptron and its learning algorithm

Lecture 43 - Perceptron : A thing of past

Lecture 44 - Support Vector Machine

Lecture 45 - Optimizing weights

Lecture 46 - Handling Outliers

Lecture 47 - Dual Formulation

Lecture 48 - Kernel formulation

Lecture 49 - Introduction to Ensemble methods

Lecture 50 - Bagging

Lecture 51 - Bootstrapping

Lecture 52 - Limitations of bagging

Lecture 53 - Introduction to boosting

Lecture 54 - Ada boost

Lecture 55 - Unsupervised learning

Lecture 56 - K-means Clustering

Lecture 57 - LLyod's Algorithms

Lecture 58 - Convergence and Initialization

Lecture 59 - Representation Learning

Lecture 60 - Orthogonal Projection

Lecture 61 - Covariance Matrix and Eigen direction

Lecture 62 - PCA and mean centering

NPTEL : Compiler Design (Prof. Rupesh Nasre) (Computer Science and Engineering)

Co-ordinators : Prof. Rupesh Nasre

Lecture 1 - Introduction - Part 1, Programming languages and compilers

Lecture 2 - Introduction - Part 2, Language translators

Lecture 3 - Introduction - Part 3, Phases of a compiler

Lecture 4 - Introduction - Part 4, Static vs Dynamic contexts,Parameter passing

Lecture 5 - Lexing - Part 1, Terminology, Regex, flex tool- Part 1

Lecture 6 - Lexing - Part 2, Lexical errors, Input buffering

Lecture 7 - flex tool- Part 2

Lecture 8 - Lexing - Part 3, Lookahead, KMP string matching

Lecture 9 - Lexing - Part 4, Regex to DFA conversion - Part 1

Lecture 10 - Lexing - Part 5, Regex to DFA conversion - Part 2, Prasing - Part 1

Lecture 11 - Parsing - Part 2, CFG, Parse tree, Precedence, Ambiguity

Lecture 12 - flex tool - Part 3

Lecture 13 - Parsing - Part 3, Sentinel forms, Error recovery, if-else ambiguity

Lecture 14 - Parsing - Part 4, Left recursion, Recursive descent parsing

Lecture 15 - Parsing - Part 5, First and Follow, Predicitive parsing table

Lecture 16 - Parsing - Part 6, Predictive parsing table, LL(1) grammars

Lecture 17 - Discussions and doubts clarification - Part 1

Lecture 18 - Parsing - Part 6, Bottom-up, Shift-reduce parsing, SLR parsing

Lecture 19 - Parsing - Part 6, LR(0) automaton, SLR parsing using automaton

Lecture 20 - Parsing - Part 7, SLR(1) parsing table, SLR(1) parsing algorithm

Lecture 21 - Parsing - Part 8, Viable prefixes, LR(1) parsing, LR(1) automaton

Lecture 22 - Parsing - Part 9, LALR parsing, SDT- Part 1, attributes

Lecture 23 - Syntax Directed Translation - Part 2, S- and L-attributed SDD

Lecture 24 - Syntax Directed Translation - Part 3, L-attributed SDD, Applications

Lecture 25 - Syntax Directed Translation - Part 4, Actions within productions

Lecture 26 - Discussions and doubts clarification - Part 2

Lecture 27 - Quiz-1 discussion, SDT - Part 5, Code generation for while loop

Lecture 28 - Intermdiate Code Generation - Part 1, Syntax trees and DAGs

Lecture 29 - Intermdiate Code Generation - Part 2, Three-address code

Lecture 30 - Discussions and doubts clarification Part 3

Lecture 31 - Intermdiate Code Generation - Part 3, Static single assignment

Lecture 32 - Intermdiate Code Generation - Part 4, IR for type expressions

Lecture 33 - Intermdiate Code Generation - Part 4, IR for array expressions

Lecture 34 - Intermdiate Code Generation - Part 4, IR for boolean expressions

Lecture 35 - Intermdiate Code Generation - Part 4, IR for break, continue, switch

Lecture 36 - Code Generator - Part 1, Introduction, IR and target code

Lecture 37 - Code Generator - Part 2, Instruction selection, ordering

Lecture 38 - Code Generator - Part 2, Basic blocks and CFG

Lecture 39 - x86 assembly code

Lecture 40 - Code optimizer - Part 1, Local optimizations within a basic block

Lecture 41 - Code optimizer - Part 2, Array references, Peephole optimization

Lecture 42 - Discussions and doubts clarification - Part 4

Lecture 43 - Code optimizer - Part 3, Register allocation, Liveness

Lecture 44 - Code optimizer - Part 4, Register allocation as graph coloring

Lecture 45 - Discussions and doubts clarification - Part 5

Lecture 46 - Code optimizer - Part 5, Data flow analysis, Reaching definitions

Lecture 47 - Discussions and doubts clarification - Part 6

Lecture 48 - Code optimizer - Part 6, DFA for reaching definitions,Live variables

NPTEL : NOC:Applied Accelerated Artificial Intelligence (Computer Science and Engineering)

Co-ordinators : Prof. Satyadhyan Chickerur, Prof. Bharatkumar Sharma, Prof. Adesuyi Tosin, Prof. Satyajit Das

NPTEL : NOC:Social Network Analysis (Computer Science and Engineering)

Co-ordinators : Prof. Tanmoy Chakraborty

Lecture 32 - Chapter 5 Lectuer 6

Lecture 33 - Chapter 5 Lectuer 7

Lecture 34 - Chapter 5 Lectuer 8

Lecture 35 - Chapter 5 Lectuer 9

Lecture 36 - Chapter 5 Lectuer 10

Lecture 37 - Chapter 6 Lectuer 1

Lecture 38 - Chapter 6 Lectuer 2

Lecture 39 - Chapter 6 Lectuer 3

Lecture 40 - Chapter 6 Lectuer 4

Lecture 41 - Chapter 6 Lectuer 5

Lecture 42 - Chapter 7 Lectuer 1

Lecture 43 - Chapter 7 Lectuer 2

Lecture 44 - Chapter 7 Lectuer 3

Lecture 45 - Chapter 7 Lectuer 4

Lecture 46 - Chapter 7 Lectuer 5

Lecture 47 - Chapter 7 Lectuer 6

Lecture 48 - Chapter 7 Lectuer 7

Lecture 49 - Chapter 7 Lectuer 8

Lecture 50 - chapter 8 Lectuer 1

Lecture 51 - chapter 8 Lectuer 2

Lecture 52 - Chapter 8 Lectuer 3

Lecture 53 - Chapter 8 Lectuer 4

Lecture 54 - Chapter 8 Lectuer 5

Lecture 55 - Chapter 8 Lectuer 6

Lecture 56 - Chapter 9 Lectuer 1

Lecture 57 - Chapter 9 Lectuer 2

Lecture 58 - Chapter 9 Lectuer 3

Lecture 59 - Chapter 9 Lectuer 4

Lecture 60 - Chapter 9 Lectuer 5

Lecture 61 - Chapter 9 Lectuer 6

Lecture 62 - Chapter 9 Lectuer 7

Lecture 63 - Chapter 9 Lectuer 8

Lecture 64 - Chapter 9 Lectuer 9

NPTEL : NOC:Quantum Algorithms and Cryptography (Computer Science and Engineering)

Co-ordinators : Prof. Shweta Agrawal

Lecture 32 - Simon's Algorithm over Z_n - Part 1

Lecture 33 - Simon's Algorithm over Z_n - Part 2

Lecture 34 - Simon's Algorithm over Z_n - Part 3

Lecture 35 - Simon's Algorithm over Z_n - Part 4

Lecture 36 - Simon's Algorithm over Z_n - Part 5

Lecture 37 - Simon's Algorithm over Z_n - Part 6

Lecture 38 - Shor's Algorithm - Part 1

Lecture 39 - Shor's Algorithm - Part 2

Lecture 40 - Hidden Subgroup Problem - Part 1

Lecture 41 - Hidden Subgroup Problem - Part 2

Lecture 42 - Introduction to Lattices - Part 1

Lecture 43 - Introduction to Lattices - Part 2

Lecture 44 - Public Key Encryption from LWE - Part 1

Lecture 45 - Public Key Encryption from LWE - Part 2

Lecture 46 - Public Key Encryption from LWE - Part 3

Lecture 47 - Fully Homomorphic Encryption - Part 1

Lecture 48 - Fully Homomorphic Encryption - Part 2

Lecture 49 - Fully Homomorphic Encryption - Part 3

Lecture 50 - Quantum Cryptography - Part 1

Lecture 51 - Quantum Cryptography - Part 2

Lecture 52 - Quantum Cryptography - Part 3

Lecture 53 - Quantum Cryptography - Part 4

Lecture 54 - Quantum Cryptography - Part 5

Lecture 55 - Quantum PKE and FHE - Part 1

Lecture 56 - Quantum PKE and FHE - Part 2

Lecture 57 - Quantum PKE and FHE - Part 3

Lecture 58 - Quantum PKE and FHE - Part 4

Lecture 59 - Quantum PKE and FHE - Part 5

NPTEL : NOC:Theory of Computation (2023) (Computer Science and Engineering)

Co-ordinators : Prof. Subrahmanyam Kalyanasundaram

Lecture 32 - Formal Definition of a Turing Machine

Lecture 33 - Turing Recognizable and Decidable Languages and TM Examples

Lecture 34 - Multitape Turing Machine

Lecture 35 - Non-Deterministic Turing Machines

Lecture 36 - Equivalence of Deterministic and Nondeterministic TM

Lecture 37 - Church-Turing Thesis

Lecture 38 - Decidable Problems Concerning Regular Languages

Lecture 39 - Decidable Problems Concerning Context Free Languages

Lecture 40 - Countability of Sets

Lecture 41 - Proof of Existence of Undecidable Languages

Lecture 42 - Halting Problem

Lecture 43 - Co-Turing Recognizability

Lecture 44 - An Introduction to Mapping Reducibility

Lecture 45 - Examples of Proving Undecidability Using Reductions

Lecture 46 - Rice Theorem

Lecture 47 - Computation Histories

Lecture 48 - The Post Correspondence Problem

Lecture 49 - Checking Ambiguity in CFG is Undecidable

Lecture 50 - Time Complexity - Part 1

Lecture 51 - Time Complexity - Part 2

Lecture 52 - Non-Deterministic Polynomial Time - Part 1

Lecture 53 - Non-Deterministic Polynomial Time - Part 2

Lecture 54 - Verifiability and NP

Lecture 55 - Polynomial Time Reductions - Part 1

Lecture 56 - Polynomial Time Reductions - Part 2

Lecture 57 - NP-Completeness

Lecture 58 - Cook-Levin Theorem

Lecture 59 - Cook-Levin Theorem - Proof and Implications

Lecture 60 - CLIQUE and VERTEX-COVER is NP-Complete

Lecture 61 - HAM-PATH is NP-Complete

Lecture 62 - SUBSET-SUM is NP-Complete

Lecture 63 - Knapsack Problem

Lecture 64 - Integer Linear Program is NP-Complete

NPTEL : NOC:Advanced Computer Networks (Computer Science and Engineering)

Co-ordinators : Prof. Neminath Hubballi, Prof. Sameer Kulkarni

Lecture 32 - Software Defined Networking - I

Lecture 33 - Software Defined Networking - II

Lecture 34 - Software Defined Networking - III

Lecture 35 - OpenFlow

Lecture 36 - SND Prospects and Challenges

Lecture 37 - Introduction to Network Function Virtualization - I

Lecture 38 - Introduction to Network Function Virtualization - II

Lecture 39 - Network Function Virtualization - Concepts, Framework and Architecture - I

Lecture 40 - Network Function Virtualization - Concepts, Framework and Architecture - II

Lecture 41 - Network Function Virtualization - Road ahead and Key challenges

Lecture 42 - High Performance Network Packet Processing

Lecture 43 - Summary and Comparision of NFV and SDN

Lecture 44 - Programmable Networks - Data Plane Programmability - Overview I

Lecture 45 - Programmable Networks - Data Plane Programmability - Overview II

Lecture 46 - Reconfigurable Match Action Tables

Lecture 47 - P4 Programming

Lecture 48 - Data Center Networking - Introduction - Part 1

Lecture 49 - Data Center Networking - Introduction - Part 2

Lecture 50 - Data Center Networking - Characteristics and Challenges

Lecture 51 - Data Center Networking - Topologies and Architecture - Part 1

Lecture 52 - Data Center Networking - Topologies and Architecture - Part 2

Lecture 53 - Data Center Networking - Protocol Innovations - Part 1

Lecture 54 - Data Center Networking - Protocol Innovations - Part 2

Lecture 55 - Network Telemetry

Lecture 56 - Serverless Computing - Part 1

Lecture 57 - Serverless Computing - Part 2

Lecture 58 - SmartNICs and In-band Network Telemetry, Future of Network Softwarization, SDN 3.0

Lecture 59 - QUIC

Lecture 60 - Green and Sustainable Data Centers

Lecture 61 - Content Distribution in IP Networks - Part 1

Lecture 62 - Content Distribution in IP Networks - Part 2

Lecture 63 - Information Centric Networking - Part 1

Lecture 64 - Information Centric Networking - Part 2

NPTEL : NOC:Affective Computing (Computer Science and Engineering)

Co-ordinators : Prof. Jainendra Shukla, Prof. Abhinav Dhal

NPTEL : NOC:Optimisation for Machine Learning: Theory and Implementation (Hindi) (Computer Science and Engineering)

Co-ordinators : Prof. Pravesh Biyani

NPTEL : ACM India - RBCDSAI Summer School on DS-AI-ML (Computer Science and Engineering)

Co-ordinators : Multi-Faculty

Lecture 1 - Introduction to AI/ML/DS

Lecture 2 - Introduction to Probability; Introduction to machine learning - Part 1

Lecture 3 - Introduction to Probability; Introduction to machine learning - Part 2

Lecture 4 - Introduction to Probability; Introduction to machine learning - Part 3

Lecture 5 - Introduction to Probability; Introduction to machine learning - Part 4

Lecture 6 - Python for AI/ML/DS - Part 1

Lecture 7 - Python for AI/ML/DS - Part 2

Lecture 8 - Descriptive statistics and Inferential statistics - Part 1

Lecture 9 - Descriptive statistics and Inferential statistics - Part 2

Lecture 10 - Descriptive statistics and Inferential statistics - Part 3

Lecture 11 - Descriptive statistics and Inferential statistics - Part 4

Lecture 12 - Descriptive statistics and Inferential statistics - Part 5

Lecture 13 - Distribution, Data visualization, Plotting libraries - Part 1

Lecture 14 - Distribution, Data visualization, Plotting libraries - Part 2

Lecture 15 - Distribution, Data visualization, Plotting libraries - Part 3

Lecture 16 - Linear Algebra for Data science

Lecture 17 - Identification of linear relationship among attributes

Lecture 18 - Solving Linear Equations - 1

Lecture 19 - Solving Linear Equations - 2

Lecture 20 - Linear Algebra - Distance, Hyperplanes and Halfspaces, Eigenvalues, Eigenvectors - Part 1

Lecture 21 - Linear Algebra - Distance, Hyperplanes and Halfspaces, Eigenvalues, Eigenvectors - Part 2

Lecture 22 - Linear Algebra - Part 1

Lecture 23 - Linear Algebra - Part 2

Lecture 24 - Linear Algebra - Part 3

Lecture 25 - Regression Models, Models Selection and Evaluation - Part 1

Lecture 26 - Regression Models, Models Selection and Evaluation - Part 2

Lecture 27 - Regression Models, Models Selection and Evaluation - Part 3

Lecture 28 - Regression Models, Models Selection and Evaluation - Part 4

Lecture 29 - Regression - Part 1

Lecture 30 - Regression - Part 2

Lecture 31 - Regression - Part 3

Lecture 32 - Classification Naive Bayes, Logistic Regression, K-NN - Part 1

Lecture 33 - Classification Naive Bayes, Logistic Regression, K-NN - Part 2

Lecture 34 - Classification Naive Bayes, Logistic Regression, K-NN - Part 3

Lecture 35 - Classification Naive Bayes, Logistic Regression, K-NN - Part 4

Lecture 36 - Classification - Part 1

Lecture 37 - Classification - Part 2

Lecture 38 - Classification - Part 3

Lecture 39 - Linear Models for Classification - Part 1

Lecture 40 - Linear Models for Classification - Part 2

Lecture 41 - Kernel Machines

Lecture 42 - Solving Langrange Dual in SVM

Lecture 43 - Classification and SVM - Part 1

Lecture 44 - Classification and SVM - Part 2

Lecture 45 - Tree - Based methods, Boosting bagging - Part 1

Lecture 46 - Tree - Based methods, Boosting bagging - Part 2

Lecture 47 - Tree - Based methods, Boosting bagging - Part 3

Lecture 48 - Tree - Based methods, Boosting bagging - Part 4

Lecture 49 - Tree-based approaches for regression and classification - Part 1

Lecture 50 - Tree-based approaches for regression and classification - Part 2

Lecture 51 - Supervised Learning Using K Nearest Neighbors - Part 1

Lecture 52 - Supervised Learning Using K Nearest Neighbors - Part 2

Lecture 53 - Supervised Learning Using K Nearest Neighbors - Part 3

Lecture 54 - Supervised Learning Using K Nearest Neighbors - Part 4

Lecture 55 - Clustering methods - Part 1

Lecture 56 - Clustering methods - Part 2

Lecture 57 - Induction to Neural Networks, Perceptrons, Multilayer Perceptrons, Feedforward Neural Networks - Part 1

Lecture 58 - Induction to Neural Networks, Perceptrons, Multilayer Perceptrons, Feedforward Neural Networks - Part 2

Lecture 59 - Induction to Neural Networks, Perceptrons, Multilayer Perceptrons, Feedforward Neural Networks - Part 3

Lecture 60 - Induction to Neural Networks, Perceptrons, Multilayer Perceptrons, Feedforward Neural Networks - Part 4

Lecture 61 - Neural Networks and Feedforward NN - Part 1

Lecture 62 - Neural Networks and Feedforward NN - Part 2

Lecture 63 - Neural Networks and Feedforward NN - Part 3

Lecture 64 - Backpropagation (Intuition)

Lecture 65 - Backpropagation: Computing Cradients w.r.t the Output Units

Lecture 66 - Learning Parameters: Gradient Descent

Lecture 67 - Contours

Lecture 68 - Nesterov Accelerated Gradient Descent

Lecture 69 - Stochastic and Mini-Batch Gradient Descent

Lecture 70 - Tips for Adjusting learning Rate and Momentum

Lecture 71 - Line Search

Lecture 72 - The convolution operation

Lecture 73 - Convolutional Neural Networks

Lecture 74 - CNN and DL models - Part 1

Lecture 75 - CNN and DL models - Part 2

Lecture 76 - CNN and DL models - Part 3

Lecture 77 - CNN and DL models - Part 4

Lecture 78 - AI/ML/DS Industry Use Cases - Part 1

Lecture 79 - AI/ML/DS Industry Use Cases - Part 2

Lecture 80 - AI/ML - Case Studies in Industry - Part 1

Lecture 81 - AI/ML - Case Studies in Industry - Part 2

Lecture 82 - Q and A on career in research a woman faculty representative from PSGTech and RBCDSAI

NPTEL : NOC:Machine Learning (ML) in Hindi (Computer Science and Engineering)

Co-ordinators : Prof. Anubha Gupta

Lecture 1 - Introduction to Machine Learning

Lecture 2 - Linear Algebra: Review (Vector Spaces)

Lecture 3 - Linear Algebra: Review (Matrices)

Lecture 4 - Probability Theory: Review (Basics of Probability)

Lecture 5 - Probability Theory: Review (Random Variables)

Lecture 6 - Linear Regression

Lecture 7 - Linear Regression

Lecture 8 - Tutorial: Linear Regression

Lecture 9 - Linear Regression

Lecture 10 - Linear Kernel Regression

Lecture 11 - k-Nearest Neighbour (k-NN) Regression

Lecture 12 - Tutorial: k-NN Regression

Lecture 13 - Tutorial: Kernel Regression

Lecture 14 - Logistic Regression: Classification Evaluation Metrics

Lecture 15 - Logistic Regression

Lecture 16 - Logistic Regression: Examples

Lecture 17 - Tutorial: Logistic Regression

Lecture 18 - Neural Networks

Lecture 19 - Neural Networks

Lecture 20 - Neural Networks: Examples

Lecture 21 - Tutorial: Neural Networks

Lecture 22 - Practical Machine Learning - Part 1

Lecture 23 - Practical Machine Learning - Part 2

Lecture 24 - Practical Machine Learning - Part 3

Lecture 25 - Practical Machine Learning - Part 4

Lecture 26 - Support Vector Machines (SVM)

Lecture 27 - Tutorial: Support Vector Machines (SVM)

Lecture 28 - Kernel Support Vector Machines (k-SVM)

Lecture 29 - NaÃ¯ve Bayes Classification

Lecture 30 - Decision Trees - Part 1

Lecture 31 - Decision Trees - Part 2

Lecture 32 - Tutorial: Naive Bayes Classification

Lecture 33 - Tutorial: Decision Trees

Lecture 34 - k-NN Classifier

Lecture 35 - Ensemble Learning

Lecture 36 - Random Forests

Lecture 37 - Bagging (Bootstrap AGGregatING)

Lecture 38 - Tutorial: Random Forests

Lecture 39 - Tutorial: k-NN Classifier and Bootstrap AGGregatING (Bagging)

Lecture 40 - Boosting

Lecture 41 - Clustering

Lecture 42 - k-means Clustering

Lecture 43 - Tutorial: Boosting

Lecture 44 - Spectral Clustering

Lecture 45 - Mixture of Models (Gaussian Mixture Models-GMM)

Lecture 46 - Dimensionality Reduction: Principal Component Analysis (PCA) and kernel PCA

Lecture 47 - Tutorial: k-means and Spectral Clustering

Lecture 48 - Tutorial: Principal Component Analysis (PCA) and Gaussian Mixture Models (GMM)

Lecture 49 - Introduction to Deep Learning (DL)

Lecture 50 - Convolutional Neural Networks (CNN) - Part A

Lecture 51 - Convolutional Neural Networks (CNN) - Part B

Lecture 52 - Autoencoders

Lecture 53 - Applications of ML in Healthcare Problems - Part 1

Lecture 54 - Applications of ML in Healthcare Problems - Part 2

Lecture 55 - Tutorial: CNN and Autoencoder

NPTEL : NOC:Cyber Security and Privacy (Computer Science and Engineering)

Co-ordinators : Prof. Saji K Mathew

Lecture 1 - Introduction - Part 1

Lecture 2 - Introduction - Part 2

Lecture 3 - Introduction - Part 3

Lecture 4 - Foundations - Part 1

Lecture 5 - Foundations - Part 2

Lecture 6 - Foundations - Part 3

Lecture 7 - Security management, GRC - Part 1

Lecture 8 - Security management, GRC - Part 2

Lecture 9 - Security management, GRC - Part 3

Lecture 10 - Contingency planning - Part 1

Lecture 11 - Contingency Planning - Part 2

Lecture 12 - Contingency Planning - Part 3

Lecture 13 - Cybersecurity policy - Part 1

Lecture 14 - Cybersecurity policy - Part 2

Lecture 15 - Cybersecurity policy - Part 3

Lecture 16 - Risk Management - Part 1

Lecture 17 - Risk Management - Part 2

Lecture 18 - Risk Management - Part 3

Lecture 19 - Cybersecurity: Industry perspective - Part 1

Lecture 20 - Cybersecurity: Industry perspective - Part 2

Lecture 21 - Cybersecurity: Industry perspective - Part 3

Lecture 22 - Cyber security technologies - Part 1

Lecture 23 - Cyber security technologies - Part 2

Lecture 24 - Cyber security technologies - Part 3

Lecture 25 - Foundations of privacy - Part 1

Lecture 26 - Foundations of privacy - Part 2

Lecture 27 - Foundations of privacy - Part 3

Lecture 28 - Privacy regulation - Part 1

Lecture 29 - Privacy regulation - Part 2

Lecture 30 - Privacy regulation - Part 3

Lecture 31 - Privacy regulation in Europe - Part 1

NPTEL : NOC:Introduction to Cryptology (Computer Science and Engineering)

Co-ordinators : Dr. Sugata Gangopadhyay

NPTEL : NOC:Data Analytics with Python (Computer Science and Engineering)

Co-ordinators : Prof. A. Ramesh

NPTEL : Combinatorics (Computer Science and Engineering)

Co-ordinators : Dr. L. Sunil Chandran

Lecture 32 - Exponential generating functions - Part (1)

Lecture 33 - Exponential generating functions - Part (2), Partition Number - Part (1)

Lecture 34 - Partition Number - Part (2)

Lecture 35 - Partition Number - Part (3)

Lecture 36 - Partition Number - Part (4); Catalan Numbers - Part (1)

Lecture 37 - Catalans Numbers - Part (2)

Lecture 38 - Catalan Numbers - Part (3), Sterling numbers of the 2nd kind

Lecture 39 - Difference Sequences

Lecture 40 - Sterling Numbers

Lecture 41 - Summary

NPTEL : Compiler Design (Prof. Y.N. Srikanth) (Computer Science and Engineering)

Co-ordinators : Prof. Y.N. Srikanth

Lecture 1 - An Overview of a Compiler - Part 1

Lecture 2 - An Overview of a Compiler - Part 2 and Run-Time Environments - Part 1

Lecture 3 - An Overview of a Compiler - Part 2 and Run-Time Environments - Part 1

Lecture 4 - Run-Time Environments - Part 2

Lecture 5 - Run-Time Environments - Part 3 and Local Optimizations - Part 1

Lecture 6 - Run-Time Environments - Part 3 and Local Optimizations - Part 1

Lecture 7 - Local Optimizations - Part 2 and Code Generation - Part 1

Lecture 8 - Local Optimizations - Part 2 and Code Generation - Part 1

Lecture 9 - Code Generation - Part 1

Lecture 10 - Code Generation - Part 2

Lecture 11 - Code Generation - Part 3 and Global Register Allocation - Part 1

Lecture 12 - Code Generation - Part 3 and Global Register Allocation - Part 1

Lecture 13 - Global Register Allocation - Part 2

Lecture 14 - Global Register Allocation - Part 3 and Implementing Object-Oriented Languages - Part 1

Lecture 15 - Global Register Allocation - Part 3 and Implementing Object-Oriented Languages - Part 1

Lecture 16 - Implementing Object-Oriented Languages - Part 2 and Introduction to Machine-Independent Optimizations - Part 1

Lecture 17 - Implementing Object-Oriented Languages - Part 2 and Introduction to Machine-Independent Optimizations - Part 1

Lecture 18 - Introduction to Machine-Independent Optimizations - Part 2 and Data-Flow Analysis - Part 1

Lecture 19 - Introduction to Machine-Independent Optimizations - Part 2 and Data-Flow Analysis - Part 1

Lecture 20 - Data-Flow Analysis - Part 2

Lecture 21 - Data-Flow Analysis - Part 3 and Control-Flow Analysis - Part 1

Lecture 22 - Data-Flow Analysis - Part 3 and Control-Flow Analysis - Part 1

Lecture 23 - Control-Flow Analysis - Part 2

Lecture 24 - Machine-Independent Optimizations - Part 1

Lecture 25 - Machine-Independent Optimizations - Part 2

Lecture 26 - Machine-Independent Optimizations - Part 3 and Data-Flow Analysis: Theoretical Foundation - Part 1

Lecture 27 - Machine-Independent Optimizations - Part 3 and Data-Flow Analysis: Theoretical Foundation - Part 1

Lecture 28 - Data-Flow Analysis: Theoretical Foundation - Part 2 and Partial Redundancy Elimination - Part 1

Lecture 29 - Data-Flow Analysis: Theoretical Foundation - Part 2 and Partial Redundancy Elimination - Part 1

Lecture 30 - Partial Redundancy Elimination - Part 2

Lecture 31 - The Static Single Assignment Form: Construction and Application to Program Optimizations - Part 1

Lecture 32 - The Static Single Assignment Form: Construction and Application to Program Optimizations - Part 2

Lecture 33 - The Static Single Assignment Form: Construction and Application to Program Optimizations - Part 3

Lecture 34 - Automatic Parallelization - Part 1

Lecture 35 - Automatic Parallelization - Part 2

Lecture 36 - Automatic Parallelization - Part 3

Lecture 37 - Automatic Parallelization - Part 4

Lecture 38 - Instruction Scheduling - Part 1

Lecture 39 - Instruction Scheduling - Part 2

Lecture 40 - Instruction Scheduling - Part 3

Lecture 41 - Software Pipelining

Lecture 42 - Energy-Aware Software Systems - Part 1

Lecture 43 - Energy-Aware Software Systems - Part 2

Lecture 44 - Energy-Aware Software Systems - Part 3

Lecture 45 - Energy-Aware Software Systems - Part 4

Lecture 46 - Just-In-Time Compilation and Optimizations for .NET CLR

Lecture 47 - Garbage Collection

Lecture 48 - Interprocedural Data-Flow Analysis

Lecture 49 - Worst Case Execution Time - Part 1

Lecture 50 - Worst Case Execution Time - Part 2

NPTEL : Graph Theory (Computer Science and Engineering)

Co-ordinators : Dr. L. Sunil Chandran

Lecture 1 - Introduction: Vertex cover and independent set

Lecture 2 - Matchings: Konigâ€™s theorem and Hallâ€™s theorem

Lecture 3 - More on Hallâ€™s theorem and some applications

Lecture 4 - Tutteâ€™s theorem on existence of a perfect matching

Lecture 5 - More on Tutteâ€™s theorem

Lecture 6 - More on Matchings

Lecture 7 - Dominating set, path cover

Lecture 8 - Gallai â€“ Millgram theorem, Dilworthâ€™s theorem

Lecture 9 - Connectivity: 2-connected and 3-connected graphs

Lecture 10 - Mengerâ€™s theorem

Lecture 11 - More on connectivity: k- linkedness

Lecture 12 - Minors, topological minors and more on k- linkedness

Lecture 13 - Vertex coloring: Brooks theorem

Lecture 14 - More on vertex coloring

Lecture 15 - Edge coloring: Vizingâ€™s theorem

Lecture 16 - Proof of Vizingâ€™s theorem, Introduction to planarity

Lecture 17 - 5- coloring planar graphs, Kuratowskyâ€™s theorem

Lecture 18 - Proof of Kuratowskyâ€™s theorem, List coloring

Lecture 19 - List chromatic index

Lecture 20 - Adjacency polynomial of a graph and combinatorial Nullstellensatz

Lecture 21 - Chromatic polynomial, k - critical graphs

Lecture 22 - Gallai-Roy theorem, Acyclic coloring, Hadwigerâ€™s conjecture

Lecture 23 - Perfect graphs: Examples

Lecture 24 - Interval graphs, chordal graphs

Lecture 25 - Proof of weak perfect graph theorem (WPGT)

Lecture 26 - Second proof of WPGT, Some non-perfect graph classes

Lecture 27 - More special classes of graphs

Lecture 28 - Boxicity,Sphericity, Hamiltonian circuits

Lecture 29 - More on Hamiltonicity: Chvatalâ€™s theorem

Lecture 30 - Chvatalâ€™s theorem, toughness, Hamiltonicity and 4-color conjecture

Lecture 31 - Network flows: Max flow mincut theorem

NPTEL : High Performance Computing (Computer Science and Engineering)

Co-ordinators : Prof. Mathew Jacob

NPTEL : Numerical Optimization (Computer Science and Engineering)

Co-ordinators : Dr. Shirish K. Shevade

NPTEL : Storage Systems (Computer Science and Engineering)

Co-ordinators : Dr. K. Gopinath

NPTEL : System Analysis and Design (Computer Science and Engineering)

Co-ordinators : Prof. V. Rajaraman

NPTEL : Principles of Compiler Design (Computer Science and Engineering)

Co-ordinators : Prof. Y.N. Srikanth

NPTEL : NOC:Discrete Mathematics (IIITB) (Computer Science and Engineering)

Co-ordinators : Prof. Ashish Choudhury

NPTEL : NOC:Secure Computation: Part I (Computer Science and Engineering)

Co-ordinators : Prof. Ashish Choudhury

NPTEL : NOC:Secure Computation - Part II (Computer Science and Engineering)

Co-ordinators : Prof. Ashish Choudhury

Lecture 1 - What is Secure Multi-Party Computation (MPC)?

Lecture 2 - Reliable Broadcast and Byzantine Agreement

Lecture 3 - EIG Protocol for Perfectly-Secure Byzantine Agreement

Lecture 4 - EIG Protocol for Perfectly-Secure Byzantine Agreement: Illustration

Lecture 5 - EIG Protocol for Perfectly-Secure Byzantine Agreement: Analysis - Part I

Lecture 6 - EIG Protocol for Perfectly-Secure Byzantine Agreement: Analysis - Part II

Lecture 7 - Efficient Protocols for Perfectly-Secure Byzantine Agreement - Part I

Lecture 8 - Efficient Protocols for Perfectly-Secure Byzantine Agreement - Part II

Lecture 9 - Domain Extension for Perfectly-Secure Byzantine Agreement

Lecture 10 - Cryptographically/Statistically-Secure Reliable Broadcast

Lecture 11 - Dolev-Strong Reliable Broadcast Protocol: Analysis

Lecture 12 - Randomized Protocol for Byzantine Agreement - Part I

Lecture 13 - Randomized Protocol for Byzantine Agreement - Part II

Lecture 14 - Randomized Protocol for Byzantine Agreement - Part III

Lecture 15 - Lower Bound for Number of Parties for Byzantine Agreement - Part I

Lecture 16 - Lower Bound for Number of Parties for Byzantine Agreement - Part II

Lecture 17 - Lower Bound for Number of Parties for Byzantine Agreement - Part III

Lecture 18 - Recap of Basic Concepts from Abstract Algebra

Lecture 19 - Reed-Solomon Error-Correcting Codes

Lecture 20 - Perfectly-Secure Message Transmission

Lecture 21 - Properties of Polynomials Over a Field - I

Lecture 22 - Properties of Polynomials Over a Field - II

Lecture 23 - One Round PSMT Protocol

Lecture 24 - Multi-Round PSMT Protocol - I

Lecture 25 - Multi-Round PSMT Protocol - II

Lecture 26 - Domain Extension for Perfectly-Secure Broadcast Based on RS Error-Correcting Codes - I

Lecture 27 - Domain Extension for Perfectly-Secure Broadcast Based on RS Error-Correcting Codes - II

Lecture 28 - Domain Extension for Perfectly-Secure Broadcast Based on RS Error-Correcting Codes - III

Lecture 29 - (n,t) - Star Structure

Lecture 30 - Domain Extension for Perfectly-Secure Broadcast Based on RS Error-Correcting Codes - IV

Lecture 31 - The BGW MPC Protocol for Passive Corruptions: Recap