

Computer Science video courses

Introduction

List of Computer Science courses with video lectures.

- · Please note:
 - Focus would be to keep the list to the point so that it is easy to browse. To access syllabus/notes/assignments, please visit link to the course or use Google search with course number/name.
 - o Only MOOCs with comprehensive lecture material which cover a subject/topic in ample detail will be added. For example, MOOC on Computer Networks or Machine Learning with 3-4 hours may not be able to cover all topics in sufficient detail and thus should be avoided.
 - NPTEL contains large number of good Computer Science courses. To check courses by Indian IIT's, please refer nptel site.

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Courses

Introduction to Computer Science

- 6.00SC Introduction to Computer Science and Programming (Spring 2011) MIT OCW
- 6.00 Introduction to Computer Science and Programming (Fall 2008) MIT OCW
- 6.01SC Introduction to Electrical Engineering and Computer Science I MIT OCW
- 6.001 Structure and Interpretation of Computer Programs, MIT (Textbook)
- CS 10 The Beauty & Joy of Computing, Spring 2015 UCBerkeley
- CS 50 Introduction to Computer Science, Harvard University (cs50.tv)
- CS 61A Structure and Interpretation of Computer Programs [Python], UC Berkeley
- SPD1 Systematic Program Design [Racket], University of British Columbia
- CS E-1 Understanding Computers and the Internet, Spring 2013 Harvard Extension School (Spring 2011)
- CSE 142 Computer Programming I (C Programming), Autumn 200 University of Washington
- CS1301 Intro to computing Gatech
- MOOC: Introduction to Computer Science Udacity
- CS 106A Programming Methodology, Stanford University
- CS 106B Programming Abstractions, Stanford University
- · CS 107 Programming Paradigms, Stanford University
- Introduction to Programming with Arcade Games, Simpson College

Data Structures and Algorithms

- CS 61B Data Structures, UC Berkeley
 - Fall 2006 Prof. Jonathan Shewchuk
 - Spring 16 Josh Hug
- MOOC Design and Analysis of Algorithms Part 1 Prof Roughgarden Coursera (Part 2)
- MOOC Algorithms Part 1 Prof Sedgewick (Part 2)
- COP 3530 Data Structures and Algorithms, Prof Sahni, UFL (Videos)
- CS225 Data Structures University of Illinois at Urbana-Champaign
- · CS2: Data Structures and Algorithms Richard Buckland UNSW
- 6.006 Introduction to Algorithms, MIT OCW
- · CS 161 Design and Analysis of Algorithms, Prof. Tim Roughgarden, Stanford University
- CSE 373 Analysis of Algorithms, Stony Brook Prof Skiena
- CS16 Introduction to Algorithms and Data Structures Brown University
- 6.046J Introduction to Algorithms Fall 2005, MIT OCW
- 6.046 Design and Analysis of Algorithms, Spring 2015 MIT OCW
- CS 473: Algorithms University of Illinois at Urbana-Champaign
- Programming Challenges Prof Skiena
- 16s-4102 Algorithms, University of Virginia (Youtube)
- CS 170 Algorithms Spring 2015 UCBerkeley
- COP 5536 Advanced Data Structures, Prof Sahni UFL (Videos)
- CS 261 A Second Course in Algorithms, Stanford University (Lectures) (Youtube)
- CS 224 Advanced Algorithms, Harvard University (Lecture Videos) (Youtube)
- ECS 122A Algorithm Design and Analysis, UC Davis
- CSEP 521: Applied Algorithms, Winter 2013 University of Washington (Videos)
- CS 6150 Advanced Algorithms (Fall 2016), University of Utah
- ECS 222A Graduate Level Algorithm Design and Analysis, UC Davis

- 6.851 Advanced Data Structures, MIT (MIT OCW)
- 6.854 Advanced Algorithms, MIT (Prof. Karger lectures)
- CS264 Beyond Worst-Case Analysis, Fall 2014 Tim Roughgarden Lecture (Youtube)
- CS364A Algorithmic Game Theory, Fall 2013 Tim Roughgarden Lectures
- CS364B Advanced Mechanism Design, Winter 2014 Tim Roughgarden Lectures
- · Algorithms Aduni
- Advanced Topics in Algorithms and Datastructures SS 2005 Universität Freiburg
- Algorithmentheorie/Algorithms Theory WS 2013 Universität Freiburg (WS 2011)
- Theory I SS 2010 Universität Freiburg

Systems Programming

- 6.033 Computer System Engineering MIT
- CS24 Introduction to Computing Systems California Institute of Technology (Spring 15 version)
- 15-213 Introduction to Computer Systems, Fall 2015 CMU
- CS361 COMPUTER SYSTEMS UIC
- CS124 Operating Systems California Institute of Technology
- Systems Aduni
- CS 162 Operating Systems and Systems Programming, UC Berkeley (Lectures YouTube)
- CS 4414 Operating Systems, University of Virginia
- CSE 421/521 Introduction to Operating Systems, SUNY University at Buffalo, NY Spring 2016 (Lectures YouTube)
 (Recitations 2016)
- CS 377 Fall 16: Operating Systems Umass OS
- 6.828: Operating System Engineering [Fall 2014]
- CSEP 551 Operating Systems Autumn 2014 University of Washington
- CS194 Advanced Operating Systems Structures and Implementation, Spring 2013, UC Berkeley
- CPCS 663 Real-Time Systems: Video Material TAMU
- CS 251: Intermediate Software Design (C++ version)
- CS 251 (2015): Intermediate Software Design
- CSE 30341 Spr 2008: Operating Systems
- CSE 60641 Fall 08: Graduate Operating Systems
- 6.172 Performance Engineering of Software Systems MIT OCW
- Software Engineering for Self Adaptive Systems iTunes HPI
- Real-Time Systems SS 2013 Universität Freiburg
- System Infrastructure For Data Science WS 2012 Universität Freiburg

Distributed Systems

- VU:Distributed Systems: Principles and Paradigms by Maarten van Steen (Fall 2012), Vrije Universiteit, Amsterdam
- CS 677 Spring 16: Distributed Operating Systems Umass OS
- CS 436: Distributed Computer Systems U Waterloo
- 6.824: Distributed Systems, Spring 2015 MIT
- Distributed Algorithms, https://canvas.instructure.com/courses/902299
- CS138 Distributed Computer Systems Spring 2016 Brown University
- CSEP 552: PMP Distributed Systems, Spring 2013 University of Washington (Videos)
- CSE 490H: Scalable Systems: Design, Implementation and Use of Large Scale Clusters, Autumn 2008 University of Washington (Videos)
- MOOC Cloud Computing Concepts UIUC

Database Systems

- CS121 Introduction to Relational Database Systems, Fall 2016 Caltech
- CS122 Relational Database System Implementation, Winter 2014-2015 Caltech
- CS 5530 Database Systems, Spring 2016, University of Utah
- MOOC Database Stanford Dbclass
- CSEP 544, Database Management Systems, Au 2015 University of Washington
- CMPSC 431W Database Management Systems, Fall 2015 PSU
- Principles of Database Management, Bart Baesens
- 15-721 Database Systems, CMU (Lectures YouTube)
- CS 186 Database Systems, UC Berkeley, Spring 2015 (Lectures- YouTube)
- CS 6530 Graduate-level Database Systems, Fall 2016, University of Utah (Lectures YouTube)
- 6.830/6.814: Database Systems [Fall 2014]
- FIT9003 Database Systems Design, Rob Meredith, Monash University

Object Oriented Design and Software Engineering

- ECE 462 Object-Oriented Programming using C++ and Java Purdue
- Object-oriented Program Design and Software Engineering Aduni
- Object Oriented Systems Analysis and Design (Systems Analysis and Design in a Changing World)
- Computer Science 169- Software Engineering Spring 2015 UCBerkeley
- Introduction to Service Design and Engineering University of Trento, Italy
- · OOSE: Software Dev Using UML and Java
- CS 411 Software Architecture Design, Bilkent University
- CS 164 Software Engineering Harvard
- Model Driven Archtitecture WS 2005 Universität Freiburg
- Software Design, Modelling and Analysis in UML WS 2012 Universität Freiburg
- MOOC: Software Architecture & Design Udacity

Artificial Intelligence

- CS 188 Introduction to Artificial Intelligence, UC Berkeley
- 6.034 Artificial Intelligence, MIT OCW
- 15-780: Graduate Artificial Intelligence, Spring 14, CMU
- CSE 592 Applications of Artificial Intelligence, Winter 2003 University of Washington
- MOOC: Intro to Artificial Intelligence Udacity
- MOOC: Artificial Intelligence for Robotics Udacity
- Advanced AI Techniques WS 2005 Universität Freiburg (WS 2004)

Machine Learning

- Introduction to Machine Learning
 - MOOC Machine Learning Andrew Ng Coursera/Stanford (Notes)
 - MOOC Statistical Learning, Stanford University
 - CS 156 Learning from Data, Caltech
 - 10-601 Introduction to Machine Learning (MS), Carnegie Mellon University
 - 10-701 Introduction to Machine Learning (PhD) Tom Mitchell, Spring 2011, Carnegie Mellon University (Fall 2014)
 - Microsoft Research Machine Learning Course
 - CS 446 Machine Learning, Fall 2016, UIUC(Fall 2015 Lectures)
 - o undergraduate machine learning at UBC 2012, Nando de Freitas
 - CS 229 Machine Learning Stanford University
 - CS 189/289A Introduction to Machine Learning, Prof Jonathan Shewchuk UCBerkeley
 - CS 5350/6350 Machine Learning, Fall 2016, University of Utah

- ECE 5984 Introduction to Machine Learning, Spring 2015 Virginia Tech
- STA 4273H (Winter 2015): Large Scale Machine Learning
- CS 485/685 Machine Learning, Shai Ben-David, University of Waterloo
- Machine Learning and Data Mining WS 2004 Universität Freiburg

Data Mining

- CSEP 546, Data Mining Pedro Domingos, Sp 2016 University of Washington (YouTube)
- CS 5140/6140 Data Mining, Spring 2016, University of Utah (Youtube)
- CS 5955/6955 Data Mining, University of Utah (YouTube)
- Statistical Aspects of Data Mining (Stats 202) Google
- · MOOC Text Mining and Analytics by ChengXiang Zhai
- Information Retrieval SS 2014, iTunes HPI
- · MOOC Data Mining with Weka
- CS 290 DataMining Lectures
- CS246 Mining Massive Data Sets, Winter 2016, Stanford University (YouTube)

Probabilistic Graphical Modeling

- MOOC: Probabilistic Graphical Models Coursera
- o CS 6190 Probabilistic Modeling, Spring 2016, University of Utah
- 10-708 Probabilistic Graphical Models, Carnegie Mellon University
- Probabilistic Graphical Models, Daphne Koller, Stanford University

Deep Learning

- Deep learning at Oxford 2015 Nando de Freitas
- DS-GA 1008 Deep Learning, New York University
- · Deep Learning, Stanford University
- MOOC: Neural Networks for Machine Learning Geoffrey Hinton 2016 Coursera
- · Deep Learning University of Waterloo
- Neural networks class Université de Sherbrooke (YouTube)

Advanced Machine Learning

- Machine Learning 2013 Nando de Freitas, UBC
- Machine Learning: 2014-2015, University of Oxford
- 10-702/36-702 Statistical Machine Learning Larry Wasserman, Spring 2016, CMU (Spring 2015)
- 10-715 Advanced Introduction to Machine Learning CMU (YouTube)

• Natural Language Processing and Computer Vision

- CS 224d Deep Learning for Natural Language Processing, Stanford University (Lectures Youtube)
- CS 224N Natural Language Processing, Stanford University
- MOOC: Natural Language Processing, Dan Jurafsky & Chris Manning Coursera
- MOOC Natural Language Processing Coursera, University of Michigan
- CS 231n Convolutional Neural Networks for Visual Recognition, Stanford University
- Machine Learning for Computer Vision TUM

• Misc Machine Learning Topics

- CS 6955 Clustering, Spring 2015, University of Utah
- Info 290 Analyzing Big Data with Twitter, UC Berkeley school of information
- 10-725 Convex Optimization: Spring 2015 CMU
- 10-801 Advanced Optimization and Randomized Algorithms
- CS 229r Algorithms for Big Data, Harvard University (Youtube)
- CAM 383M Statistical and Discrete Methods for Scientific Computing, University of Texas
- Statistical Learning- Classification University of Waterloo
- 9.520 Statistical Learning Theory and Applications, Fall 2015 MIT
- · Reinforcement Learning UCL
- Regularization Methods for Machine Learning 2016 (YouTube)

- CSE P 506 Concurrency (Spring 2011) University of Washington (Videos)
- CSEP 524 Parallel Computation University of Washington (Videos)
- CS 282 (2014): Concurrent Java Network Programming in Android
- Concurrency Theory and Practice WS 2010 Universität Freiburg

Computer Networks

- Prof. Shiv Kalyanaraman's Online Audio and Video Lectures on Computer Networking
- Audio/Video Recordings and Podcasts of Professor Raj Jain's Lectures Washington University in St. Louis (YouTube)
- Computer Networks, Tanenbaum, Wetherall Computer Networks 5e Video Lectures (U Washington MOOC)
- CSEP 561: PMP Network Systems, Fall 2013 University of Washington (Videos)
- CSEP 561 Network Systems, Autumn 2008 University of Washington (Videos)
- Introduction to Data Communications 2013, Steven Gordon Thammasat University, Thailand
- Communication Systems SS 2008 Universität Freiburg
- Communication Systems (Telecommunication from ISDN/GSM to VoIP) WS 2010 Universität Freiburg
- Internetworking SS 2005 Universität Freiburg
- Mobile Computing WS 2004 Universität Freiburg
- Network Algorithms SS 2013 Universität Freiburg
- Telecommunication Systems SS 2012 Universität Freiburg
- Wireless Sensor Networks WS 2006 (English) Universität Freiburg

Mobile Applications Development

- MOOC Programming Mobile Applications for Android Handheld Systems University of Maryland
- CS 193p Developing Applications for iOS, Stanford University
- CS S-76 Building Mobile Applications Harvard
- · Android App Development for Beginners Playlist thenewboston
- Android Application Development Tutorials thenewboston
- MOOC: Developing Android Apps Udacity
- MOOC: Advanced Android App Development Udacity
- CSSE490 Android Development Rose-Hulman Winter 2010-2011, Dave Fisher
- · iOS Course. Dave Fisher

Math for Computer Scientist

- 6.042J Mathematics for Computer Science, Fall 2010, MIT OCW
- 6.042J Mathematics for Computer Science, Spring 15, MIT OCW
- Computer Science 70, 001 Spring 2015
- 6.041 Probabilistic Systems Analysis and Applied Probability MIT OCW
- 10-600 Math Background for ML CMU
- Linear Algebra Review CMU
- Statistics 110: Probability
- 18.06 Linear Algebra, Prof. Gilbert Strang, MIT OCW
- 36-705 Intermediate Statistics Larry Wasserman, CMU
- MOOC: Statistical Inference Coursera
- · MOOC: Statistics: Making Sense of Data, Coursera
- STATS 250 Introduction to Statistics and Data Analysis, UMichigan
- 131B Introduction to Probability and Statistics, UCI
- Multiple View Geometry Lecture 1 (Prof. Daniel Cremers) TUM
- The Probability and Statistics Full Course YouTube
- A first course in Linear Algebra N J Wildberger UNSW

Web Programming and Internet Technologies

- CS 75 Building Dynamic Websites Harvard University
- CSE 199: How the Internet Works, Fall 2016 University of Buffalo
- Web Search SS 2006 Universität Freiburg
- CSEP545: Transaction Processing for E-Commerce, Winter 2012 University of Washington (Videos)
- CT 310 Web Development Colorado State University
- Internet Technologies and Applications 2012, Steven Gordon Thammasat University, Thailand
- CSCI 3110 Advanced Topics in Web Development, Fall 2011 ETSU iTunes
- CSCI 5710 e-Commerce Implementation, Fall 2015 ETSU iTunes
- XML and Semantic Web-Technologies SS 2005 Universität Freiburg
- MOOC: Web Development Udacity

Theoretical CS and Programming Languages

- MOOC Compilers Stanford University
- CS 164 Hack your language, UC Berkeley (Lectures Youtube)
- CS 173 Programming Languages, Brown University (Book)
- CS 421 Programming Languages and Compilers, UIUC (Videos)
- CSC 253 CPython internals: A ten-hour codewalk through the Python interpreter source code, University of Rochester
- CSEP 501 Compiler Construction, University of Washington (Lectures Youtube)
- CSEP 505 Programming Languages, Winter 2015 University of Washington
- DMFP Discrete Mathematics and Functional Programming, Wheaton College
- CS 374 Algorithms & Models of Computation (Fall 2014), UIUC (Lecture videos)
- 6.045 Automata, Computability, and Complexity, MIT (Lecture Videos)
- MOOC: Automata Jeffrey Ullman Coursera
- CS581 Theory of Computation Portland State University (Lectures Youtube)
- Theory of Computation Fall 2011 UC Davis
- TDA555 Introduction to Functional Programming Chalmers University of Technology (Lectures YouTube)
- · Philip Wadler Haskell lecture recordings
- Functional Programming University of Edinburgh 2016-17
- MOOC Functional Programming Principles in Scala by Martin Odersky (YouTube)
- CS294: Program Synthesis for Everyone
- MOOC: Principles of Reactive Programming, Scala Coursera

Computer Organization and Architecture

- How Computers Work Aduni
- 6.004 Computation Structures Spring 2013, MIT
- CS 61C Machine Structures, UC Berkeley (Lectures YouTube)
- CS1: Higher Computing Richard Buckland UNSW
- 18-447 Introduction to Computer Architecture, CMU (Lectures YouTube Fall 15)
- CS 152 Computer Architecture and Engineering, UC Berkeley
- CSEP 548 Computer Architecture Autumn 2012 University of Washington
- 15-418 Parallel Computer Architecture and Programming, CMU (Lecture Videos)
- EE445L Embedded Systems Design Lab, Fall 2015, UTexas
- CS149 Embedded Systems Fall 2014 UCBerkeley
- ECE 4760 Designing with Microcontrollers Fall 2016, Cornell University (Lectures Youtube)
- CS 267 Applications of Parallel Computers, Spring 16 UC Berkeley (YouTube)
- CMPE 118/L(218/L) Mechatronics Fall 2015
- Software Engineering for Embedded Systems WS 2010/11 iTunes HPI

- ELEC2141 Digital Circuit Design, UNSW
- MOOC: Computer Architecture, David Wentzlaff Princeton University/Coursera
- MOOC: From NAND to TetrisBuilding a Modern Computer From First Principles (YouTube)
- MOOC: Heterogeneous Parallel Programming Coursera

Security

- 6.858 Computer Systems Security MIT OCW
- CSEP590A: Practical Aspects of Modern Cryptography, Winter 2011 University of Washington (Videos)
- CIS 4930/ CIS 5930 Offensive Computer Security, Florida State University
- 18-636 Browser Security, Stanford
- Internet Security Weaknesses and Targets (WT 2015/16) (WT 2012/13 (YouTube))
- IT Security, Steven Gordon Thammasat University, Thailand
- · Security and Cryptography, Steven Gordon Thammasat University, Thailand
- Web Security SS 2008 Universität Freiburg
- CS461/ECE422 Computer Security University of Illinois at Urbana-Champaign (Videos)
- MOOC: Cryptography Coursera
- MOOC: Intro to Information Security Udacity
- Introduction to Cryptography, Christof Paar Ruhr University Bochum, Germany

Computer Graphics

- CS 5630/6630 Visualization, Fall 2016, University of Utah (Lectures Youtube)
- Advanced Visualization UC Davis
- Computer Graphics Fall 2011
- Introduction to Graphics Architecture
- CS184 Computer Graphics, Fall 2012 UC Berkeley
- Rendering / Ray Tracing Course, SS 2015 TU Wien

Image Processing and Computer Vision

- EE225B Digital Image Processing, Spring 2014 UC Berkeley (Videos Spring 2006)
- EE637: Digital Image Processing I Purdue University (Videos Sp 2011, Videos Sp 2007)
- Image Processing and Analysis UC Davis
- CAP 5415 Computer Vision, University of Central Florida
- Lecture: Variational Methods for Computer Vision (Prof. D. Cremers) TUM
- Image Processing and Analysis (Course) UC Davis
- Introduction to Vision and Robotics
- EENG 512 / CSCI 512 Computer Vision Colorado School of Mines
- MOOC: Digital Image procesing Duke/Coursera
- MOOC: Introduction to Computer Vision Udacity

HCI

- CS147: Introduction to Human-Computer Interaction Design Stanford
- CSEP 510: Human Computer Interaction
- Programming for Designers COMP1400-T2 (2010) UNSW

Misc

Computational Biology

- Skiena's Computational Biology Lectures
- 6.802J/ 6.874J Foundations of Computational and Systems Biology MIT OCW
- Bioinformatic II WS 2010 Universität Freiburg
- · Computational Finance
 - Skiena's Computational Finance Lectures
 - MOOC: Mathematical Methods for Quantitative Finance, University of Washington/Coursera)
 - 18.S096 Topics in Mathematics with Applications in Finance, MIT OCW
- Game Development
 - MIT CMS.611J Creating Video Games, Fall 2014
 - CS 3152 Introduction to Computer Game Development, Cornell University
 - Unity3D Tutorials
 - MOOC: Beginning Game Programming with C# Coursera
- AM 207 Monte Carlo Methods and Stochastic Optimization, Harvard University
- CS 223A Introduction to Robotics, Stanford University
- Open Sourced Elective: Database and Rails Intro to Ruby on Rails, University of Texas (Lectures Youtube)
- SCICOMP An Introduction to Efficient Scientific Computation, Universität Bremen (Lectures Youtube)
- Lecture: Visual Navigation for Flying Robots TUM
- CS E-259 XML with Java, Java Servlet, and JSP Harvard
- CSE 40373 Spr 2009: Multimedia Systems
- Exposing Digital Photography Harvard Extension School
- XML and Databases WS 2011 Universität Freiburg
- MOOC: Matlab Coursera
- · Computing for Computer Scientists University of Michigan
- Additional Information
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 YouTube channels for Universities, University pages, Google, itunes U, blog posts and similar sites like awesomecourses etc. If you are University Professor for any course listed below and would like Your course to be removed
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