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Cornell University
Computer Science

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John E. Hopcroft

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vita

Book_with_Avrim Blum and Ravi Kannan

Education:

Stanford University Electrical Engineering PhD 1964
Stanford University Electrical Engineering MS 1962
Seattle University Electrical Engineering BS 1961

Employment:

2004-present IBM Professor of Engineering and Applied Mathematics, Cornell University

1994-2001 - The Joseph Silbert Dean of Engineering,
Cornell University

1992-1993 - Associate Dean for College Affairs,
College of Engineering, Cornell University

1987-1992 - Chair,
Department of Computer Science, Cornell University

1985-1993 - Joseph C. Ford Professor,
College of Engineering, Cornell University

1972-to present - Professor,
Department of Computer Science, Cornell University

1970-1971 - Visiting Associate Professor,
Stanford University

1967-1971 - Associate Professor,
Department of Computer Science, Cornell University

1964-1967 - Assistant Professor,
Department of Electrical Engineering, Princeton University

Honors

2018 Society of Industrial and Applied Mathematics Distinguished Service to the Profession Award

2017 Foreign member Chinese Academy of Sciences

2017 Honorary professorship, Harbin Institute of Technology

2017 NEC C&C Foundation Award

2017 National Academy of Engineering Simon Ramo Founders Award

2017 Honorary Professorship, Peking University

2016 China Gold Metal Friendship Award

2016 Microsoft Research Outstanding Collaborator

2015 Honorary professorship, Soochow University, Suzhou, China.
2014 Honorary professorship, Jilin University, Jilin

2013-Honorary professorship, Huazhong University of Science and Technology

2011-Designated by Merrill Scholar Aaron Sidford as the faculty member who made the most important contribution to his education at Cornell

2011-Honorary professorship Jiao Tong University, Shanghai

2011-Honorary Doctorate Beijing Institute of Technology

2010-Ralph S. Watts 72 Excellence in Teaching Award

2010-Honorary degree, Doctor of Engineering, HKUST

2010-Honorary professorship Chongqing University

2010-Designated by Merrill Scholar Christie Brandt as the faculty member who made the most important contribution to her education at Cornell.

2010-Einstein professor Chinese Academy of Sciences

2010-IEEE von Neumann Medal

2010-Honorary Professor Yunnan University

2010-Recognized by the Societe Mathematique de Tunisie (SMT) for "notable services and outstanding contributions in the application of mathematical theories in theoretical computer science",

2009-Honorary degree, Saint Petersburg State University of Information Technologies, Mechanics & Optics. Saint Petersburg, Russia

2009-Member of the National Academy of Sciences

2009-Fellow of Society for Industrial and Applied Mathematics

2008-ACM Karl V. Karlstrom Outstanding Educator Award

2008 -Honorary professorship, Beijing Institute of Technology

2008 - Honorary Doctor of Engineering, University of Sydney

2007 - CRA Distinguished Service Award

2006 - Assoc. of Computer Science Undergraduates Faculty of the Year Award

2005 - IEEE Harry H. Goode Memorial Award

2004 - IBM Professor of Engineering and Applied Mathematics

1994 - Fellow of the Association for Computing Machinery

1990 - Doctor of Humanities Degree, Honoris Causa, Seattle University

1989 - Member of the National Academy of Engineering

1987 - Fellow of the Institute of Electrical and Electronics Engineering

1987 - Fellow of the American Association for the Advancement of Science

1987 - Fellow of the American Academy of Arts and Sciences

1986 - Association for Computing Machinery A.M. Turing Award (shared with R.J. Tarjan)

1985-1993 - Joseph C. Ford Professor of Computer Science

1961-1964 - National Science Foundation Graduate Fellow

PhD students

Princeton

1967 Alfred V. Aho, "Indexed Grammars - an Extension of Context Free Grammars".

1967 Allen J. Korenjak, "Deterministic Language Processing".

Cornell

1970 Leslie R. Kerr, "The Effect of Algebraic Structure on the Computational Complexity of Matrix Multiplication".

1971 David J. Lewis, "Closure of Classes of Formal Languages under Substitution Operators".

1973 Jean A. Musinski, "Determining the Complexity of Matrix Multiplication and Other Bilinear Forms".

1973 Harry B. Hunt III, "On the Time and Tape Complexity of Languages".

1975 Zvi Galil, "The Complexity of Resolution Procedures for Theorem Proving in the Propositional Calculus".

1975 Jin K. Wong, "Isomorphism Problems Involving Planar Graphs".

1976 Thomas D. Howell, "Tensor Rank and the Complexity of Bilinear Forms".

1976 Jean-Jacques Pansiot, "Some Decidable Cases of the Reachability Problem for Vector Addition Systems".

1979 Giles Brassard, "Relativized Cryptography".

1980 Steven Fortune, "Topics in Computational Complexity".

1980 James Wyllie, "The Complexity of Parallel Computations".

1980 Merrick Furst, "A Subexponential Algorithm for Trivalent Graph Isomorphisms".

1982 Richard Cole, "Two Problems in Graph Theory".

1983 Cynthia Dwork, "Bounds of Fundamental Problems in Parallel and Distributed Computation".

1984 Chanderjit Bajaj, "Geometric Optimization and Computational Complexity".

1984 Gordon Wilfong, "Multiple Object Motion Planning".

1984 Paul Deitz, "Intersection Graph Algorithms."

1986 Joseph Warren, "On Algebraic Surfaces Meeting with Geometric Continuity".

1986 Balasubramaniam Natarajan, "On Moving and Orienting Objects".

1987 Lee Barford, "A Graphical, Language-Based Editor for Generic Solid Models Represented by Constraints".

1987 John Johnstone, "The Sorting of Points Along an Algebraic Curve".

1989 Jim Cremer, "An Architecture for General Purpose Physical System Simulation--Integrating Geometry, Dynamics, and Control".

1991 Baining Guo, "Modeling Arbitrary Smooth Objects with Algebraic Surfaces".

1991 James Stewart, "The Theory and Practice of Robust Geometric Computation, or, How To Build Robust Solid Modelers".

1992 Daniela Rus, "Fine Motion Planning for Dexterous Manipulation."

1992 Michael Wilk, "Efficient Object-Oriented Constraint Solving for Complex Models."

1993 Sridhar Sundaram, "Fast Algorithms for N-body Simulation."

1998 Kristen Summers, "Automatic Discovery of Logical Document Structure"

2006 Andre Allavena, "On the Correctness of Gossip-Based Membership Protocols"

2006 Anirban Dasgupta, "Learning using spectral methods"

2009 Daniel Sheldon, "Manipulation of PageRank and Collective Hidden Markov models"

2011 Yookyung Jo, "Using graphs for topic discovery"

2012 June Andrews “Community Detection in Large Networks”

2012 Liaoruo Wang “The Structure and Dynamics of Large Social Networks”

2013 Sucheta Soundarajan, “Communities in Social Networks”

2017 Yixuan Li

Current students

John E. Hopcroft is the IBM Professor of Engineering and Applied Mathematics in Computer Science at Cornell University. From January 1994 until June 2001, he was the Joseph Silbert Dean of Engineering. After receiving both his M.S. (1962) and Ph.D. (1964) in electrical engineering from Stanford University, he spent three years on the faculty of Princeton University. He joined the Cornell faculty in 1967, was named professor in 1972 and the Joseph C. Ford Professor of Computer Science in 1985. He served as chairman of the Department of Computer Science from 1987 to 1992 and was the associate dean for college affairs in 1993. An undergraduate alumnus of Seattle University, Hopcroft was honored with a Doctor of Humanities Degree, Honoris Causa, in 1990.

Hopcroft's research centers on theoretical aspects of computing, especially analysis of algorithms, automata theory, and graph algorithms. He has coauthored four books on formal languages and algorithms with Jeffrey D. Ullman and Alfred V. Aho. His most recent work is on the study of information capture and access.

He was honored with the A. M. Turing Award in 1986. He is a member of the National Academy of Sciences (NAS), the National Academy of Engineering (NAE), a foreign member of the Chinese Academy of Sciences, and a fellow of the American Academy of Arts and Sciences (AAAS), the American Association for the Advancement of Science, the Institute of Electrical and Electronics Engineers (IEEE), and the Association of Computing Machinery (ACM). In 1992, he was appointed by President Bush to the National Science Board (NSB), which oversees the National Science Foundation (NSF), and served through May 1998. From 1995-98, Hopcroft served on the National Research Council's Commission on Physical Sciences, Mathematics, and Applications.

In addition to these appointments, Hopcroft serves as a member of the SIAM financial management committee, IIIT New Delhi advisory board, Microsoft's technical advisory board for research Asia, and the Engineering Advisory Board, Seattle University.

Courses

- **CS 381** - Fall 2007
- **CS 683** - Spring 2008
- **CS 381** - Fall 2008
- **CS 485** - Spring 2009
- **CS 381** - Fall 2009
- CS 4850 - Spring 2010
- CS 3810 - Fall 2010
- CS 2800 - Fall 2011
- CS 4810 - Spring 2012
- CS 2800 - Fall 2012
- CS 4850 - Spring 2013
- CS 6825 - Fall 2013
- CS 4850 - Spring 2014
- CS 6825 - Fall 2014
- CS 4850 - Spring 2015
- CS 2800 - Fall 2015
- CS 4850 - Spring 2016
- sabbatical - Fall 2016
- CS 4850 - Spring 2017

Research

- The Analysis and Modeling of Large Linked Networks (NSF)
- Information Forensics (AFOSR)

Talks

- "Computer Science in the Information Age", University of Nebraska, March 22, 2007

- "Computer Science in the Information Age", Iowa State University, Ames, IA, April, 2007
- "Computer Science in the Information Age", University of Iowa, Iowa City, IA, April 2007
- "Future Directions in Computer Science," Hanoi University of Technology, Hanoi, Vietnam, August 6, 2007
- "Future Directions for Computer Science", Keynote Address, International Forum on Computer Science and Advanced Software Technology, Nanchang University, Nanchang, P.R. China, June 10, 2007
- "Future Directions for Computer Science", Keynote Address, 21st Century Computing Conference Oct 29, 2007, Nanjing, China
- "Future Directions for Computer Science", Keynote Address, 21st Century Computing Conference Nov 2, 2007, Seoul, Korea
- "Computer Science in the Information Age", RPI , April 3, 2008
- "Computer Science in the Information Age", Drexel, May 8, 2008
- "Computer Science in the Information Age", Changsha, June 19, 2008
- "Computer Science in the Information Age", University of Chile, Santiago, August 7, 2008
- "Computer Science in the Information Age", Vietnam National University, Hanoi, August 19, 2008
- "Computer Science in the Information Age", Hanoi University of Technology, Hanoi, August 19, 2008
- "Computer Science in the Information Age", IIIT Hyderabad, Sept 29, 2008
- "Computer Science in the Future", Microsoft Chennai, India Oct 1, 2008
- "Research Directions Supporting the Information Age," Beijing Nobel Laureates Forum 2008, Beijing 2008
- "The Future of Computer Science", Beihang University, June 16, 2009
- "The Future of Computer Science", Institute of Software, Chinese Academy of Sciences, June 17, 2009
- "New Directions in Computer Science Research", Hefei University of Technology, June 24, 2009
- "The Future of Computer Science Research", Infosys, Bangalore, July 15, 2009
- "A Vision of Computer Science for Tomorrow", St Petersburg Scientific Forum, St Petersburg, Russia, Sept 21, 2009
- "Future research directions in computer science," Tsinghua University, Beijing, China, Oct. 13, 2009
- "Computer Science in the Information Age", KAUST University, Saudi Arabia, Jan 18, 2010
- "Computer Science in the information age", University of Carthage March 23, 2010
- "Computer Science Theory to support Research in the Information Age", University of Southern California, April 6, 2010.
- "Computer Science Theory to support Research in the Information Age", University of Cincinnati, April 9, 2010
- "Progress in New Computer Science Research Directions", Hefei University of Science and Technology, May 18, 2010.
- "Progress in New Computer Science Research Directions", Chinese Academy of Sciences Software Institute, May 21, 2010
- "Creating a science base to support new directions in computer science ", Chinese Academy of Sciences Software Institute, May 24, 2010
- "Creating a science base to support new directions in computer science", Yunnan University, May 28, 2010
- "New Research Directions in the Information Age", Keynote address TAMC Prague 2010
- “Creating a science base to support new directions in computer science”. Wuhan University, August 10, 2010

  “Getting started in research”, FAW 2010, Wuhan 2010.

  “Creating a science base to support new directions in computer science”. Chongqing University, August 17, 2010

  “Creating a science base to support new directions in computer science , Seattle University, Oct 11, 2010.

  “Growing talent”, Microsoft Asian Faculty Summit, Shanghai, China Oct 18, 2010.

  “Creating a science base to support new directions in computer science”, Microsoft Computing in the 21st Century, Shanghai, Oct 20, 2010.

  “Tracking Communities and Scientific Ideas in the Digital World”, Southern Methodist University, Nov. 5, 2010

  “Creating a science base to support new directions in computer science”, HKUST Nov 15, 2010.

  “Computer science theory to support research in the information age,” Penn State University, Jan 28, 2011.

  “Computer science theory to support research in the information age,” IIT Bombay, Feb 18, 2011

  “Computer science theory to support research in the information age,” IIIT New Delhi, Feb. 19, 2011

  “Computer science theory to support research in the information age,” IIT New Delhi, Feb 21, 2011

  “Computer science theory to support research in the information age,” IIIT Hyderabad, Feb 22, 2011

  “Computer science theory to support research in the information age,” Microsoft India Development Center, Feb 23, 2011

  “Computer science theory to support the information age”, KAUST Feb 26,2011.

  “Computer science theory to support research in the information age”, Science Council of Japan, Tokyo, Japan, March 6, 2011

"The information future", keynote address, Second Kuwait Conference on e-Services and e-Systems, Kuwait University, April 6, 2011.
"Computer science theory to support research in the information age", UFMG, Belo Horizonte, Brazil, April 15, 2011.
"Computer science theory to support research in the information age", FUCAPI, Manaus, Brazil, April 18, 2011.
"Computer science theory to support research in the information age", Digiteo, Paris, May 5, 2011.
"Computing and the Future," Microsoft Latin American Faculty Summit, Catagena, May 18, 2011
"Future directions in computer science", Jiao Tong University, Shanghai, May 26, 2011.
"Computing and the Future", Zhejiang Normal University, May 29, 2011.
"Computing and the Future", Chongqing University of Posts and Telecommunication, June 2, 2011.
"Computing and the Future", Chinese Academy of Science, Chongqing, June 8, 2011.
"Future directions in Computer Science," Worcester Polytechnic Institute, Sept. 30. 2011
"Research ideas in spectral methods for community detection," Jiao Tong University, Shanghai, Jan 10, 2012
"Building a Science Base for the Information Age", Peking University, Beijing, May 15, 2012.
"A Turing Lecture", Chinese Academy of Sciences Software Institute, Beijing, May 16, 2012.
"Advances in computer science", High School Star program, Chinese Academy of Sciences Software Institute, Beijing, May 18, 2012.
"Building a Science Base for the Information Age", iamen University, iamen, June 2, 2012.
"New Directions in Computer Science", Purdue University, Sept 21, 2012.
"New Directions in Computer Science", keynote address CLEI 2012, Medellin, Columbia, Oct 3, 2012.
"Future Directions in Computer Science Research", keynote address, ISAAC, Taiwan, Dec. 19, 2012.
"Future Directions in Computer Science Research", IMPA, Rio de Janeiro, Brazil, March 20, 2013
"Future Directions in Computer Science Research", PUC-Rio, Rio de Janeiro, Brazil, March 21, 2013
"Future Directions in Computer Science Research", USP, San Paulo, Brazil, March 22, 2013
"Future Directions in Computer Science Research",Dallan Maritime University, Dallan, China, June 27,2013
"Future Directions in Computer Science Research", Wuhan, China May 30, 2013
"Future Directions in Computer Science Research", TU Berlin, Sept 20, 2013.
"Future Directions in Computer Science Research", Heidelberg Laureate Form Sept 27, 2013.
"Future Directions in Computer Science Research", WI-IAT keynote address, Atlanta, Georgia Nov. 19, 2013
"Future Directions in Computer Science Research", CINVESTAV, Mexico City, Mexico Dec.2 2013
"Future Directions in Computer Science Research", Wayne State University, Detroit Michigan, Feb. 25, 2014.
"Future Directions in Computer Science Research", Chioa Tung University, Taiwan, May 23, 2014.
"Future Directions in Computer Science Research", Fudan University, Shanghai. China June 12, 2014.
"Future Directions in Computer Science Research", Central South University, Chnagsha, China June 27, 2014.
"Mathematics Supporting the Information Age," Advanced Disciplines Lectures for social network and data mining, Tsinghua University, August 11, 2014.
"Future Directions in Computer Science Research", Institute of Information Science, Academia Sinica, Tiawan Dec 18,2014.
"Future Directions in Computer Science Research", Harbin Institute of technology, Harbin, China Dec 27, 2014.
"Future Directions in Computer Science Research", Jilin University, Jilin, China Dec 29, 2014.
"Future Directions in Computer Science Research", Jiangxi Normal University, Nanchang, China Jan 5, 2015.
"Future Directions in Computer Science Research", INTEL Shanghai, Shanghai, China Jan 14, 2015

- "The Future of Computer Science" keynote address, ACM Gao, India Feb. 6, 2015.
"The Future Role of Computer Science," Soochow University, Suzhou, China, May 29, 2015
- "Entering the information age," Brazilian Academy of Sciences, 1ooth anniversary Magna Conference, May 2, 2016.

"Exciting computer science research directions," Heidelberg Forum, Heidelberg, Germany, Sept. 19, 2016.
"Entering the information age," Chinese University of Hong Kong, Hong Kong, Oct 6, 2016.
"The future of computer science," Chinese University of Hong Kong, Shenzhen, China, Nov 24, 2016.
"How simple questions lead to fundamental research," Shanghai JiaoTong University, Dec 14, 2016.
"Entering the information age," Andy Yao 70th, Tsinghua University, Beijing, China, Dec 19, 2016.
"How to improve teaching," CHED, Shanghua, China, Dec 29,2016

"Research in the information age," National University of Defense Technology, Changsha, China, Dec 31, 2016.
