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Computer science is the study of the design, analysis, communication, implementation, and application of computational processes. At Rensselaer, education in computer science prepares students for solving applied real-world problems and for conducting research in computer science. The program provides students with a solid grounding in both theory and practice.

Students in Computer Science are exposed to applied areas such as robotics, databases, programming language design, and operating systems. Research areas include bioinformatics, computational science and engineering, computer vision, database systems, networking, parallel computing, pervasive computing, robotics, semantic web, software design, and theoretical computer science.

DEGREES OFFERED

Computer Science  B.S., M.S., Ph.D.
416 B.S., 109 M.S., and 49 Ph.D. degrees awarded over the last four years

AREAS OF GRADUATE RESEARCH

- Algorithms and theory
- Artificial intelligence
- Bioinformatics
- Computational finance
- Computational linguistics
- Computer networks
- Computer vision; biomedical image analysis
- Concurrent programming and cloud-based computing
- Data cyberinfrastructure
- Data mining
- Database systems; manufacturing applications
- Distributed and large-scale simulation
- Distributed systems
- Game theory
- Graphics and visualization
- High-performance and massively parallel computation
- Machine learning
- Program analysis and verification
- Robotics
- Semantic web and web science
- Security
- Social and cognitive networks
- Software engineering

RENSSELAER INSTITUTE FOR DATA EXPLORATION AND APPLICATIONS (IDEA)

The new Institute brings together the wealth of data in high performance computing, web science, data science, network science, cognitive computing, and immersive technologies that are available at Rensselaer. It involves faculty and students across the five schools to address some of the most challenging problems facing our world today.

AFFILIATED RESEARCH CENTERS

- Center for a Digital Society
- Center for Computational Innovations (CCI)
- Data Science Research Center
- Landgraf Center for Computer Vision, Graphics, and Robotics
- Scientific Computation Research Center (SCOREC)
- Social Cognitive Networks Academic Research Center (SCNARC)
- Network Science and Technology Center
### Faculty and Research Areas

**Computer Science**

**Professor**

**Francine Berman**

Edward P. Hamilton Distinguished Professor in Computer Science

Big data and data cyberinfrastructure, preservation and access, e-science, grid, parallel, and high performance computing.

**Christopher Carothers**

Massively parallel computing, parallel discrete-event simulation, systems simulations.

**Mark Goldberg**

Experimental design and analysis of algorithms, combinatorics and graph theory, applications to social networks.

**Martin Hardwick**

Data management systems for engineering and manufacturing applications.

**Jim Hendler**

Tetherless World Senior Constellation Professor

Artificial intelligence, semantic web, web science, agent-based computing, open government data, and high performance processing.

**Malik Magdon-Ismail**

Theory, algorithms and applications of computational learning systems, computational finance, bioinformatics, social and communication network analysis.

**Deborah L. McGuinness**

Tetherless World Constellation Co-Chair

Semantic web, intelligent systems, semantically enabled informatics, semantic e-Science.

**David Spooner**

Associate Dean for Undergraduate Education and Administration

Information security, computer science, and information technology education.

**Charles Stewart**

Department Head

Computer vision, biological and environmental applications.

**Boleslaw Szymanski**

Claire and Roland Schmitt Distinguished Professor, Director of the Center for Network Science and Engineering

Social, computer, and sensor networks; distributed and parallel computing; distributed simulation.

**Jeff Trinkle**


**Bülent Yener**

Director of Data Science Research Center

Computer networks, biological networks, bioinformatics, security, combinatorial optimization.

**Mohammed Zaki**

Data mining, machine learning, bioinformatics, complex graphs and networks, data science, high performance computing.

**ASSOCIATE PROFESSOR**

**Sibel Adali**

Social networking, trust, multimedia database systems, information integration, semantic web.

**Elliot Anshelevich**

Design and analysis of algorithms, strategic agents in networks, algorithmic game theory.

**Barbara Cutler**

Computer graphics, visualization, geometry processing, algorithms, design tools for architecture.

**Petros Drineas**

Design and analysis of algorithms, linear algebra algorithms and their applications in data mining.

**Heng Ji**

Edward P. Hamilton Development Chair

Natural language processing with an emphasis on the design of efficient algorithms to extract information from text.

**Mukkai Krishnamoorthy**

Programming environments, design and analysis of combinatorial algorithms, open source software development issues, network visualization.

**Ana Milanova**

Software engineering, compilers, program analysis, software testing, verification, reliable software systems.

**Carlos Varela**

Concurrent programming models and languages, adaptive scalable distributed computing, computational science and engineering.

**ASSISTANT PROFESSOR**

**Stacy Patterson**

Clare Boothe Luce Assistant Professor

Theoretical foundations of dynamic distributed computation and networks, cooperative control, and signal processing.

**Lirong Xia**

Artificial intelligence, multi-agent systems, decision-making under uncertainty, algorithm design, social choice (voting) theory, game theory.

To apply, learn more at [www.rpi.edu/dept/admissions/graduate/](http://www.rpi.edu/dept/admissions/graduate/)