

facts

Computer Science



An Introduction to Computer Science

Computers are transforming our society, causing sweeping changes throughout the business world and to the world of science and technology. These changes are affecting the way the average person carries out such everyday activities as working, writing, shopping, cooking, banking, traveling and home entertainment.

The academic discipline of computer science investigates the fundamental concepts supporting such applications: concepts related to computers executing programs that operate on data. Thus, computer science provides a framework for understanding current applications as well as applications of the future.

Depending on their goals and interests, majors in computer science have a variety of opportunities upon graduation. For those who aspire to an intellectually challenging and financially rewarding career, among the most promising of all careers today are those of the systems analyst and software engineer. Strong communication skills, fostered by computer science and other liberal arts courses, also prepare one for becoming a consultant between the technical side of computers and the "people" side of applications.

Since the study of computer science provides a perspective for evaluating the feasibility of potential applications, computer science majors also are in a better position to achieve an actual breakthrough in applying computers to some new endeavor. Finally, for those who dream about becoming pioneers in a field of research, the field of computer science offers fertile ground. Although much has been discovered in the past few decades, many fundamental questions raised within this academic discipline remain unanswered.

Computer Science Graduates of the University of Richmond

Most students who major in computer science at the University of Richmond move directly into a programming, analyst or consultant position after graduation. Several surveys have shown that these graduates earn the highest starting salaries of any undergraduate major at the University.

Those outstanding students who aspire to a career in research usually pursue a doctorate in the discipline after graduation. The University of Richmond ranks well among American peer institutions in the number of graduates who have gone on to earn the computer science Ph.D.

Examples of Employers Hiring Recent Graduates

Accenture
American Management Systems
Circuit City Stores Inc.
Computer Sciences Corporation
IBM
Lockheed-Martin
Lucent Technologies
Microsoft
Motorola
Naval Surface Warfare Center
Northrop Grumman Corporation
Shared Medical Systems
Systems and Computer Technologies
Systems Research and Applications

A Sampling of Schools Accepting Recent Graduates

California Institute of Technology
Carnegie Mellon University
Cornell University
Massachusetts Institute of Technology (MIT)
Stanford University

University of California
University of Maryland
University of North Carolina
University of Texas
University of Virginia
University of Washington
Yale University

Many of those accepting job offers upon graduation also pursue advanced degrees on a part-time basis within a few years, with the tuition expense often covered by their companies as they continue to work.

The Computer Science Major

To prepare themselves for employment or potential graduate study, computer science majors take courses that provide programming and data-structuring experience in a variety of languages. In addition, majors choose among electives in the more advanced topics of operating systems, database management systems, theory of computation, computer networking, computer graphics, computer security, simulations and the design and implementation of programming languages. To prepare for work after graduation, many majors work within a team, developing a substantial software application.

Although our major program requires 33 semester hours of computer science and six hours of mathematics, including three hours of calculus, it also is possible to fulfill the requirements of a minor in computer science while majoring in a related discipline, such as economics, business or one of the sciences.

The Learning Environment

The math and computer science department, classrooms and computer facilities are housed in Jepson Hall, a

newer building on campus designed with striking Collegiate Gothic architecture. Computer science major courses are limited to 20 students each, which provides ample time for interaction between students and faculty.

Windows XP Professional systems connected via the campus network are available for use by students and faculty in computer science. Special topic courses are offered to reflect current directions in the field, and outstanding students are encouraged to pursue independent study and research projects with the faculty. The department has established an honors program to promote faculty-student collaboration on research projects. Unlike institutions with graduate programs in computer science, it is undergraduates who participate in the University of Richmond's research and scholarly endeavors. Teaching and scholarly work in computer science are supported by remarkable resources.

Recent Student Research Projects

- Francisco Chinchilla, "Self-Similarity in Network Traffic"
Danielle Clement, "Coevolution of Evolved Expressions"
David Green, "A Palette Decomposition Algorithm and Its Use as a Digital Effect"
Ed Kenney, "Securing Distributed Metacomputations"
Olga Troyanskaya, "Method for the Identification of Origins of Replication and Genes Regulated by DNA"
Ryan Webb, "Ecological Niching in an Interactive Simulation"

Scholarships/Awards

(Department chair can provide details)

- The Joseph and Mary C. Kent Computer Science Prize
The Outstanding Student in Computer Science Award
The E. Sherman Grable Scholarship
The CRA Outstanding Undergraduate Award
The ACM Undergraduate Scholarship

Distinguished Alumni

Gregory Morrisett graduated in 1989. He subsequently received his Ph.D. in computer science from Carnegie Mellon University in 1995 and joined the faculty at Cornell. In 1998, he was one of 100 young scientists awarded a Sloan Foundation Fellowship and in 1999, he received one of 38 National Science Foundation Faculty Early Career Development grants awarded in the computer science systems area. Dr. Morrisett recently was appointed the Allen B. Cutting Professor of Computer Science at Harvard University.

Michael Cammarano graduated in 2000. He was accepted for graduate study by the most prestigious programs in the country, which included Carnegie Mellon, MIT, Stanford, the University of California at Berkeley and the University of Washington. He was one of 51 recipients in the computer science area of a National Science Foundation Graduate Fellowship, which supported his graduate studies at Stanford for three years. In his last year at Richmond, his honors thesis on a parallel algorithm for back propagation in neural networks won the prize at the University's annual Student Symposium for best research project.

Faculty

Lewis Barnett

Ph.D., computer science
University of Texas
Areas of specialty: analysis and design of computer network protocols, Internet resource discovery

Arthur Charlesworth

Ph.D., mathematics
Duke University
Distinguished Educator Award, 1988
Areas of specialty: design and implementation of programming languages, parallel programming

Gary R. Greenfield

Ph.D., mathematics
Oregon State University
Areas of specialty: division rings, algebraic number theory, computer graphics, artificial life, algorithmic art

Anita Hubbard

M.S., mathematics, graduate study in computer science, University of North Carolina at Chapel Hill
Areas of specialty: theory of computation, computer simulation

John R. Hubbard

Ph.D., mathematics
University of Michigan
Areas of specialty: functional analysis, history of mathematical science, numerical analysis, database management systems

Barry Lawson

Ph.D., computer science
College of William & Mary
Areas of specialty: simulation, artificial societies, distributed systems

Kelly A. Shaw

Ph.D., computer science
Stanford University
Areas of specialty: computer architecture and systems

Doug Szajda

Ph.D., mathematics
University of Virginia
Areas of specialty: computer networks, computer security, distributed computation