Degree Programs:
B.S., M.S. and Ph. D. in Computer Science
B.A. in Computer Science
Minors in Computer Science, Computer Gaming, Artificial Intelligence

Some Statistics:
14 faculty
6 major funded research programs totaling $1.8 million yearly expenditure (2009)
137 Undergraduate students (Spring ‘11)
64 Graduate students (44 Ph. D., 20 M.S., Spring ‘11)

Special Programs:
Domestic and global Co-op
Junior year abroad
Undesignated B.S. (Design your own degree)
Integrated B.S./M.S. program
Master in Engineering (M. Eng.)
MS Co-op Program

Research Thrusts:
Bioinformatics and Systems Biology
Database Systems
Health Informatics
Data Mining and Visualization
Artificial Intelligence and Machine Learning
Computational Perception
Networks and Distributed Systems
Software Testing and Analysis
Robotics

Employers (sample):
Microsoft, Intel, Apple, Google, Rockwell, IBM, Agilent, HP, Hyland Software, Medtronic, Guidant, Motorola, EMC, Keithley Instruments, Accenture, Yelp!, Bloomberg, Yahoo!

Student Organizations
- The Association for Computing Machinery (ACM) chapter at CWRU teams up with faculty supervisors to participate in intercollegiate programming competitions and organizes games nights and many other activities.

Jennings Computing Center
- The Jennings Computing Center in Olin building consists of two labs with 18 Windows and 18 Linux desktop systems. This lab is primarily used for student coursework and other projects. The department has recently received a large grant from the National Science Foundation to expand the computing resources in this center.

Virtual Worlds Gaming and Simulation Lab
- 24 High Performance Alienware gaming workstations; multiple video game consoles with projection displays; audio and video studio, virtual reality facility
- Video game development; innovative and successful cross-institutional (with the Cleveland Institute of Art and the Cleveland Institute of Music) approach to experiential education; Electronic Arts (EA) game reiew.

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Computer Science
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Computers have become a fundamental part of modern life. We use computers to steer cars and fly aircraft, perform distributed online banking transactions, perform delicate image-guided surgery, interpret the human genome and do many other very complex things. But what is computation? How do we create bug-free software that can analyze complex data or control mechanical and electronic systems? How can computers communicate between themselves in an error-free way on a global scale, such as the Internet? And, what insight does all this give into our own brains—the greatest computational devices in existence? As computer scientists, these are some of the questions we seek to answer.

The Computer Science division within EECS at Case is unique in several respects. The division is small enough that each student is able to receive personal attention from faculty, yet large enough to support a diverse student population and a large number of intellectually stimulating research programs for students to participate in. Many of these programs are interdisciplinary and collaborative in nature—as a student of Computer Science, you will have the opportunity to work on problems relevant not only to Computer Science, but also to other engineering disciplines as well as disciplines such as Medicine, Genomics and Cognitive Science. Through internships and co-ops, you will have the opportunity to apply your knowledge to problems in the real world. Graduating with a Computer Science degree from Case equips you with the skills you need to embark on challenging, high-tech careers; as entrepreneurs or researchers in industry or academia.

We hope you will choose to join us!

**Some Research Projects**

- **Databases:** How can we store and efficiently access massive amounts of data? If we have large biological databases, such as metabolite databases, can we use an automated system to identify what might be the causes of anomalous metabolite concentrations in a patient? Could we diagnose diseases in this way?

- **Software Testing and Analysis:** When a large program crashes, can we use automated methods to determine which part of the code was really to blame? Can we estimate how unreliable (likely to crash) some software really is?

- **Bioinformatics and Computational Genomics:** How do complex networks of genes interact? How can we use automated methods to find genes responsible for disease? How can we develop tools to integrate and curate data from various medical sources?

- **Computer Networks:** How can we measure the performance characteristics of a global network like the Internet? How can we deliver multimedia content over large networks in a robust manner? How can we use networking methods to design smart energy grids that can allocate power efficiently and recover from failure?

- **Artificial Intelligence, Machine Learning and Data Mining:** How can we efficiently extract knowledge from data that is represented as a graph or a sequence? How can we give an intelligent system the ability to automatically decompose complex problems and transfer knowledge between related problems? How can teams of intelligent agents collaborate effectively? How can we design improved algorithms that can be used by intelligent systems to “learn” and improve over time?

- **Computational Perception:** How does the auditory system in the brain encode sounds? How does it separate sounds from background noise? How does the visual system encode images? How does it represent contours, regions and shapes?