The Department of Computer Science at CU-Boulder is nationally renowned in the areas of human-computer interaction, numerical and scientific computing, machine learning, and software engineering. The department prides itself on achieving excellence at both the undergraduate and graduate levels and has an industrial affiliates program that facilitates collaboration in research, development, education, and recruiting.

The bachelor of science degree prepares students for a wide range of careers in the computing field and culminates in a senior projects course in which students carry out year-long software engineering projects for industry. The department recently introduced learning tracks that allow students to tailor their undergraduate major to their specific interests. With a faculty that includes two presidential teaching scholars, the department emphasizes excellence in teaching within the context of research that addresses real-world issues.

CU-Boulder doctoral candidate Sophia Liu studied first-hand how social media were used to share information during a local crisis.
Robots create paths for student learning

Technology developed by robotics researchers has already made its way into our cars, farm equipment, medical devices, and toys, and will be a key technology of the 21st century, says Assistant Professor Nikolaus Correll who introduced an advanced robotics course into CU’s curriculum.

The course is a hands-on class with the long-term goal of designing a multi-robot team that can assemble intelligent structures from modular building blocks. Each semester, the class takes on a piece of the robotics challenge; future classes will work on different “grand challenges” that reflect the state of the art at the time.

“Teaching robotics—engineering at the system level—will help CU-Boulder grads to keep the big picture and make them leaders in this emerging field,” Correll says.

Computational Methods Shed Light on Genomes

As a mathematician and computer scientist, CU Assistant Professor Debra Goldberg likens the massive amounts of data coming from genome projects to a giant jigsaw puzzle, one that can be solved by noting certain patterns. Each discovered pattern, such as the protein pattern pictured at right, helps solve another portion of the puzzle. By developing combinatorial and graph algorithms to solve problems in modern genomics, Goldberg is helping to find some of these patterns.

“I have a particular interest in helping biologists determine the function of uncharacterized genes or proteins,” Goldberg says. “Understanding how proteins function is essential if we hope to gain a systems-level understanding of any organism, and will provide critical new targets to stimulate the development of new medicines.”

Assistant Professor Katie Siek teaches a section of the First-Year Engineering Projects course called Games for Health. The students develop computer-based games that are fun to play and support health and wellness at the same time.