WHY PURSUE A GRADUATE DEGREE IN CS?

✓ Be a leader who brings computational innovation to the solution of problems in a variety of fields.
✓ Be part of a program committed to diversity and to improving computer science education for all.

RESEARCH AREAS

Our division is growing rapidly and has research-active tenured/tenure-track faculty working in the following areas:

APPLIED ALGORITHMS & DATA STRUCTURES
CS FOR ALL
HIGH PERFORMANCE COMPUTING
HUMAN CENTERED ROBOTICS
INFORMATION & SYSTEMS SCIENCES
MACHINE LEARNING
NETWORKING
SECURITY

Students address real-world computing problems in research labs and centers, which creates a community for multidisciplinary learning, research and experimentation.

ADMISSIONS

Admissions to the graduate degree program is competitive and based on an evaluation of academic performance, test scores, personal statement and references.

FUNDING

CS@Mines has multiple TA/RA openings for PhD students each fall. The TA/RA financial support covers tuition, fee, health insurance and a competitive monthly stipend. Our research has been funded by government agencies, such as NSF, and by industry leaders.

ACADEMICS

The Graduate Program in Computer Science brings together faculty and graduate students with common interests in applying computational power and thinking to the world. The division offers a Master of Science, with thesis and non-thesis options, and a Doctor of Philosophy degree to prepare candidates for a wide-array of careers in industry, government and academia.

LEARN MORE

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Graduate Program Manager
(cs.mines.edu)

📍 Computer Science Division
Brown Hall Building
1610 Illinois Street
Golden, CO 80401
RESEARCH AREAS

Our faculty have a strong emphasis on research both within the division and collaboratively with other departments, universities, government organizations and industry partners. We encourage you to learn more about our research and faculty engaged in compelling research in the field of computer science.

APPLIED ALGORITHMS & DATA STRUCTURES
An interdisciplinary research area that applies to areas such as VLSI design automation, cheminformatics, computational materials, and cyber-physical systems.

INFORMATION & SYSTEMS SCIENCES
An interdisciplinary research area that encompasses the fields of control systems, signal and image processing, compressive sensing, and optimization.

CS FOR ALL
This area encompasses research on STEM recruitment and diversity, K-12 computing education, and computing/engineering at the university level.

MACHINE LEARNING
Includes research in developing mathematical foundations and algorithm design needed for computers to learn.

HIGH PERFORMANCE COMPUTING
High performance computing in CS@Mines focuses on compiler-based code and data transformation, memory optimization for both multi-core and many-core processors, speculative parallelization, approximate computation, and GPU-based acceleration of Big Data applications (such as graph processing and machine learning algorithms).

NETWORKING
Networking research aims to enable emerging wireless applications via networks and systems support, ranging from hardware design to algorithms development and software integration, from credible simulations to actual system deployment and testing. Interdisciplinary research also exists, mainly in the use of wireless sensor networks and robotic networks for applications closely tied to Mines’ mission: earth, energy and environment.

HUMAN-CENTERED ROBOTICS
Far beyond the boundary of traditional industrial robotics, human-centered robotics address how robots can work beside us, assisting people and taking over tasks where our current society has shortcomings.

SECURITY
Research includes usable security and privacy in web/mobile/cloud/cyber-physical systems, vulnerability measurement and analysis, and security-privacy education.

FACULTY SPOTLIGHT: Qi Han
Associate Professor Qi Han has been awarded an NSF grant to improve communications in underground mines. A collaboration with CSU and Mining Engineering at Mines, the project will design, prototype and test a novel framework of low-cost, energy-efficient and reliable sensor nodes and commodity smartphones to improve safety in mining. “I’ve been passionate about using my research expertise to improve mine safety for quite some time, so it’s very exciting that the NSF has chosen to support this research,” said Han. “I’m most interested in designing algorithms to support the co-existence of high quality voice streams in noisy underground environments. Providing voice streaming support will significantly improve situational awareness.”

The wireless cyber-physical framework would bypass GPS, cellular and other signals that we take for granted above ground.

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