RESEARCH AREAS

Queen's School of Computing is actively engaged in research on a broad range of topics, with an eminent research record. Our forward-thinking research provides solutions to current and future technology. If you have questions about joining our graduate programs email our Graduate Program Assistant at gradstudies@cs.queensu.ca.

ARTIFICIAL INTELLIGENCE

Artificial intelligence research aims to build machines that can reason, learn, and act intelligently – to understand and reproduce human cognition. The application of AI is spreading to more aspects of our everyday lives, and it promises to drive economic growth, boost innovation and tackle issues of global significance from healthcare delivery to food security to public safety.

BIOMEDICAL COMPUTING

Biomedical computing research is developing tools that enable the biomedical community to collect, analyze, model, simulate and share massive amounts of data on human health and disease. It already shows the potential for substantial impact on human health and well-being via applications including personalized medicine and image-guided surgery.

DATA ANALYTICS

Data Analytics examines large amounts of data to uncover patterns, correlations and insights. Data analytics technologies and techniques are transforming the way data is used, reshaping fields including medicine, retail, transportation, and financial services. It is paving the way for improved quality-of-life, increased operational efficiency, and evidence-based decision making.

HUMAN COMPUTER INTERACTION

In HCI research, computer scientists collaborate with experts in engineering, psychology, linguistics, and social and system organization, to understand and improve the design, implementation, and evaluation of interactive systems. HCI plays a key role in the study of games. Gaming research is developing games and applying gaming principles that benefit society.

SECURITY

Cybersecurity research seeks to protect computer systems, networks and programs from digital attacks including malware, ransomware, phishing and denial-of-service and vulnerability attacks. These attacks have the potential to damage a victim – individual or organization, industry or government – through data theft, downtime, identity theft, reputational damage, and more.

SOFTWARE ENGINEERING

Software Engineering deals with the design, implementation and maintenance of complex computer programs, placing emphasis on the entire software development process from idea to final product. Thanks to Software Engineering, complex systems – from aviation to enterprise resource planning to nuclear power plants – operate effectively, safely, and reliably.

SYSTEMS AND NETWORKS

Research on Systems and Networks focuses on the hardware on which computation occurs and the networks over which information is transmitted. Researchers focus on real-world challenges in areas including parallel and high-performance computing, computer networking, cloud computing, computer architecture, and wireless communication.

THEORY OF COMPUTING

The Theory of Computation is the study of 'automata,' abstract mathematical machines (or models of computation – the most well-known being the Turing machine) and the computation problems that they can be used to solve. Automata enable a researcher to understand how machines compute functions and solve problems.

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