

Faisal Qureshi, PhD

Associate Professor and Undergraduate Program Director, Computer Science, Faculty of Science at University of Ontario Institute of Technology

Oshawa, ON, CA

Innovating intelligent traffic control systems to ease congestion and reduce air pollution

A long daily commute for millions of drivers fuels serious health and economic consequences. Vehicle emissions are the leading cause of air pollution in North America; and idling for long periods in traffic each day significantly reduces productivity. In an effort to curb traffic congestion in urban centres, Faisal Qureshi, PhD, Associate Professor of Computer Science, in the Faculty of Science, is developing new techniques to capture and analyze big data involved in traffic camera networks, to better understand traffic patterns and conditions. Using that data, he is developing sensors for next generation smart camera networks to detect incidents, divert vehicles and improve traffic flow in urban centres and on highways. This emerging technology will make more intelligent use of existing road networks, help reduce air pollution, and ultimately mitigate climate change.

His research also has meaningful benefits for older adults who want to live independently at home for as long as possible. Dr. Qureshi is creating smart camera networks to allow family members to monitor elderly relatives, particularly those with dementia. To facilitate smart homes, he is developing sensors that family members could program to give cues to the user, reminding them to complete important daily tasks, and helping them maintain independence.

A computer science expert, Dr. Qureshi is fascinated by understanding how human intelligence works and using it to build novel systems capable of carrying out complex tasks without human intervention. He earned his Bachelor of Science in Mathematics with a Minor in Physics from Punjab University in Lahore, Pakistan in 1992, and his Master of Science in Electronics from Quaid-e-Azam University in Islamabad, Pakistan in 1995.

Dr. Qureshi joined UOIT in July 2008 as an assistant professor. Instrumental in establishing the university's Visual Computing (VC) Lab, he was named associated professor in July 2013. He gained industry experience as a software engineer with Toronto-based Autodesk Canada Co., and as a contract engineer with MDRobotics in Brampton, Ontario.

Education/Learning, Research, Animation, Computer Gaming, Computer/Network Security

Computer Vision, Camera Networks, Computer Graphics, Smart Graphics, Behaviour-based Computer Animation, Cognitive Vision, Video Surveillance, Autonomous Characters for Computer Animation and Games, Autonomous Agent Architectures

Institute of Electrical and Electronics Engineers, Association for Computing Machinery, Canadian Image Processing and Pattern Recognition Society

Towards Efficient Feedback Control in Streaming Computer Vision Pipelines
Workshop on User-Centred Computer Vision

Accelerating Cost Volume Filtering Using Salient Subvolumes and Robust Occlusion Handling
12th Asian Conference on Computer Vision (ACCV 2014)

A Stream Algebra for Computer Vision Pipelines

Second Workshop on Web-scale Vision

Topic Models for Image Localization

Tenth Conference on Computer and Robot Vision (CRV 2013)

I Remember Seeing This Video: Image Driven Search in Video Collections

Tenth Conference on Computer and Robot Vision

Droplet Tracking from Unsynchronized Cameras

2nd International Conference on Pattern Recognition Applications and Methods (ICPRAM 2013)

University of Toronto

PhD Computer Science

University of Toronto

MSc Computer Science

Quaid-e-Azam University

MSc Electronics

Punjab University

BSc Mathematics & Physics (Minor)

Director, Visual Computing (VC) Lab

Dr. Qureshi established UOIT's state-of-the-art VC Lab which focuses on research problems that reside at the intersection of computer vision, visual sensor networks, and computer graphics.

Co-Chair, 13th Conference on Computer and Robot Vision

Co-Chair of the 12th Conference on Computer and Robot Vision in Halifax, Nova Scotia in June 2015, Dr. Qureshi will also Co-Chair next year's conference in Victoria British Columbia in June 2016.

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