



Innovation Award 2009: Machine Intelligence

Erin Jones & Dawn Davidson

At this year's President's Breakfast on August 31st, Leo Salemi, Professor of Construction and Advanced Engineering Technologies, was presented with the Innovation Award, for his research project Machine Intelligence: An Investigation in the Application of Hierarchical Temporal Memory, and for his dedication to student involvement and higher learning and his involvement of industry partners in his research.

Not much more than a year ago, Leo first became known to the Office of Research and Innovation when he began to attend applied research events and workshops. He submitted an application for a small amount of GBC Seed Funding in September of 2008 for an applied research project on machine intelligence. His application was approved by the Seed Funding Committee, and Leo also received funding from the Ontario Centres of Excellence Connections Program.

Innovative research – The project focuses on the concept of machine intelligence. It explores the use of a software package called the Numenta Platform for Intelligent Computing (NuPIC), to gain a thorough understanding of how intelligent computing using Hierarchical Temporal Memory (HTM) – a new type of programming based on the human neocortex – can be used in the design and manufacturing of intelligent machines, sensors and systems. The project's achievements include repurposing a small underutilized electronic equipment and supplies storage room at the Casa Loma Campus into an Infrastructure Testing Lab, and building a remote site application designed to simulate what an operator or technician would encounter when monitoring or controlling a remote site such as a water pumping station located miles away.

Student Involvement - Leo understands that by getting students involved in applied research projects, these students become the first choice of employers. The students' learning experience is enhanced as they take what they learn in the class and apply it to solve real industry problems. The first two phases of his project were carried out with the assistance of ten students from three different professional programs Electro-Mechanical Engineering Technician; Computer Systems Technology and Mechanical Engineering Technology – Design. These students can all proudly put this research on their resumes and explain to potential employers how they are the best candidate for the job – they have experience working as part of an interprofessional team on a real life, cutting edge and innovative applied research project.

Industry Involvement - Leo also sought out numerous partners for the project who contributed specialists to work with the students, equipment, and technical support and advice. This kind of industry involvement in a project strengthens the College's relationship with industry and keeps the College's curriculum aligned with what is important to industry.

The initial research project was completed this spring, but it has opened up more opportunities and Leo has plans for future research. As the remote site application is in place, his next step is to refine the features so they can attract more industry partners. The application that is currently set up to monitor and control a remote water pumping station can easily be reconfigured to monitor and control an IT Server Room, a Remote Communications Tower, Security for Commercial & Residential Dwellings, or in a Health Care Application for monitoring a home-care patient.

Our congratulations go out to Leo, along with our recognition as an outstanding faculty member. His research advances the learning environment at GBC and the esteem of the college. We are very fortunate to have a professor so dedicated and innovative.

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[George Brown College](#), with 30,000 full- and part-time students and more than 900 faculty in more than 150 programs, aims to be a top community college of choice for applied research investment by industry and other partners. Its applied research strengths include advanced engineering and microelectronics; nursing and the social sciences; health informatics; IT; and design and new media. George Brown is currently allied with nine other Ontario colleges in the Colleges Ontario Network for Industry Innovation, started with a \$3.5m grant from the Ministry of Research and Innovation. CONII is building college capacity to bring research to the marketplace.

