RESEARCH POSITION (UNDERGRADUATE & M.ENG.)
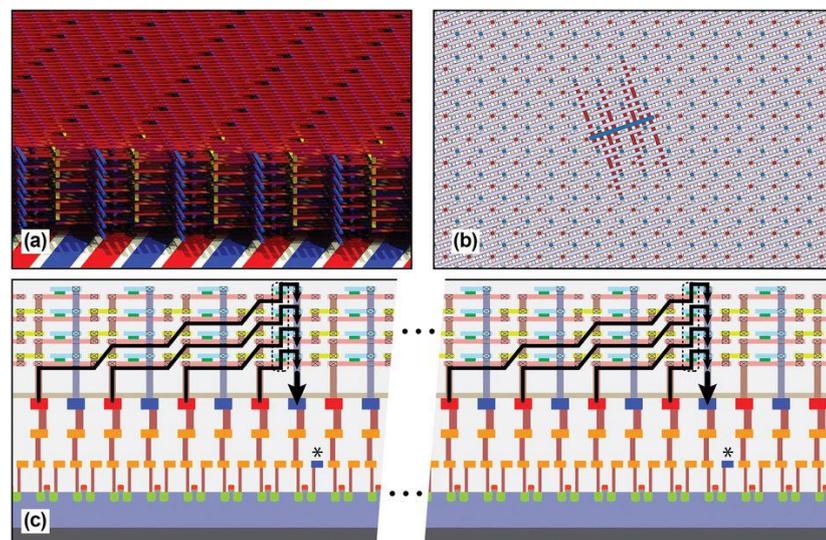
Project proposed by:	**Intelligent Sensory Microsystems Laboratory, ECE, U of T** **Lab for Computing Research and Innovation, York University**
Supervisor:	**Prof. Roman Genov, Prof. Amirali Amirsoleimani**
Project title:	**Machine Learning Hardware Platform Design and Implementation**
Project description:	In the ISML and LCRAIN labs, we have been researching efficient and versatile systems for the next generation of machine learning hardware. Our goal is to propose scalable, flexible, and innovative strategies for the implementation of the synaptic weight and the associated Multiply and Accumulate (MAC) operation, which are the most demanding resources for efficient Machine Learning (ML) hardware. We capitalize on emerging multi-technology platforms such as high-performance CMOS and high-density memory devices to introduce efficient solutions to existing techniques. Fig 1. 3D CMOS- memristor structure. The platform consists of a high-performance Xilinx FPGA board, memory and CMOS chips. The research candidate will design the firmware and hardware components of this platform. This will include programming of the FPGA board to communicate with the custom designed printed circuit board (PCB), interface with PC thorough a serial high-speed connection and user-friendly graphical user interface (GUI). The ideal candidates are expected to have the following qualifications: • Good experience with printed circuit boards (PCB), debugging, and FPGA development boards. • Proficiency in Python and HDL language like Verilog. • Self-driven attitude, preemptive in finding solutions, and interested in both hardware and software.
Contact person:	Dr. Amirali Amirsoleimani (amirsol@yorku.ca); and copy to Prof. Roman Genov (roman@eecg.utoronto.ca). Please include your GPA, study program, and related accomplished projects in the email along with your attached updated CV and all of your transcripts (official or unofficial).