Project Title	Machine Learning-Enabled Adaptive Neurostimulation for Patient-Optimized Biomedical Prostheses
Supervisor	Prof. Roman Genov
	Department of Electrical and Computer Engineering (ECE)
Laboratory	Integrated Sensory Microsystems Laboratory (ISML), ECE, UofT
Project Description	The greater of neural prostheses and other related applications. Students will participate machine learning algorithm development, testing, system integration and some integrated circuit (IC) design. Publications in high standard journals and conferences are inevitable. The project will be beneficial for cutting-edge skill and knowledge onbarcement for the area of paragraphic the area of paragraphic the area of the project will be beneficial for cutting-edge skill and knowledge onbarcement for the area of paragraphic the area of the project will be beneficial for cutting-edge skill and knowledge onbarcement for the area of paragraphic the area of the project will be beneficial for cutting-edge skill and knowledge onbarcement for and some integrated circuit (IC) design.
Pre-requisite	 Background/ affiliations in ECE/Eng.Sci./CS with experience/ interests in any two or more points: Machine learning related coding (Python, Verilog, etc.) PCB-level circuit design and hardware testing IC layout Analog, digital, or radio frequency (RF) designs (Very important) Enthusiastic, independent learner, and strong soft skills.
Number of positions	3 (three) students
Contact	Jianxiong Xu (jianxiong.xu@mail.utoronto.ca)
References	[and copy to Prot. Roman Genov (roman@eecg.utoronto.ca)]
	 [1] Xu, Slanklong, et al. Pascicle-selective bidirectional peripheral nerve interface IC with 173dB FOM noise-shaping SAR ADCs and 1.38 pJ/b frequency-multiplying current-ripple radio transmitter." 2023 IEEE International Solid-State Circuits Conference (ISSCC). IEEE, 2023. [2] T.D. Albarran, "Optimization of Temporal Interference Stimulation for Invasive Neuromodulation of Motor Neurons Using an In-Silico Sciatic Nerve Model," <i>M.S. thesis</i>, ECE, UCLA, USA, 2023. [3] R.B. Budde, M.T. Williams, and P.P. Irazoqui, "Temporal interference current stimulation in peripheral nerves is not driven by envelope extraction," <i>IOP J. Neural Engg.</i>, vol. 20, no. 2, Apr. 2023.