

Unlocking the Mysteries of the Brain with Advanced Crain-Computer Interface (BCI) Technology

Project proposed by: Intelligent Sensory Microsystems Laboratory, ECE, U of T

Supervisor: Prof. Roman Genov

Mentor: Jianxiong Xu (Jay)

Project description:

This project is cutting-edge research effort including designing an event-driven, non-uniform sampling/quantization ADC that synergistically balances power, precision, and efficiency. We are on a quest to transcend the traditional constraints of quantization noise, aiming for superior recording quality with lower energy demands.

Your Mission:

As a key member of our dynamic team, you will collaborate closely with graduate students to test and refine this cutting-edge ADC. Your contributions will include:

- Developing a digital FIR-based anti-aliasing filter, minimizing the need for bulky analog counterparts.
- Crafting a dynamic servo loop for unparalleled noise and interference suppression.
- Designing an optimal compander informed by brain signal energy probability distributions.

We are in search of:

- **Driven Innovators:** We value candidates with a proactive mindset, prepared to commit their time and ingenuity to our mission.
- **Theoretical Acumen:** A sound understanding of Fourier transforms, Laplace transforms, Z-transforms, and sampling theorems will be viewed favorably.
- **Keen Learners:** An enthusiasm for deep diving into signal processing will be a critical aspect of your role.

Join Us:

Step into the Intelligent Sensory Microsystems Lab, where your passion for science and engineering meets impactful research. Under the guidance of experienced Ph.D. students, embark on a journey of personal and professional growth.

How to Apply:

Send your **resume, transcript and a brief cover letter** explaining why you are the perfect fit for this role to **Mr. Jianxiong Xu (jianxiong.xu@mail.utoronto.ca)** and **copy to Prof. Roman Genov (roman@eecg.utoronto.ca)**. Let's innovate together for a better tomorrow.