Richard Gao

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EDUCATION

PhD., Cognitive Science, University of California, San Diego   **2014 – Present**
BASc., Engineering Science, University of Toronto. **CGPA**: 3.9/4   **2014**

PEER REVIEWED PUBLICATIONS

2018
1. Negraes, P., **Gao, R.**, Trujillo, C., et al. Development of brain network oscillations in human cortical organoids require MECP2 activity and GABAergic signaling (*in review*).

2017
2. **Gao, R**., Donoghue, T., Voytek., B. Automated generation of cognitive ontology via web text-mining. *CogSci Annual Meeting Proceedings*, 2067-72 (2017)
3. **Gao, R.**, Peterson, E. J. & Voytek, B. Inferring synaptic excitation/inhibition balance from field potentials. *Neuroimage* 158, 70–78 (2017).

2016
4. **Gao, R.** Interpreting the electrophysiological power spectrum. *Journal of Neurophysiology* 115, 628–630 (2016).

ACCEPTED ABSTRACTS & PRESENTATIONS

2016
1. **Gao, R.**, Voytek, B. Spiking correlates and temporal variability of oscillatory frequency modulation. *Society for Neuroscience (SfN) Annual meeting.* Poster.
2. **Gao, R.**, Voytek, B. Inferring excitatory and inhibitory synaptic parameters from the local field potential. *Computational and Systems Neuroscience (Cosyne)*. p.103. Peer-reviewed abstract & poster presentation.

2015
3. **Gao, R.**, Voytek, B. Exploring the neural basis of the elctrophysiological power spectrum. *Society for Neuroscience (SfN) Annual meeting*. Poster
4. Noto, T., Cole, S.R., **Gao, R.**, Peterson, E.J., Voytek, B. Neural network properties can be inferred from electrophysiological power spectral geometry. *Society for Neuroscience (SfN) Annual meeting*. Poster

2014 & Earlier
5. **Gao, R.** Design of a closed-loop electrical stimulation system for treatment of epilepsy. Undergraduate Honour's Thesis.
6. **Gao, R.** Wireless acquisition of physiological signals for detection of activity engagement in children with communication difficulties. *IBBME Research Symposium*. Talk

GRANTS & AWARDS

- Kavli Institute for Brain and Mind, Innovative Research Grant: **$50,000**   **2017**
- NSERC Postgraduate Scholarship-Doctoral: **$21,000/year**   **2016 – 2019**
- NSERC Alexander Graham Bell Canada Graduate Scholarship (Declined)   **2016**
- Cosyne 2016 Travel Grant: **$800**   **2016**
- UCSD Frontiers of Innovation Scholar Program Research Grant: **$25,000**   **2015**

- UCSD Katzin Prize. Fellowship: **$10,000/year**   **2014 – 2019**
- Engineering Science Award of Excellence (CGPA 3.9/4 or above)   **2014**
- NSERC Industrial Undergraduate Student Research Award. **$6,000**   **2012 – 2013**
- NSERC Undergraduate Student Research Award. **$6,000**   **2011**
- Queen Elizabeth Aim For the Top Scholarship Winner. **$3,000/year**   **2009 – 2014**
- International Baccalaureate Diploma   **2009**

TEACHING POSITIONS

Introduction to Data Science (2017 Spring, Fall)   Teaching Assistant, **UC San Diego**
- Freshmen class on broad topics of data science, including data munging and visualization in Python, machine learning, text-mining, privacy, Class was hosted on UCSD JupyterHub.

Introduction to Cognitive Science (2016, 2015)   Teaching Assistant, **UC San Diego**
- Freshmen class on various subfields of cognitive science, including neuroscience, linguistics, machine intelligence, and social and embodied cognition

Machine Learning I (2015)   Teaching Assistant, **UC San Diego**
- Advanced undergraduate class on machine learning algorithms, including Bayesian techniques, clustering, linear classifiers, artificial neural networks, and others.

Introduction to Statistical Analysis (2015)   Teaching Assistant, **UC San Diego**
- Entry-level undergraduate class on probability, statistics, and hypothesis testing.

Praxis I: Engineering Design (2014)   Design Studio Leader, **University of Toronto**
- Freshmen class on engineering design processes, written and oral communication skills, and critical thinking in engineering.

RESEARCH & PROFESSIONAL EXPERIENCE

2015
Summer School – Computational Neuroscience, Redwood Center, UC Berkeley
- Lectures and lab sessions on computational and theoretical neuroscience.

Research Rotation, 4 months   **Alysson Muotri, UCSD**
- Modeling Rett syndrome using human induced pluripotent stem cell derived neural cultures.

Research Rotation, 4 months   **Eran Mukamel, UCSD**
- Neural mass modeling of phase-amplitude coupling changes during anesthesia.

Research Rotation, 4 months   **Douglas Nitz, UCSD**
- Analyzing single unit and local field potential recordings in rat ventral tegmental area.

2014 & Earlier
Undergraduate Honour's Thesis, 8 months   **Roman Genov, UofT**
- Designing closed-loop electrical stimulation system for treatment of intractable epilepsy.

Research & Development Intern, 16 months   **InteraXon Inc. Toronto**
- Developing EEG-based BCI algorithms for mindfulness meditation training.

Undergraduate Research, 4 months,   **Tom Chau, UofT**
- Creating a GUI and physiological signal collection system for real-time analysis of affect in children with communication disorders.

Undergraduate Research, 4 months   **Adam Anderson, UofT**
- Classifying emotional response to affective stimuli using physiological signals.