

KARTIK S. PRADEEPAN

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SUMMARY

Kartik Pradeepan is a neuroscience doctoral student working at the interface between **genetics**, **neuroscience**, and **artificial intelligence**. I have an interest in combining **bioinformatics**, as it relates to **neuroscience**, **healthcare and medicine**, and **machine learning** to aid decision making to **improve health outcomes** and reveal **novel insights about the body**. I also have a passion for **scientific communication** and **open science**, and appreciate the importance of disseminating knowledge.

EDUCATION

Western University Sept 2018 - Present
Doctor of Philosophy, Neuroscience

Western University Sept 2013 - Apr 2018
Bachelor of Science, Honours Double Major in Genetics and Physiology

AWARDS

NSERC Postgraduate Scholarship - Doctoral (PGS-D), \$63,000 CAD May 2021 - Aug 2024

- Awarded to high-calibre scholars who are engaged in an eligible doctoral program in the natural sciences or engineering.

Ontario Graduate Scholarship (OGS), \$15,000 CAD (Declined) May 2021

- Awarded to graduate students in Ontario based on merit.

Axion Travel Award, \$500 USD Oct 2019

- Awarded to researchers attending the Society of Neuroscience (SfN) Annual Meeting 2019 in Chicago.
- *Press Release*

Thales Student Innovation Case Competition Grand Prize, \$20,000 CAD Nov 2018

- Problem: Design an AI capable of automatically finding opinion clusters and analyzing a piece of evidence.
- Solution: "Opinion Galaxies: A Machine Learning Network Approach to Big Data in Medical Research." An algorithm that creates an interactive multidimensional network of research, where papers are connected based on similarity in views and opinions based off of natural language processing.
- *Press Release*

Laurene Paterson Estate Scholarship, \$1000 CAD Sept 2017

- Awarded to full-time students who have demonstrated financial need and have achieved a minimum 80% average.

Dean's Honor List May 2016/2017/2018

- Awarded to full-time students who have achieved a minimum 80% average.

ACADEMIC WORK EXPERIENCE

Human Physiology 3120 Sept 2020 - May 2021
Graduate Teaching Assistant *Western University*

- Instructed by Tom Stavrakys.

Physiology of Senses 4710 Sept 2019 - Dec 2019
Graduate Teaching Assistant *Western University*

- Instructed by Dr. Tutis Vilis.
- Taught over 100 students in both online and in-class format.

Kramer Lab Jan 2016 - May 2018
Research Assistant *Western University*

- Investigated the role of epigenetic regulation in learning and memory in the context of intellectual disabilities.
- Research project: "Primer design and optimizing gene knockdown using qPCR in *drosophila* transgenic RNAi lines"

RESEARCH CONTRIBUTIONS

Manuscripts Submitted to a Refereed Journal

- Present state of brain machine interfaces. Kartik Pradeepan. *Health Science Inquiry* 2019. 2019

Conferences and Presentations

· International.

1. **Pradeepan, K. S.**, McCready, F., Martinez-Trujillo, J., Ellis, J.,(2020, May).*Developmental population-level differences of stem cell derived excitatory networks from SHANK2 ASD patients*. Poster was to be presented at the Canadian Association for Neuroscience 2020 Meeting, Montreal, QC, Canada.
2. **Pradeepan, K. S.**, McCready, F., Martinez-Trujillo, J., Ellis, J.,(2020, May).*Developmental population-level differences of stem cell derived excitatory networks from SHANK2 ASD patients*. Poster was to be presented at the Gordan Research Conference for Fragile X and Autism-Related Disorders, Barga, Lucca, Italy.
3. **Pradeepan, K. S.**, McCready, F., Mok, R., Martinez-Trujillo, J., Ellis, J., (2020, May). *Computational modeling of stem-cell derived neuronal networks of Rett Syndrome and ASD patients*. Seminar was to be presented at the Gordan Research Seminar for Fragile X and Autism-Related Disorders, Barga, Lucca, Italy.
4. **Pradeepan, K. S.**, McCready, F., Martinez-Trujillo, J., Ellis, J.,(2019, Oct).*Developmental population-level differences in iPSC-derived excitatory networks of SHANK2 ASD*. Poster was at the Society for Neuroscience 2019 Meeting, Chicago, IL, USA.

· Regional.

1. **Pradeepan, K. S.**, Mok, R., Benigno, G., Martinez-Trujillo, J., Ellis, J., Muller,L.(May 2021). *Electrophysiological characterization and neuronal network modelling of Rett Syndrome in iPSC-derived neuronal networks*. E-Poster was presented at London Health Research Day 2021.
2. **Pradeepan, K. S.**, Khaki, M., Mok, R., Martinez-Trujillo, J., Ellis, J.,(May 2019). *Analyzing the electrophysiological effects of Rett Syndrome on neuronal network development using machine learning*. Poster was presented at the Canadian Association for Neuroscience 2019 Meeting, Toronto, ON, Canada.
3. **Pradeepan, K. S.**, (2019, Mar). *Making neurons to study autism*. Oral presentation at Kiwanis Senior's Center, London, ON, Canada.

· Institutional.

1. **Pradeepan, K. S.**, (2020, June). *Modeling developmental differences of SHANK2-related ASD in iPSC-derived neuronal networks*. Seminar was presented at Schulich School of Medicine and Dentistry Neuroscience Seminars, London, ON, Canada.
2. Martinez-Trujillo, J., **Pradeepan, K. S.**, Benigno, G., Muller, L.,(May 2020). *Electrophysiological characterization of human stem cell derived networks of excitatory neurons in Rett Syndrome*. Oral presentation at Developmental Disabilities Research Day 2020, London, ON, Canada.
3. **Pradeepan, K. S.**, Khaki, M., Mok, R., Martinez-Trujillo, J., Ellis, J.,(May 2019). *Analyzing the electrophysiological effects of Rett Syndrome on neuronal network development using machine learning*. Poster was presented at Developmental Disabilities Research Day 2019, London, ON, Canada.
4. **Pradeepan, K. S.**, Khaki, M., Mok, R., Martinez-Trujillo, J., Ellis, J.,(May 2019). *Analyzing the electrophysiological effects of Rett Syndrome on neuronal network development using machine learning*. Poster was presented at Clinical Neurological Sciences Research Day 2019, London, ON, Canada.
5. **Pradeepan, K. S.**, Khaki, M., Mok, R., Martinez-Trujillo, J., Ellis, J.,(Apr 2019). *Analyzing the electrophysiological effects of Rett Syndrome on neuronal network development using machine learning*. Poster was presented at Neuroscience Research Day 2019, London, ON, Canada.
6. **Pradeepan, K. S.**, (2019, Mar). *Population analysis for the development of iPSC-derived glutamatergic networks*. Oral presentation for Robarts Research Institute Data Club, London, ON, Canada.
7. **Pradeepan, K. S.**, (2019, Feb). *Inspiration from the brain: modeling neuron network development*. 3 Minute Thesis 2019, London, ON, Canada.

ACTIVITIES

Scientific Outreach and Public Communication

- Society of Neuroscience Graduate Students (SONGS) Communication Team Nov 2019 - Present
- Society of Neuroscience Graduate Students (SONGS) Outreach Team Sept 2019 - Present
 - ““Hand-in-hand” – How the brain handles a missing body part”, Dorsal Column Student Journal, 2019
 - “The Uncertainty of Rett Syndrome”, Dorsal Column Student Journal, 2020
- Incomplete Thoughts Podcast Host Sept 2019 - Present
- Science Rendezvous Neuroscience Organizer Feb 2021 - May 2021
- Let's Talk Science Jan 2019 - May 2021
- Mentorship Committee Member Jan 2019 - Aug 2020
- GradCast #240 Podcast - ”Making Neurons to Study Autism” Oct 2019
- Science Rendezvous May 2019

- Thames Valley Science & Engineering Fair Apr 2019
- Retiring with Strong Minds presentation - Kiwanis Senior's Center Mar 2019
- Be AI U CaN B Genetics in-class (grade 7/8) presentation - Mr. Gardiner at Abdereen P.S. Feb 2019
- Clickbait Medicine Podcast Episode #2 - Cognitive Behavioural Therapy Jan 2019

Leadership and Organization

- Society of Graduate Students (SOGS) Neuroscience Councillor September 2020 - Present
- Society of Neuroscience Graduate Students (SONGS) Presentation Workshop Chair July 2020 - Present
- Robarts Association of Trainees and Students (RATS) Council May 2019 - June 2021
- Society of Neuroscience Graduate Students (SONGS) Presentation Workshop Committee Sept 2018 - July 2020
- Society of Graduate Students (SOGS) Neuroscience Councillor May 2019 - Sept 2019

PROJECTS

NeuroNex Working Memory July 2020 - Present *Trainee*

- In collaboration with 15 labs across 3 countries (Canada, USA, Germany) in 8 different academic institutions, we are working to generate a complete picture of neocortical circuits involved in generating mental representations and their functions across areas and species. We are also creating a resource that will contain the collected data as well as links to existing databases (e.g. www.primatedatabase.com).
- Agile-waterfall hybrid environment.

Human Physiology Database for Neurodevelopmental Disorders Feb 2020 - Present *Full-stack developer*

- The first open access human neurophysiology database for the dissemination of electrophysiological, transcriptomic, and morphological data related to various neurodevelopmental disorders.
- Agile environment.

Primate Cell Type Database Nov 2019 - Present *Full-stack developer*

- An open access database for intracellular electrophysiological and morphological data obtained from non-human primates sampled from the lateral prefrontal cortex.
- Agile environment.

TECHNICAL STRENGTHS

Computer Languages	MATLAB, Python, Java, HTML, VB.NET, LaTeX
Database	MySQL
Tools	Brian2, TensorFlow/ Keras, Simulation-Based Inference (SBI) Toolbox

RELEVANT ACADEMIC COURSE

Computer Science

- Biomedical Applications of Neural Networks, Introduction to Neural Networks, Data Science for the Life Sciences, Programming for the Life Sciences

Medical Sciences

- Advanced Genetics, Cellular Physiology, Cellular and Molecular Neurobiology, DNA: Genome Organization, Mutagenesis & Repair, Developmental Biology, Human Molecular Biology, Human Physiology, Motor Neurophysiology, Organogenesis in Mammals, Physiology of Stem Cell Function, Physiology of the Senses, Principles of Human Genetics, Regulation of Gene Expression, Skeletal Health and Disease