Greydon Gilmore

Curriculum Vitae

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Profile Summary

Electrophysiology ◆ Signal Processing ◆ Image Analysis
Software development ◆ Statistical Analysis ◆ Python, R, MATLAB, SQL
Clinical data handling ◆ Grant\Ethics Applications ◆ Patient care

Education

2017–2021 **Ph.D. Biomedical Engineering**, Western University, London, Canada, under supervision of **Dr. Mandar Jog**

- **Ph.D. Thesis:** Towards A Comprehensive Software Suite for Stereotactic Neurosurgery"

2013–2015 **M.Sc. Neuroscience**, Western University, London, Canada, under supervision of **Dr. Mandar Jog**

- **M.Sc. Thesis:** "Deep brain stimulation and its effects on Parkinson disease spatiotemporal gait parameters"

2010–2013 **B.Sc. Neuroscience**, Honours, Highest Distinction, Carleton University, Ottawa, Canada, under supervision of **Dr. Shawn Hayley**

- **B.Sc. Thesis:** "Influence of paraquat and recent prior social defeat on affiliative behaviour Hippocampal neurogenesis in IL-6-deficient mice"

Research Interests

- **deep brain stimulation**
  neuromodulation for movement disorders and epilepsy
- **electrophysiology**
  collection and analysis of electrophysiology data in functional neurosurgery
- **clinical software development**
  develop open-source software for clinical applications and research

Honors & Awards

2020–2022 **Parkinson's Society of Canada**
Graduate Student Award – Western University (Ph.D. candidate)

- $20,000 CAD for two years

2019 **Graduate Student Teaching Award**
Teaching assistant for Physiology 2130 – Human physiology

- $500 CAD

2017–2019 **Parkinson's Society of Canada (declined)**
Graduate Student Award – Western University (Ph.D. candidate)

- $20,000 CAD for two years

2017–2019 **OCE Talent Edge Internship Program (26784)**
Intern Talentedge Program – Western University (Ph.D. candidate)

- $60,000 CAD for two years

2017 **Graduate Student Innovation Scholars**
WORLDDiscoveries – Western University (Ph.D. candidate)

- $1,500 CAD

2017 **Scholarship for Intraoperative Neurophysiological Monitoring Course**
Western University (Ph.D. candidate)

- $7,250 USD

2016 **Natural Sciences and Engineering Research Council of Canada**
Partnered grant with Fanshawe College – Western University

- $30,000 CAD for summer term

2014–2016 **Canadian Institute of Health Research**
Canadian Graduate Scholarship – Western University (M.Sc. Candidate)

- $18,500 CAD for two years

2013 **The University Medal in Science**
Highest academic standing in the faculty of science – Carleton University

- $7,250 USD

2010–2013 **Dean's List**
Carleton University (B.Sc. Neuroscience)

Research Experiences

2013–present **Graduate Research Assistant**, Movement Disorders Center, London, Canada, under supervision of **Dr. Mandar Jog**

- routinely collect spike traces from microelectrodes within the subthalamic nucleus and local field potentials from the motor cortex (ECoG), while the patient performs cognitive tasks in the operating room
- analyze spike and LFP data within Python and MATLAB
- localize all DBS electrodes using STEALTH
- follow patients before surgery and up to 1-year post DBS surgery, while investigating various DBS parameter settings on motor outcome (eg. voltage, frequency, pulse width)
- collect kinematic data using 17 inertial sensors and gait analysis software
- statistical analysis on kinematic data for the purpose of understanding motor response to setting changes
- manage patients according to proper GCP, FDA and ICH guidelines
- effectively communicated innovative and novel research at many international conferences for several science and medical societies
- prepared several successful grant applications (Mitacs, CIHR, NSERC and Parkinson's society of Southwestern Ontario)
- ongoing manuscript preparation and publication

Professional Experience

2016–present **Intraoperative Electrophysiologist**, London Health Sciences Centre, Department of Neurosurgery, London, Canada

- collect microelectrode recordings to determine final electrode placement
- work with neurosurgical team to interpret the electrophysiology based on neural spiking activity

2015–2016 **Clinical Trial Coordinator**, London Health Sciences Centre, Movement Disorders Center, London, Canada

- initiate and manage various clinical research projects and provide project specific administrative support
- assist with actual clinical research activities by collecting and recording pertinent data
- provide clinical trial coordination and project management as specified in IRB approved pharmaceutical studies
- screen potential patients for eligibility through record review of laboratory tests and past medical history, for criteria related to participation in clinical trials
- implemented and monitored clinical trial to ensure sponsor/investigator obligations are met and are compliant with applicable local requirements and FDA and ICH guidelines

Publications

2020 Igor Varga, Eduard Bakstein, **Greydon Gilmore**, Daniel Novak (2020). Image-Based Subthalamic Nucleus Segmentation for Deep Brain Surgery with Electrophysiology Aided Refinement. *Workshop on Clinical Image-Based Procedures*. doi: /10.1007/978-3-030-60946-7_4

2020 Daphne Hui, Aditya Murgai, **Greydon Gilmore**, Shabna Mohideen, Andrew Parrent, Mandar Jog (2020). Assessing the effect of current steering on the total electrical energy delivered and ambulation in Parkinson's disease. *Nature: Scientific reports*. doi: 10.1038/s41598-020-64250-7

2020 Mahsa Khosravi, S. Farokh Atashzar, **Greydon Gilmore**, Mandar Jog, Rajni Patel (2020). Intraoperative Localization of STN During DBS Surgery Using a Data-Driven Model. *IEEE Journal of Translational Engineering in Health and Medicine*. doi: 10.1109/JTEHM.2020.2969152

2019 **Greydon Gilmore**, Aditya Murgai, Abdulrahman Nazer, Andrew Parrent, Mandar Jog (2019). Zona incerta deep-brain stimulation in orthostatic tremor: efficacy and mechanism of improvement. *Journal of Neurology*. doi: 10.1007/s00415-019-09505-8

2019 **Greydon Gilmore**, Arnaud Gouelle, Mitchell Adamson, Marcus Pieterman, Mandar Jog (2019). Forward and backward walking in Parkinson disease: A factor analysis. *Gait & Posture*. doi: 10.1016/j.gaitpost.2019.08.005

2019 **Greydon Gilmore**, Aditya Murgai, Mandar Jog (2019). Letter to the Editor Regarding "Statistical Shape Analysis of Subthalamic Nucleus in Patients with Parkinson's Disease". World Neurosurgery. doi: 10.1016/j.wneu.2019.03.266

2019 Mahsa Khosravi, Seyed Farokh Atashzar, **Greydon Gilmore**, Mandar Jog, Rajni Patel (2019). Unsupervised Clustering of Micro-Electrophysiological Signals for localization of Subthalamic Nucleus during DBS Surgery. 2019 9th International IEEE/EMBS Conference on Neural Engineering.

2018 Mitch B. Adamson, **Greydon Gilmore**, Tyler W. Stratton, Navid Baktash, Mandar Jog (2018). Medication status and dual-tasking on turning strategies in Parkinson disease. In Journal of the neurological sciences. Doi: 10.1016/j.jns.2018.11.028

2018 Mahsa Khosravi, Seyed Farokh Atashzar, **Greydon Gilmore**, Mandar Jog, Rajni Patel (2018). Electrophysiological signal processing for intraoperative localization of subthalamic nuleus during deep brain stimulation surgery. *2018 IEEE Global Conference on Signal and Information Processing.*

2017 **Greydon Gilmore**, Donald Lee, Andrew Parrent, Mandar Jog (2017). The current state of post-operative imaging in the presence of deep brain stimulation electrodes. Movement Disorders. doi: 10.1002/mds.27028

2017 **Greydon Gilmore**, Mandar Jog (2017). Future perspectives: Assessment tools and rehabilitation in the new age. In Fen, C.H., Barsottini, O. (1st edition, pp. 155-182), Movement Disorders Rehabilitation. New York, New York: Springer.

2017 Memar, S., Delrobaei, M., **Gilmore, G.**, McIsaac, K., Jog, M. (2017). Segmentation and detection of physical activities during a sitting task in Parkinson's disease participants using multiple inertial sensors. Journal of Applied Biomedicine. doi: 10.1016/j.jab.2017.05.002

2017 Delrobaei, M., Baktash, N., **Gilmore, G.**, McIssaac K., Jog, M. (2017). Using wearable technology to generate objective Parkinson's disease dyskinesia severity score: Possibilities for home monitoring. IEEE Trans Neural Systems Rehabilitation Engineering. doi: 10.1109/TNSRE.2017.2690578.

2016 Delrobaei, M., Tran, S., **Gilmore, G.**, McIssac, K., Jog, M. (2016). Characterization of multi-joint upper limb movements in a single task to assess bradykinesia. Journal of the Neurological Sciences, 368 (337-342). doi: 10.1016/j.jns.2016.07.056

2015 Delrobaei, M., Tran, S., **Gilmore, G.**, Ogjanovic, K., McIssac, K., Jog, M. (2015). The impact of electrical parameters on bradykinesia of Parkinson's disease patients after deep brain stimulation surgery. Movement Disorders, 30 (S88-S88).

2014 Delrobaei, M., Parrent, A., Tran, S., **Gilmore, G.**, Ogjanovic, K., McIssac, K., Jog, M. (2014). Quantifying the short-term effects of deep brain stimulation surgery on bradykinesia in Parkinosn's disease patients. Biomedical Engineering. 21th Iranina Conference (pp 224-228). doi: 10.1109/ICBME.2014.7043926

Teaching Experiences

2020–2021 **Teaching Assistant**, Human Physiology (PHYS 1020), Western University, London, Canada

2016–2020 **Teaching Assistant**, Human Physiology (PHYS 2130), Western University, London, Canada

2014–2015 **Teaching Assistant**, Student Development Centre (Indigenous Services), Western University, London, Canada

2013–2014 **Teaching Assistant**, Child Development (Psyc 2045), Western University, London, Canada

Conference Presentations

2017 **Society for Neuroscience**, Washington D.C.
Oral presentation of Ph.D. Thesis work

2016 **Society for Neuroscience**, San Diego, California
Oral presentation of Ph.D. Thesis work

2015 **Society for Neuroscience**, Chicago, Illinois
Oral presentation of Ph.D. Thesis work

2015 **International Neuromodulation Society**, Montreal, Quebec
Oral presentation of M.Sc. Thesis work

2014 **International Gait and Posture Conference**, Vancouver, British Columbia
Oral presentation of M.Sc. Thesis work

2014 **Canadian Association of Neuroscience Conference**, Montreal, Quebec
Oral presentation of M.Sc. Thesis work

Training and Certificates

2018 Deep Learning Reinforcement Learning Summer School
- Vector Institute and CIFAR, Toronto, Canada

2017 Intensive Intraoperative Neurophysiological Monitoring Course
- Greenville Neuromodulation Centre, Greenville, Pennsylvania

2013–present Good Clinical Practice
- CITI Program

Interests

Magic performing magic for 20+ years

Coffee wrote a coffee blog for a few years, travelled internationally to write reviews about cafes

References

Dr. Mandar Jog
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