

# Greydon Gilmore

## Curriculum Vitae

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### Profile Summary

electrophysiology ♦ signal processing ♦ medical image analysis  
software development ♦ statistical analysis ♦ Python, R, Bash, MATLAB, SQL  
clinical data handling ♦ grant\ethics applications ♦ patient care

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### 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"

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### Research Interests

- **neuromodulation**  
deep brain stimulation 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

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### 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

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## Professional Experience

- 2016–present **Intraoperative Electrophysiologist**, London Health Sciences Centre, Department of Neurosurgery, London, Canada
- provide intraoperative electrophysiology support during neurosurgical procedures
  - extracellular single-unit recordings, audio evoked potentials, EEG/iEEG, subdural grids
- 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

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## Publications

- 2022 Dinkar Kulshreshtha, Marcus Pieterman, **Greydon Gilmore**, Mandar Jog (2022). Adapting the listening time for micro-electrode recordings in deep brain stimulation interventions. *Journal of Neurology*. doi: 10.1007/s00415-021-10666-8
- 2022 Mohamad Abbass, **Greydon Gilmore**, Alaa Taha, Ryan Chevalier, Magdalena Jach, Terry M Peters, Ali R Khan, Jonathan C Lau (2022). Application of the anatomical fiducials framework to a clinical dataset of patients with Parkinson's disease. *Brain Structure and Function*. doi: 10.1007/s00429-021-02408-3
- 2021 Thibault Martin, **Greydon Gilmore**, Claire Haegelen, Pierre Jannin, John SH Baxter (2021). Adapting the listening time for micro-electrode recordings in deep brain stimulation interventions. *International Journal of Computer Assisted Radiology and Surgery*. doi: 10.1007/s11548-021-02379-0
- 2021 Thibault Martin, Maxime Peralta, **Greydon Gilmore**, Paul Sauleau, Claire Haegelen, Pierre Jannin, John SH Baxter (2021). Extending convolutional neural networks for localizing the subthalamic nucleus from micro-electrode recordings in Parkinson's disease. *Biomedical Signal Processing and Control*. doi: 10.1016/j.bspc.2021.102529
- 2021 Maryam H Mofrad, **Greydon Gilmore**, Seyed M Mirsattari, Jorge G Burneo, David A Steven, Ali Khan, Ana Suller Marti, Lyle Muller (2021). Waveform detection by deep learning reveals multi-area spindles that are selectively modulated by memory load. *bioRxiv*. doi: 10.1101/2021.05.14.444188

- 2020 Jonathan C Lau, Yiming Xiao, Roy AM Haast, **Greydon Gilmore**, Kâmil Uludağ, Keith W MacDougall, Ravi S Menon, Andrew G Parrent, Terry M Peters, Ali R Khan (2020). Direct visualization and characterization of the human zona incerta and surrounding structures. *Human brain mapping*. doi: 10.1002/hbm.25137
- 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 nucleus 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.**, McIsaac 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 Parkinson's disease patients. *Biomedical Engineering. 21th Iranina Conference* (pp 224-228). doi: 10.1109/ICBME.2014.7043926

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## 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

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## 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

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## 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

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## Interests

- Magic performing magic for 20+ years
- Coffee wrote a coffee blog for a few years, travelled internationally to write reviews about cafes

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## References

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