

1. NAME, POSITION, AND DEPARTMENT

David Allenson Borton

Associate Professor of Engineering and Brain Science
School of Engineering, Brown University
Carney Institute for Brain Science
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Biomedical Engineer
Department of Veterans Affairs
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2. EDUCATION

Postdoctoral fellowship (Bioengineering; G. Courtine), Ecole Polytechnique Federale de Lausanne, 2014
Ph.D. (Biomedical Engineering, *neuroengineering*; A. Nurmikko), Brown University, 2012
Sc.B. (Biomedical Engineering, *bioelectronics*; L. Snyder), Washington University in St. Louis, 2006

3. PROFESSIONAL APPOINTMENTS

09-01-2022 – present **Brown University**
Associate Professor of Brain Science

07-01-2021 – present **Brown University**
Associate Professor of Engineering

12-01-2016 – present **Providence VA Medical Center**
Biomedical Researcher, Center for Neurorestoration and Neurotechnology (CfNN)

07-01-2014 – 2021 **Brown University**
Assistant Professor of Engineering

07-01-2012 – 2014 **Ecole Polytechnique Federale de Lausanne (EPFL)**
Marie Curie Postdoctoral Fellow, Center for Neuroprosthetics

4. ACADEMIC HONORS, FELLOWSHIPS, AND SOCIETIES

A. FACULTY HONORS

- Defense Advanced Research Projects Agency Director's Award, 2017
- Distinguished Visiting Professor, Johnson & Wales University, 2016
- Defense Advanced Research Projects Agency Young Faculty Award, 2014
- International Research in Paraplegia Research Award, 2014

B. GRADUATE HONORS

- Nomination to attend Lindau Nobel Laureate Meeting, European Commission, 2013
- Marie Curie International Incoming Fellowship (IIF), 2012
- Brain Science Program Reisman Fellowship, 2010

C. PROFESSIONAL SOCIETY MEMBERSHIPS

- Institute of Electrical and Electronics Engineers (IEEE)
- IEEE Biomedical Engineering Society (BMES)
- IEEE Engineering in Medicine and Biology Society (EMBS)
- Society for Neuroscience (SfN)
- International Society for Optics and Photonics (SPIE)
- OpenMind Responsive Neurotechnology Consortium (<https://openmind-consortium.github.io>)
- American Society of Stereotactic Neurosurgeons (ASSFN)

5. PUBLICATIONS

A. CHAPTERS IN BOOKS

1. “AI and ML”

Adriel Barrios-Anderson, Jared Fridley, David Borton, and Carl Saab.
In *Spinal Cord Injury Pain*, pg. accepted, (Elsevier: San Diego, CA, USA, 2020).

2. “Wireless Neurotechnology for Neural Prostheses”

Arto Nurmikko, David Borton, and Ming Yin.
In *Neurobionics: The Biomedical Engineering of Neural Prostheses*, pg. 123–161, (John Wiley & Sons, Inc.: Hoboken, NJ, USA, 2016), [DOI:10.1002/9781118816028.ch5](https://doi.org/10.1002/9781118816028.ch5).

3. “Rewiring the Nervous System, Without Wires”

David Borton.
In *Future Trends in Microelectronics*, pg. 259–274, (John Wiley & Sons, Inc.: Hoboken, NJ, USA, 2016), [DOI:10.1002/9781119069225.ch3-2](https://doi.org/10.1002/9781119069225.ch3-2).

4. “Wireless, Implantable Neuroprostheses: Applying Advanced Technology to Untether the Mind”

David Borton and Arto Nurmikko.
In *Future Trends in Microelectronics*, pg. 286–299, (John Wiley & Sons, Inc.: Hoboken, NJ, USA, 2013), [DOI:10.1002/9781118678107.ch21](https://doi.org/10.1002/9781118678107.ch21).

B. REFEREED JOURNAL PUBLICATIONS AND CONFERENCE PROCEEDINGS

The fields of engineering, neuroscience, and clinical studies all have unique avenues to share scientific accomplishments. First, it is important to remember that for all of these fields, authorship generally follows the guideline of first listing the student who completed the research (first author) and last listing the advising author and/or author who’s laboratory supported the majority of the research (last author). At times, when contributions are truly equal, first authors will be listed as “equally contributing” and should be considered as such in rating the relevant contributions. Engineering publications take the form of both peer-reviewed journals and peer-reviewed conference proceedings. Neuroscience relies heavily on journal publications, separated by journal mission (e.g. journal of neuroscience vs. the journal of neuroscience methods). My scientific contributions are across the engineering, neuroscience, and clinical fields and are along appropriate and respected publication avenues for each. *** indicates equal contribution authors.**
‡ **indicates co-senior author**

1. “A Review of Functional Restoration From Spinal Cord Stimulation in Patients With Spinal Cord Injury”

Alice Lin, Elias Shaaya, Jonathan S. Calvert, Samuel R. Parker, David A. Borton, and Jared S. Fridley.
Neurospine, **19** (2022), 703–734, [DOI:10.14245/ns.2244652.326](https://doi.org/10.14245/ns.2244652.326).

2. **“Fast inference of spinal neuromodulation for motor control using amortized neural networks.”**
Lakshmi Narasimhan Govindarajan, Jonathan Calvert, Samuel Parker, Minju Jung, Radu Darie, Priyanka Miranda, Elias Shaaya, David Borton, and Thomas Serre.
Journal of neural engineering (2022), online, DOI:10.1088/1741-2552/ac9646.
3. **“Emergence of distinct neural subspaces in motor cortical dynamics during volitional adjustments of ongoing locomotion”**
David Xing, Wilson Truccolo, and David A. Borton.
Journal of Neuroscience (2022), accepted, DOI:10.1101/2022.04.03.486001.
4. **“Spatiotemporal Distribution of Electrically Evoked Spinal Compound Action Potentials During Spinal Cord Stimulation”**
Jonathan S. Calvert, Radu Darie, Samuel R. Parker, Elias Shaaya, Sohail Syed, Bryan L. McLaughlin, Jared S. Fridley, and David A. Borton.
Neuromodulation: Technology at the Neural Interface (2022), online publication, DOI:10.1016/j.neurom.2022.03.007.
5. **“A 3D in vitro model of the device-tissue interface: functional and structural symptoms of innate neuroinflammation are mitigated by antioxidant ceria nanoparticles”**
Elaina Atherton, Yue Hu, Sophie Brown, Emily Papiez, Vivian Ling, Vicki L Colvin, and David A Borton.
Journal of Neural Engineering, **19** (2022), 036004, DOI:10.1088/1741-2552/ac6908.
6. **“Lipopolysaccharide-induced neuroinflammation disrupts functional connectivity and community structure in primary cortical microtissues”**
Elaina Atherton, Sophie Brown, Emily Papiez, Maria I Restrepo, and David A Borton.
Scientific reports, **11** (2021), 1–15, DOI:https://doi.org/10.1038/s41598-021-01616-5.
7. **“Deep brain stimulation for depression informed by intracranial recordings”**
Sameer A. Sheth, Kelly R. Bijanki, Brian Metzger, Anusha Allawala, Victoria Pirtle, Joshua A. Adkinson, John Myers, Raissa K. Mathura, Denise Oswald, Evangelia Tsolaki, Jiayang Xiao, Angela Noecker, Adriana M. Strutt, Jeffrey F. Cohn, Cameron C. McIntyre, Sanjay J. Mathew, David Borton, Wayne Goodman, and Nader Pouratian.
Biological Psychiatry, **92** (2022), 246–251, DOI:https://doi.org/10.1016/j.biopsych.2021.11.007. From Molecules to Circuits in Depression.
8. **“Long-term ecological assessment of intracranial electrophysiology synchronized to behavioral markers in obsessive-compulsive disorder”**
Nicole R. Provenza, Sameer A. Sheth, Evan M. Dastin-van Rijn, Raissa K. Mathura, Yaohan Ding, Gregory S. Vogt, Michelle Avendano-Ortega, Nithya Ramakrishnan, Noam Peled, Luiz Fernando Fracassi Gelin, David Xing, Laszlo A. Jeni, Itir Onal Ertugrul, Adriel Barrios-Anderson, Evan Matteson, Andrew D. Wiese, Junqian Xu, Ashwin Viswanathan, Matthew T. Harrison, Kelly R. Bijanki, Eric A. Storch, Jeffrey F. Cohn, Wayne K. Goodman, and David A. Borton.
Nature Medicine, **27** (2021), 2154–2164, DOI:10.1038/s41591-021-01550-z.
9. **“Honeycomb: a template for reproducible psychophysiological tasks for clinic, laboratory, and home use.”**
Nicole R Provenza, Luiz Fernando Fracassi Gelin, Wasita Mahaphanit, Mary C McGrath, Evan M Dastin-van Rijn, Yunshu Fan, Rashi Dhar, Michael J Frank, Maria I Restrepo, Wayne K Goodman, and David A Borton.
Revista brasileira de psiquiatria (Sao Paulo, Brazil : 1999), **44** (2022), 147–155, DOI:10.1590/1516-4446-2020-1675.
10. **“Uncovering biomarkers during therapeutic neuromodulation with parrm: Period-based artifact reconstruction and removal method”**
Evan M Dastin-van Rijn, Nicole R Provenza, Jonathan S Calvert, Anusha B Allawala, Radu Darie, Sohail Syed, Evan Matteson, Gregory S Vogt, Michelle Avendano-Ortega, Ana C Vasquez, *et al.*
Cell Reports Methods (2021), 100010, DOI:https://doi.org/10.1016/j.crmeth.2021.100010.

11. **“Balancing specialized versus flexible computation in brain–computer interfaces”**
Ioannis Karageorgos, Karthik Sriram, Ján Veselý, Nick Lindsay, Xiayuan Wen, Michael Wu, Marc Powell, David Borton, Rajit Manohar, and Abhishek Bhattacharjee.
IEEE Micro, **41** (2021), 87–94.
12. **“A Novel Framework for Network-Targeted Neuropsychiatric Deep Brain Stimulation”**
Anusha Allawala, Kelly R Bijanki, Wayne Goodman, Jeffrey F Cohn, Ashwin Viswanathan, Daniel Yoshor, David A Borton, Nader Pouratian, and Sameer A Sheth.
Neurosurgery, **89** (2021), E116–E121, DOI:10.1093/neuros/nyab112.
13. **“How do packet losses affect measures of averaged neural signals?”**
Evan Dastin-van Rijn, Matthew Harrison, and David Allenson Borton.
bioRxiv (2021), N/A, DOI:https://doi.org/10.1101/2021.06.03.446830.
14. Bradford N. Roarr, Randy S. Perrone, Fawad Jamshed, Ro’ee Gilron, Timothy J. Denison, Philip A. Starr, Jeffrey A. Herron, and David A. Borton, “Omni: Open mind neuromodulation interface for accelerated research and discovery,” in *2021 10th International IEEE/EMBS Conference on Neural Engineering (NER)* 985–988, 2021.
15. **“NeuroDAC: an open-source arbitrary biosignal waveform generator”**
M P Powell, J Anso, R Gilron, N R Provenza, A B Allawala, D D Sliva, K R Bijanki, D Oswalt, J Adkinson, N Pouratian, S A Sheth, W K Goodman, S R Jones, P A Starr, and D A Borton.
Journal of Neural Engineering, **18** (2021), 016010, DOI:10.1088/1741-2552/abc7f0.
16. **“Long-term wireless streaming of neural recordings for circuit discovery and adaptive stimulation in individuals with parkinson’s disease”**
Simon Little, Randy Perrone, Robert Wilt, Coralie de Hemptinne, Maria S Yaroshinsky, Caroline A Racine, Sarah S Wang, Jill L Ostrem, Paul S Larson, Doris D Wang, *et al.*.
Nature biotechnology (2021), 1–8, DOI:https://doi.org/10.1038/s41587-021-00897-5.
17. **“Developing collaborative platforms to advance neurotechnology and its translation”**
David A. Borton, Heather E. Dawes, Gregory A. Worrell, Philip A. Starr, and Timothy J. Denison.
Neuron, **108** (2020), 286 – 301.
18. **“Hardware-software co-design for brain-computer interfaces”**
I. Karageorgos, K. Sriram, J. Veselý, M. Wu, M. Powell, D. Borton, R. Manohar, and A. Bhattacharjee.
Proceedings of 2020 ACM/IEEE 47th Annual International Symposium on Computer Architecture (ISCA) (2020), 391–404. ”tags”:[”Advanced Neurotechnology”].
19. **“Automated and rapid self-report of nociception in transgenic mice”**
Christopher J. Black, Anusha B. Allawala, Kiernan Bloye, Kevin N. Vanent, Muhammad M. Edhi, Carl Y. Saab, and David A. Borton.
Scientific Reports, **10** (2020), 13215. ”tags”:[”Sensorimotor Neuroscience”].
20. **“Miniaturized devices for bioluminescence imaging in freely behaving animals”**
Dmitrijs Celinskis, Nina Friedman, Mikhail Koksharov, Jeremy Murphy, Manuel Gomez-Ramirez, David Borton, Nathan Shaner, Ute Hochgeschwender, Diane Lipscombe, and Christopher Moore.
Proceedings of 2020 42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (2020), 4385–4389. ”tags”:[”Advanced Neurotechnology”].
21. **“Pain phenotypes classified by machine learning using electroencephalography features”**
Joshua Levitt, Muhammad M Edhi, Ryan V Thorpe, Jason W Leung, Mai Michishita, Suguru Koyama, Satoru Yoshikawa, Keith A Scarfo, Alexios G Carayannopoulos, Wendy Gu, Kyle Srivastava, Bryan Clark, Rosana Esteller, David Borton, Stephanie Jones, and Carl Saab.
NeuroImage (2020), 117256. ”tags”:[”Sensorimotor Neuroscience”].
22. **“Low-Dimensional Motor Cortex Dynamics Preserve Kinematics Information During Unconstrained Locomotion in Nonhuman Primates”**
David Xing*, Mehdi Aghagolzadeh*, Wilson Truccolo, Erwan Bezaud, Gregoire Courtine‡, and David Borton‡.
Frontiers in Neuroscience, **13** (2019), 1046. ”tags”:[”Sensorimotor Neuroscience”].

23. **“Decoding task engagement from distributed network electrophysiology in humans”**
Nicole Provenza, Angelique Paulk, Noam Peled, Maria Restrepo, Sydney Cash, Darin Dougherty, Emad Eskandar, David Borton[‡], and Alik Widge[‡].
Journal of Neural Engineering, **16** (2019), 16. ”tags”:[”Psychiatric Neuromodulation”].
24. **“The case for responsive neuromodulation to treat severe intractable mental disorders”**
Nicole Provenza, Evan Matteson, Anusha Allawala, Adriel Barrios-Anderson, Sameer A Sheth, Ashwin Viswanathan, Elizabeth McIngvale, Eric Storch, Michael J Frank, Nicole McLaughlin, Jeff Cohn, Wayne Goodman, and David Borton.
Frontiers in Neuroscience, **13** (2019), 152. ”tags”:[”Psychiatric Neuromodulation”].
25. **“Automated Affect Detection in Deep Brain Stimulation for Obsessive-Compulsive Disorder: A Pilot Study”**
Jeffrey F Cohn, Laszlo A Jeni, Itir Onal Ertugrul, Donald Malone, Michael S Okun, David Borton, and Wayne K Goodman.
Proceedings of the 2018 on International Conference on Multimodal Interaction (2018), 40–44. ”tags”:[”Psychiatric Neuromodulation”].
26. **“Decoding hindlimb kinematics from primate motor cortex using long short-term memory recurrent neural networks”**
Yinong Wang, Wilson Truccolo, and David Borton.
Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS (2018), 1944–1947. ”tags”:[”Sensorimotor Neuroscience”].
27. **“Organic Electronics for Artificial Touch”**
Christopher Black, Radu Darie, and David Borton.
Trends in Neurosciences, **41** (2018), 568–570. ”tags”:[”Sensorimotor Neuroscience”].
28. **“Toward multi-area distributed network of implanted neural interrogators”**
Marc Powell, Xiaoxiao Hou, Craig Galligan, Nancy Stoffel, Kaustubh Nagarkar, Jeff Ash, and David Borton.
Proceedings of SPIE, **10352** (2017), 2000–2010. ”tags”:[”Advanced Neurotechnology”].
29. **“Micro-hermetic packaging technology for active implantable neural interfaces”**
Xiaoxiao Hou, Kaustubh Nagarkar, Nancy Stoffel, Eric Davis, Jeffrey Ashe, and David Borton.
Proceedings of the IEEE 67th Electronic Components and Technology Conference (2017), 218–223. ”tags”:[”Advanced Neurotechnology”].
30. **“An engineered home environment for untethered data telemetry from nonhuman primates”**
Marc P. Powell, William R. Britz, James S. Harper III, and David A. Borton.
Journal of Neuroscience Methods (2017), 72–81. ”tags”:[”Advanced Neurotechnology”].
31. **“Advances in Retinal Prosthetic Research: A Systematic Review of Engineering and Clinical Characteristics of Current Prosthetic Initiatives.”**
Derrick L Cheng, Paul B Greenberg, and David A Borton.
Current eye research, **42** (2017), 334–347. ”tags”:[”Sensorimotor Neuroscience”].
32. **“Delivering the sense of touch to the human brain”**
Radu Darie, Marc Powell, and David Borton.
Neuron, **93** (2017), 728–730. ”tags”:[”Sensorimotor Neuroscience”].
33. **“A brain–spine interface alleviating gait deficits after spinal cord injury in primates”**
Marco Capogrosso*, Tomislav Milekovic*, David Borton*, Fabien Wagner, Eduardo Martin Moraud, Jean-Baptiste Mignardot, Nicolas Buse, Jerome Gandar, Quentin Barraud, David Xing, Elodie Rey, Simone Duis, Yang Jianzhong, Wai Kin D. Ko, Qin Li, Peter Detemple, Tim Denison, Silvestro Micera, Erwan Bezar, Jocelyne Bloch, and Grégoire Courtine.
Nature, **539** (2016), 284–288. ”tags”:[”Advanced Neurotechnology”, ”Sensorimotor Neuroscience”].
34. **“Modified toolbox for optogenetics in the nonhuman primate”**
Ji Dai, Ilker Ozden, Daniel I. Brooks, Fabien Wagner, Travis May, Naubahar S. Agha, Benjamin

- Brush, David Borton, Arto V. Nurmikko, and David L. Sheinberg.
Neurophotonics, **2** (2015), 031202. "tags":["Advanced Neurotechnology"].
35. **"Wireless neurosensor for full-spectrum electrophysiology recordings during free behavior."**
Ming Yin*, David Borton*, Jacob Komar, Naubahar Agha, Yao Lu, Hao Li, Jean Laurens, Yiran Lang, Qin Li, Christopher Bull, Lawrence Larson, David Rosler, Erwan Bezar, Grégoire Courtine, and Arto V Nurmikko.
Neuron, **84** (2014), 1170–82. "tags":["Advanced Neurotechnology","Sensorimotor Neuroscience"].
 36. **"Detection of optogenetic stimulation in somatosensory cortex by non-human primates—towards artificial tactile sensation."**
Travis May, Ilker Ozden, Benjamin Brush, David Borton, Fabien Wagner, Naubahar Agha, David L Sheinberg, and Arto V Nurmikko.
PloS one, **9** (2014), e114529. "tags":["Sensorimotor Neuroscience"].
 37. **"Corticospinal neuroprostheses to restore locomotion after spinal cord injury"**
David Borton, Marco Bonizzato, Janine Beauparlant, Jack DiGiovanna, Eduardo M. Moraud, Nikolaus Wenger, Pavel Musienko, Ivan R. Minev, Stéphanie P. Lacour, José Del R Millán, Silvestro Micera, and Grégoire Courtine.
Neuroscience Research, **78** (2014), 21–29.
 38. **"Personalized Neuroprosthetics"**
David Borton, Silvestro Micera, Jose Millan, and Gregoire Courtine.
Science Translational Medicine, **5** (2013), 210rv2–210rv2.
 39. **"An implantable wireless neural interface for recording cortical circuit dynamics in moving primates."**
David Borton, Ming Yin, Juan Aceros, and Arto Nurmikko.
Journal of neural engineering, **10** (2013), 026010. "tags":["Advanced Neurotechnology"].
 40. **"A fully wireless platform for correlating behavior and neural data from an implanted, neural recording device: Demonstration in a freely moving swine model"**
Naubahar Agha, Jacob Komar, Ming Yin, David Borton, and Arto Nurmikko.
Proceedings of the International IEEE/EMBS Conference on Neural Engineering (2013), 989–992. "tags":["Advanced Neurotechnology"].
 41. **"Integrated device for combined optical neuromodulation and electrical recording for chronic in vivo applications"**
Jing Wang, Fabien Wagner, David A Borton, Jiayi Zhang, Ilker Ozden, Rebecca D Burwell, Arto V Nurmikko, Rick van Wagenen, Ilka Diester, and Karl Deisseroth.
Journal of Neural Engineering, **9** (2012), 016001. "tags":["Advanced Neurotechnology"].
 42. **"Developing implantable neuroprosthetics: A new model in pig"**
David Borton, Ming Yin, Juan Aceros, Naubahar Agha, Juri Minxha, Jacob Komar, William Patterson, Chirs Bull, and Arto Nurmikko.
Proceedings of the Annual International Conference of the IEEE/EMBC, **2011** (2011), 3024–3030. "tags":["Advanced Neurotechnology"].
 43. **"Active Microelectronic Neurosensor Arrays for Implantable Brain Communication Interfaces"**
Yoon-Kyu Song, David Borton, Sunmee Park, William Patterson, Chirs Bull, Farah Laiwalla, John Mislow, John Simeral, J.P. Donoghue, A.V. Nurmikko, Song, Borton, S. Park, Patterson, Bull, F. Laiwalla, J. Mislow, Simeral, John Donoghue, and Arto Nurmikko.
IEEE Transactions on Neural Systems and Rehabilitation Engineering, **17** (2009), 339–345. "tags":["Advanced Neurotechnology"].
 44. **"Wireless, high-bandwidth recordings from non-human primate motor cortex using a scalable 16-Ch implantable microsystem"**
David a. Borton, Yoon Kyu Song, William R. Patterson, Christopher W. Bull, Sunmee Park, Farah Laiwalla, John P. Donoghue, and Arto V. Nurmikko.

Proceedings of the Annual International Conference of the IEEE/EMBC (2009), 5531–5534. "tags":["Advanced Neurotechnology"].

45. **"Implantable wireless cortical recording device for primates"**

David A Borton, Yoon-Kyu Song, William R Patterson, Christopher W Bull, Sunmee Park, Farah Laiwalla, John P Donoghue, and Arto V Nurmikko.

World Congress on Medical Physics and Biomedical Engineering, September 7-12, 2009, Munich, Germany (2009), 588–591. "tags":["Advanced Neurotechnology"].

C. ABSTRACTS

In this section, I list the conference presentations (poster and talks) that students in my laboratory have made. Conference presentations represent an academic output (sharing science) of my laboratory, but they also represent examples of mentorship and guidance I have provided my students. Preparing for, and performance a scientific presentation in the form of a poster or talk is a growing experience for the student and essential to their overall academic and career development.

1. **"Modulation of theta power during a cognitive control task with deep brain stimulation in treatment resistant depression"**

Stephanie Vartany and David Borton.

Carney Unconference (2020), June.

2. **"Controlling brain networks through oscillatory synchrony"**

Alik Widge, Nicole Provenza, Meng-chen Lo, Ethan Blackwood, Mark Schatza, Sarah Olsen, Ishita Basu, Mustafa Taha Bilge, Darin Dougherty, and David Borton.

Biological Psychiatry, **87** (2020), S96.

3. **"Chronic vc/vs dbs for ocd increases vc/vs delta-band power during rest"**

Nicole Provenza, Sameer Sheth, Evan Dastin-van Rijn, Wayne Goodman, and David Borton.

American Society for Stereotactic and Functional Neurosurgery 2020 Biennial Meeting (2020), August.

4. **"Adaptive dbs for intractable ocd"**

Nicole Provenza, David Borton, and Wayne Goodman.

8th Deep Brain Stimulation (DBS) Think Tank (2020), September.

5. **"Chronic vc/vs dbs for ocd modulates vc/vs delta-band power during rest"**

Nicole Provenza, Sameer Sheth, Evan Dastin-van Rijn, Matthew Harrison, Wayne Goodman, and David Borton.

The BRAIN Initiative Investigators Meeting (2020), June 1–2.

6. **"A novel method for dbs artifact removal: Period-based artifact reconstruction and removal method for dbs."**

Evan Dastin-van Rijn, Nicole Provenza, Matthew Harrison, Wayne Goodman, and David Borton.

The BRAIN Initiative Investigators Meeting (2020), June 1–2.

7. **"Spinal cord stimulation modulates the sensory cortex during passive leg movements"**

Radu Darie and David Borton.

Society for the Neural Control of Movement (2019), 2–D–58.

8. **"Population dynamics in primary motor cortex during locomotion and obstacle avoidance"**

David Xing, Wilson Truccolo, and David Borton.

Society for the Neural Control of Movement (2019), 2–D–61.

9. **"Towards understanding the role of task-related sensory information in motor cortex during object interaction"**

Marc Powell and David Borton.

Society for the Neural Control of Movement Annual Meeting (2019), 2–D–57.

10. **“Toward understanding sensorimotor integration during object interaction in a freely behaving nonhuman primate model”**
 Marc Powell.
Southern New England American Association for Laboratory Animal Science Meeting (2019), 1.
11. **“Motor cortical correlates of obstacle avoidance during locomotion in non-human primates”**
 David Xing and David Borton.
Society for Neuroscience (2018), NN9/310.04.
12. **“Self-assembled neural microtissue as an in vitro model of the device-tissue interface”**
 Elaina Atherton, Marc Powell, Diane Hoffman-Kim, and David Borton.
Neuroscience, Neuroengineering, and Biomedical Engineering Workshop (2018), 1.
13. **“An engineered in vitro model of foreign-body response to chronic neural implants”**
 Elaina Atherton, Anusha Allawalla, Marc Powell, Diane Hoffman-Kim, and David Borton.
Society for Neuroscience (2018), 769.12.
14. **“A transdural very-near field wireless power and data link for implantable neural interfaces”**
 Marc Powell, XiaoXiao Hou, and David Borton.
Society for Neuroscience (2018), 700.17/LLL20.
15. **“A multi-modal approach to elucidate the spinal circuits mediating tactile allodynia”**
 Christopher Black, Anusha Allawala, Ryan Thorpe, Carl Saab, Stephanie Jones, and David Borton.
Society for Neuroscience (2018), 389.02/W5.
16. **“Characterization of circuit mechanisms underlying discriminatory eeg neural markers of pain perception in somatosensory cortex”**
 Ryan Thorpe, Christopher Black, Sam Neymotin, Carl Saab, David Borton, and Stephanie Jones.
Neuroscience (2018), 1.
17. **“Investigating leg kinesthesia in the primate somatosensory cortex”**
 Radu Darie and David Borton.
Society for Neuroscience (2018), 1.
18. **“Toward active sensory prostheses”**
 Marc Powell and David Borton.
Summer School on Neurophysiology for Neural and Biomedical Engineering (2017), 1.
19. **“A neuromusculoskeletal model of the rhesus macaque hindlimb during locomotion”**
 Radu Darie, A Di Russo, and David Borton.
Society for Neuroscience (2017), 1.
20. **“Self-assembled neural microtissue as a relevant, reliable, and high throughput in vitro model of the device-tissue interface”**
 Elaina Atherton, Jess Sevetsen, Diane Hoffman-Kim, and David Borton.
Society for Neuroscience (2017), 595.08.
21. **“Decoding task states from distributed local field potential recordings”**
 Nicole R Provenza, Angelique C Paulk, Kara Farnes, Madeline M Robertson, Noam Peled, Darin D Dougherty, Sydney S Cash, Emad N Eskandar, Alik S Widge, and David A Borton.
Annals of Neurology, **82** (2017), M125, DOI:10.1002/ana.25024.
22. **“Decoding hindlimb kinematics from single-unit motor cortical activity using deep neural networks in non-human primates”**
 Yinong Wang, David Xing, Wilson A. Truccolo, and David A. Borton.
Society for Neuroscience (2017), 1.
23. **“Decoding task states from distributed local field potential recordings in humans”**
 Nicole Provenza, Angelique Paulk, Kara Farnes, Madeleine Robertson, Noam Peled, Nir Nossenson, D Vallejo-Lopez, Dustin Dougherty, Syd Cash, Emad Eskandar, Alik Widge, and David Borton.
Society for Neuroscience (2017), 1.

24. **“Conjugation of antioxidants for integration of neural device-tissue interfaces”**
Elaina Atherton, Joseph Faller, and David Borton.
Materials Research Society Fall Meeting and Exhibit (2016), 1.
25. **“Novel approaches to a biohybrid retinal prosthesis: Development of a method for culturing, recording, and stimulating retinal neurons”**
Derrick Cheng and David Borton.
Brown University Neuroscience Honors Symposium (2016), 1.
26. **“Modeling the transmission of electromagnetic radiation through radio frequency transparent non-human primate enclosures”**
Sarah Syrop, Marc Powell, and David Borton.
Brown University Undergraduate Teaching and Research Awards (2015), 1.
27. **“A computational model of epidural electrical stimulation of locomotor circuitry in rhesus macaque lumbar spinal cord”**
Radu Darie, Omar Nema, and David Borton.
Society for Neuroscience (2015), 422.01/Q2.
28. **“Advances in retinal prosthetic research: A systematic review”**
Derrick Cheng, Paul Greenberg, and David Borton.
23rd Annual Lifespan Hospitals Research Conference (2015), 1.
29. **“Functional inference distinguishes task and stimulation states across cortical and sub-cortical networks”**
Nicole Provenza, Kara Farnes, Nir Nossenson, Madeleine Robertson, Angelique Paulk, Noam Peled, Mark McConely, Peter Parks, Dustin Dougherty, Syd Cash, Emad Eskandar, Alik Widge, and David Borton.
Society for Neuroscience (2016), 454.06 / JJJ4.
30. **“Low dimensional dynamics of the primary motor cortex during natural locomotion captures kinematic information and improves decoding performance for brain machine interfaces”**
David Xing, Mehdi Aghagolzadeh, Wilson Truccolo, and David Borton.
Society for Neuroscience (2015), 522.07/V18.
31. **“Radio-transparent enclosures for enabling wireless home-cage recordings of non-human primates”**
Marc Powell, David Xing, Radu Darie, Aaron Gregoire, Jonas Zimmerman, William Britz, James Harper, and David Borton.
Society for Neuroscience (2015), 612.19/R14.
32. **“Behavioral report of optogenetic stimulation of somatosensory cortex hand representation in non-human primates”**
Travis May, Ilker Ozden, Naubahar Agha, Fabien Wagner, Ben Brush, David Borton, and Arto Nurmikko.
Society for Neuroscience Annual Meeting (2013), 612–644.

D. INVITED LECTURES, PANELS, AND SEMINARS

1. Panel Conversation - Neuromodulation and the Frontiers of Bioelectronic Therapy
(Virtual) San Francisco, CA - September 2020.
2. Speaker - Toward chronic, bidirectional interfaces to the spinal cord
(Virtual) Montreal, Canada - June 2020.
3. Keynote speaker Winter Speaker Series - Wired and Rewired: On the Cutting Edge of Neuroscience
Newport, RI - February 2020.
4. SPIE Optics and Nanoengineering
San Diego, CA - August 2019.

5. Keynote speaker - Neurotechnology in Dementia
London, UK - May 2019.
6. Rhode Island Hospital Neurosurgical Retreat
Newport, RI - May 2019.
7. JSW Group Summer Session
Providence, RI - April 2019.
8. BRAIN PI Meeting Session Talk
Bethesda, MD - May 2019.
9. Society for Neuroscience Session Talk
San Diego, CA - October 2018.
10. Electronic Packaging Symposium
Niskayuna, NY - September 2018.
11. Brain-Computer Interface Society, Keynote speaker
Asilomar, USA, May 2018.
12. Future Trends in Microelectronics Workshop, Invited speaker
Sardinia, Italy, June 2018.
13. Neurotechnology Workshop, speaker
Newport, USA, June 2018.
14. Data Sharing Workshop, Invited speaker
Washington D.C., USA, November 2017.
15. Neuroengineering Course URI, Invited speaker
Kingston, USA, November 2017.
16. International Packaging Conference, Invited speaker
San Diego, USA, August 2017.
17. International Society for Optics and Photonics, Invited speaker
San Diego, USA, August 2017.
18. Johnson and Wales University, Distinguished speaker
Providence, USA, February 2017.
19. Open AI Neurotechnology Lecture
San Francisco, USA, January 2017.
20. Medtronic Scientific Forum
Minneapolis, USA, December 2016.
21. Medical Electronic Device Realization Center
MIT Boston, USA, May 2015.
22. Electronic Packaging Symposium
Niskayuna, USA, September 2015.
23. Center for Sensorimotor Neural Engineering
Seattle, USA, August 2015.
24. Future Trends in Microelectronics Workshop
Mallorca, Spain, June 2015.
25. The Congress of Neurological Surgeons
Boston, USA, December 2014.
26. McGowan Institute for Rehabilitation Retreat
Pittsburgh, USA, September 2014.
27. Fudan University, Invited speaker
Shanghai, China, December 2014.

28. Medtronic Scientific Forum
Minneapolis, USA, November 2014.
29. Italian Society of Clinical Movement Analysis
Pisa, Italy, 2013.
30. Seoul National University, Invited speaker
Seoul, South Korea, March 2013.
31. Future Trends in Microelectronics Workshop
Corsica, France, June 2012.

G. PATENTS

Patents are an important aspect of a successful engineering portfolio. The focus of patents in our field is not to provide future revenue streams, but instead to protect innovative concepts that may in the future have commercial pressures driving the application. Further, patents are essential to moving from basic science to applied science, and ensuring that innovative concepts with therapeutic applications actually have a pathway to improving the human condition.

1. United States Patent and Trademark Office, U.S. Provisional Patent Application No. PCT/US22/40397, 2022, David Borton, Gautam Parthasarathy, Jared Fridley, Kirk Wallace, and Steven Dulcos, “A novel sonolucent window for ultrasound monitoring of spinal cord structure and hemodynamics,”
2. United States Patent and Trademark Office, U.S. Provisional Patent Application No. PCT/US2021/048894, 2022, David Borton, Ming Yin, Robert Franklin, and Michael Sorenson, “Novel application specific integrated circuit for neural stimulation,”
3. United States Patent and Trademark Office, U.S. Provisional Patent Application No. 63/184,891, 2021, David Borton and Evan Dastin-van Rijn, “Periodic estimation of lost packets (pelp),”
4. United States Patent and Trademark Office, U.S. Provisional Patent Application No. 63/175,838, 2021, David Borton and Evan Dastin-van Rijn, “Period-based artifact reconstruction and removal for deep brain stimulation (parrm),”
5. United States Patent and Trademark Office, U.S. Provisional Patent Application No. 63/213,842, 2021, David Borton, Jonathan Calvert, Radu Darie, Bryan McLaughin, and Samuel Parker, “A novel method to modulate nervous system activation based on one or many spinal field potentials,”
6. European Patent Office, EP2686059B1, 2012, Arto Nurmikko, Ming Yin, William Patterson, Juan Aceros, David Borton, Christopher Bull, and Farah Laiwalla, “Implantable wireless neural device,”
7. US Patent Office, 15/304,382, 2017, Arto Nurmikko, Christopher Heelan, David Borton, Jacob Komar, David Rosler, and John Simeral, “System and methods for mobile medical monitoring,”
8. World Intellectual Property Organization, PCT; US Patent Office, WO2019027517A2; US11612748, 2018, Nicole Provenza, David Borton, Alik Widge, Darin Dougherty, and Emad Eskandar, “Systems, methods, and media for detecting and facilitating an effortful mental task by providing real-time deep brain stimulation,”
9. United States Patent and Trademark Office, US20180272042A1, 2018, David Borton, Elaina Atherton, and Vicki Colvin, “Drug-polymer film for controlled local delivery at tissue-device interface,”
10. US Patent Office, U.S. Provisional Patent Application No. 62/714,565, 2020, Mark Powell and David Borton, “Neural interrogation platform,”

6. RESEARCH GRANTS (AS OF 9/2020)

—— **Total awarded: \$13,135,118.71 (anticipated) \$9,801,384.71 (obligated to-date)**
—— **Total F&A charged: \$2,836,074.59 (anticipated) \$1,350,803.21 (charged to-date)**

CURRENT GRANTS

1. **“Accelerating dissemination of implantable neurotechnology for clinical research”**
National Institute for Neurological Devices and Stroke, U24NS113637-01 (09/2020 – 08/2025).
Co-PI (with Phil Starr, Greg Worrell, and Tim Denison), \$922,271.
2. **“Intelligent spine interface”**
Defense Advanced Research Projects Agency, #D19AC00015 (09/2019 – 9/2021).
PI, \$5,406,765.
3. **“Spatiotemporal coding in the pain circuit along the spine-brain continuum”**
NIH NINDS BRAIN, 1R01NS10841401 (06/2018 – 05/2023).
Co-PI (with Carl Saab), \$1,015,250.00.
4. **“Deep brain stimulation for depression using directional current steering an individualized network targeting”**
National Institute for Mental Health, 7UH3NS10354902 (07/2018 – 08/2022).
Co-PI (with Sameer Sheth and Nadar Pouratian), \$636,782.
5. **“The role of m1 leg area in volitional and stereotyped control of the lower limb”**
Department of Veterans Affairs, Office of Research and Development, 1I01RX00283501A1 (09/2018 – 08/2022).
PI, \$1,097,862.
6. **“Adaptive dbs in non-motor neuropsychiatric disorders: Correcting limbic circuit imbalance”**
National Institute for Mental Health, 1UH3NS100549-01 (01/2017 – 12/2021).
Co-I (with lead PI: Wayne Goodman), \$1,813,156.

B. COMPLETED GRANTS (FUNDS COMMITTED TO BROWN/PI)

1. **“Piloting the intelligent spine interface for enabling improved saliency of proprioception and motor control in spinal cord injury”**
Defense Advanced Research Projects Agency, Director’s Award Expansion, D15AP00112-DA (03/2019 – 03/2021).
PI, \$830,000.
2. **“Diversity supplement to graduate medical student in my lab on funded co-pi r01”**
National Institute for Neurological Devices and Stroke, Awarded, pending # (02/2021 – 02/2022).
PI, \$100k.
3. **“Supplement: Adaptive dbs in non-motor neuropsychiatric disorders: Correcting limbic circuit imbalance”**
National Institute for Mental Health, 5UH3NS100549-02 (09/2017 – 09/2018).
Co-I (lead PI Wayne Goodman, Baylor), \$100,000.
4. **“Enhancing proprioceptive saliency via intracortical microstimulation”**
Directors Award, Defense Advanced Research Projects Agency, D15AP00112 (09/2017 – 08/2019).
PI, \$250,000.
5. **“Draper laboratory fellow - nicole provenza”**
Charles Stark Draper Laboratory, 004776 (09/2016 – 06/2020).
PI, \$(student tuition and stipend).

6. **“High bandwidth wireless interface for continuous intracortical recording”**
National Institute for Neurological Devices and Stroke, UH2NS095548 (09/2015 – 08/2020).
Co-I (lead PIs: Leigh Hochberg and Arto Nurmikko), \$335,979.
 7. **“Physical and computational modeling of sensory relay from peripheral input to cortical processing (comsense)”**
Medtronic, inc., 000 (07/2017 – 06/2018).
PI (with Co-I: Carl Saab and Stephanie Jones), \$325,072.
 8. **“Restoring balance and locomotion via model-driven sensory stimulation within dynamic and diverse environments”**
Defense Advanced Research Projects Agency, Young Faculty Award, D15AP00112 (09/2015 – 09/2017).
PI, \$934,000.
 9. **“Cortical internet for therapies of sensory deficits”**
Defense Advanced Research Projects Agency, DARPA-16-09-NESD-FP-001 (04/2017 – 04/2018).
Co-I (with lead PI: Arto Nurmikko), \$788,028.
 10. **“Toward a unified model of spatiotemporal coding in the spine-brain continuum”**
Brown Internal Seed Funding, GR300078 (03/2017 – 03/2018).
PI (with lead Co-I: Carl Saab), \$100,000.
 11. **“Development of implantable electronics and device packaging”**
General Electric Global Research, 146994642 (06/2016 – 12/2016).
PI, \$98,475.
 12. **“A model-based approach to cervical cord stimulation for upper limb movement restoration”**
International Research in Paraplegia Foundation, P152 (5/2015 – 4/2017).
PI, \$150,000.
 13. **“Draper laboratory fellow - nicole provenza”**
Charles Stark Draper Laboratory, 252.209-7005 (09/2015 – 06/2016).
PI, \$70,000.
-

C. PROPOSALS SUBMITTED AND PENDING

1. **“A novel sonolucent window for longitudinal ultrasound monitoring of spinal cord injury”**
Department of Defense, #submitted (02/2021 – 02/2023).
PI (Sub-award to GE Research), \$(est)700k.
 2. **“Encoding principles of kinesthesia in the primate somatosensory cortex”**
National Institute for Neurological Devices and Stroke, #submitted (02/2021 – 02/2026).
PI, \$(est)1.5M.
-

9. TEACHING AND ADVISING

A. RECENT REGULAR COURSES TAUGHT

SEMESTER	COURSE NUMBER AND TITLE	ENROLLMENT	EVAL.*
Spring 2023	ENGN 2912R: Implantable Devices	14	-†
Fall 2022	ENGN 1230: Instrumentation Design	41	4.0†
Fall 2021	ENGN 1230: Instrumentation Design	47	3.4†
Spring 2021	ENGN 2912R: Implantable Devices	11	3.8†
Fall 2020	ENGN 1230: Instrumentation Design	28	4.4†
Fall 2019	ENGN 1230: Instrumentation Design	38	4.5†
Spring 2018	Junior Sabbatical	N/A	N/A
Fall 2018	ENGN 1230: Instrumentation Design	31	1.56
Spring 2018	Teaching (parental) Relief	N/A	N/A
Fall 2017	ENGN 1230: Instrumentation Design	49	1.60
Spring 2017	ENGN 2912R: Implantable Devices	18	1.29
Fall 2016	ENGN 1230: Instrumentation Design	51	1.59
Spring 2016	ENGN 2912R: Implantable Devices	22	1.36
Fall 2015	ENGN 1230: Instrumentation Design	25	1.42
Spring 2015	ENGN 0520: Electrical Circuits and Signals (co-teach)	113	2.51
Fall 2014	ENGN 1230: Instrumentation Design (co-teach)	31	2.05

* Average Student Evaluation of instructor effectiveness based on a 1-5 scale

2014-2018: (1 = Very Effective, 2 = Effective, 3 = Good, 4 = Fair, 5= Ineffective)

†2019-present: (5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2 = Disagree, 1 = Strongly Disagree)

B. RECENT INDEPENDENT STUDIES AND WORKSHOPS

SEMESTER	COURSE NUMBER AND TITLE	ENROLLMENT
Spring 2022	ENGN 2980 S70: Special Projects, Research & Design	5
Fall 2022	ENGN 2980 S70: Special Projects, Research & Design	7
Spring 2022	NEUR: Independent Study in Neuroscience	1
Spring 2022	ENGN 2980 S70: Special Projects, Research & Design	8
Fall 2021	NEUR: Independent Study in Neuroscience	2
Fall 2021	ENGN 2980 S70: Special Projects, Research & Design	9
Spring 2021	ENGN 2980 S70: Special Projects, Research & Design	11
Fall 2020	ENGN 2980 S70: Special Projects, Research & Design	12
Spring 2020	NEUR: Independent Study in Neuroscience	1
Spring 2020	ENGN 2980 S70: Special Projects, Research & Design	10
Fall 2019	NEUR: Independent Study in Neuroscience	1
Fall 2019	ENGN 2980 S70: Special Projects, Research & Design	10
Spring 2019	ENGN 2980 S70: Special Projects, Research & Design	7
Spring 2019	NEUR: Independent Study in Neuroscience	1
Fall 2018	ENGN 2980 S70: Special Projects, Research & Design	10
Summer 2018	Brown/Wyss Neuroengineering Workshop Mentor and Co-Organizer	50
Spring 2018	ENGN 2980 S70: Special Projects, Research & Design	11
Fall 2017	ENGN 2980 S70: Special Projects, Research & Design	11
Fall 2017	NEUR: Independent Study in Neuroscience	1
Spring 2017	ENGN 2980 S70: Special Projects, Research & Design	8
Fall 2016	ENGN 2980 S70: Special Projects, Research & Design	8
Spring 2016	ENGN 2980 S70: Special Projects, Research & Design	7
Fall 2015	ENGN 2980 S70: Special Projects, Research & Design	7
Spring 2015	ENGN 1971: Independent Study in Engineering	2
Spring 2015	ENGN 2980 S70: Special Projects, Research & Design	5
Fall 2014	ENGN 2980 S70: Special Projects, Research & Design	4
Summer 2017	Unlisted: Faculty Mentor for Experimental Surgery	15

C. ADVISING

2014 – present

Graduate Doctoral Research Advisor for:

Sam Parker (Biomedical Engineering Ph.D. Program), 2020-present.

Sophie Brown (Biomedical Engineering Ph.D. Program), 2020-present.

Dmitrijs Celinkis (Biomedical Engineering Ph.D. Program; co-advised by Prof. Moore), 2018-2022. – postdoc at

Nicole Provenza (Biomedical Engineering Ph.D. Program), 2017-2021. – postdoc at Baylor College of Medicine

Anusha Allawala (Biomedical Engineering Ph.D. Program), 2017-present.

Christopher Black (Biomedical Engineering Ph.D. Program), 2015-2022. – postdoc at Brown

Elaina Atherton (Biotechnology Ph.D. Program), 2015-2021. – Scientist at Recursion

Marc Powell (Biomedical Engineering Ph.D. Program), 2014-2020. – postdoc at UPitt – CEO/Founder ReachNe

Radu Darie (Biomedical Engineering Ph.D. Program), 2014-present.

David Xing (Biomedical Engineering Ph.D. Program), 2014-2020 – postdoc at Northwestern

Evan Matteson (Biomedical Engineering Ph.D. Program), 2014-2018. – @Formlabs

Xiaoxiao Hou (Electrical Engineering Ph.D. Program), 2014-2018. – @Apple

2014 – present

Graduate Masters Research Advisor for:

Shane Barys, Biomedical Engineering, 2022-present.

Abigail Drexler, Biomedical Engineering, 2022-present.

Lily del Valle, Biomedical Engineering, 2021-present.
Priyanka Miranda, Biomedical Engineering, 2021-2023. – Software Developer II at ABioMed
Victoria Vaffae, Biomedical Engineering, 2020-present.
Yang Jiao, Electrical Engineering, 2019-2020.
Sophie Brown, Biomedical Engineering, 2019-2020. – Ph.D. @Brown BME
Ryan Thorpe, Biomedical Engineering, 2017-2019. – Ph.D. @Brown Neuroscience
Yinong Wang, Biomedical Engineering, 2016-2018. – @3M AI Labs
Sarah Syrop, Biomedical Engineering, 2015-2018. – @Philips
Nicole Provenza, Sc.M. Engineering, 2016-2017. – Ph.D. @Brown

2014 – present

International Student Research Advisor for:

Michelle Newbery (U. of Wollongong Ph.D. - Biomedical Engineering), 2019-present.
Corentin Puffin (EPFL M.S. Thesis - Neuroscience), 2019-present.
Andrea DiRusso, 2017-2018. (EPFL M.S. Thesis - Engineering) – Ph.D. @EPFL
Matheus Ferrera, 2014-2015. (Brazil Scientific Mobility Program)
Nicolas Gonzalez-Castro, 2015-2016. (Colombia, Institute of Health Sciences - CES)

2019 – present

Clinical Research Fellowship Advisor for:

Elias Shaaya, Neurosurgery, Rhode Island Hospital, 2020-2022.
Sohail Syed, Neurosurgery, Rhode Island Hospital, 2019-2020.

2015 – present

Reader on the Doctoral Dissertation / Preliminary Exam:

Sabina Stefan, Ph.D. Biomedical Engineering. 2022 (Prof. Lee)
Stefan Sigurdsson, Ph.D. Biomedical Engineering. 2020 (Prof. Nurmikko)
Jacob Gusman, Ph.D. Biomedical Engineering, Candidate. (Prof. Hochberg)
Nicole Dusang, Ph.D. Biomedical Engineering, Candidate. (Prof. Hochberg)
Daniel Scott, Ph.D. Cognitive, Linguistic & Psychological Sciences, Candidate. (Prof. Frank)
Peter Lauro, M.D., Ph.D. Neuroscience, Candidate. (Prof. Asaad)
Huy Cu, Ph.D. Biomedical Engineering, Candidate. (Prof. Nurmikko)
Joonhee Lee, Ph.D. Biomedical Engineering, Candidate. (Prof. Nurmikko)
Alejandro Pando, Ph.D. Biomedical Engineering, 2019. (Prof. Fast)
Shanshan Dai, Ph.D. Electrical Engineering, 2018. (Prof. Rosenstein)
Zeyang Yu, Ph.D. Biomedical Engineering, 2018. (Prof. Nurmikko)
Christopher Heelan, Ph.D. Electrical Engineering, 2018. (Prof. Nurmikko)
Jacob Komar, Ph.D. Electrical Engineering, 2015. (Prof. Nurmikko)

2015 – present

Reader on the Master's Dissertation Defense Committee of:

Travis Wallace , M.S. Biomedical Engineering, 2019. (Prof. Coulombe)
Brian McHugh , M.S. Biomedical Engineering, 2018. (Prof. Crisco)
Daniel Amaya , M.S. Neuroscience, 2018. (Prof. Asaad)
Alexia Ioannou, M.S. Neuroscience, 2018. (Prof. Burwell)
Maximillian Lowdes, M.S. Biomedical Engineering, 2018. (Prof. Asaad)
Joshua Levitt, M.S. Biomedical Engineering, 2018. (Prof. Saab)
Shannon Crowley, M.S. Biomedical Engineering, 2018. (Prof. Lee)
Stephany Vasquez, M.S. Biomedical Engineering, 2017. (Prof. Bilgen)
Samantha Zambuto, M.S. Biomedical Engineering, 2017. (Prof. Hoffman-Kim)

2014 – present

Undergraduate Research Advisor for:

Stephanie Vartany, Neuroscience, UTRA, 2020-present.

Michelle Ackerman, Biomedical Engineering, UTRA, 2020-present.
 Emily Papiez, Neuroscience, UTRA, 2019-present.
 Evan Dastin-van Rijn, Biomedical Engineering, UTRA, 2018-present.
 Mariel Rosic, Biomedical Engineering, 2018-present.
 Adam Friedberg, Biochemistry, Clinical Research 2018-2019. – M.D. Ph.D. @Brown
 Beatriz deArruda, Biomedical Engineering, UTRA, 2016-present. – Ph.D. @Oxford
 Caleb Tulloss, Electrical Engineering, Mitchell Award, 2016-2019. – Ph.D. @Columbia
 Sarah Pratt, Computer Science, UTRA, 2016-2018. – @Startup in NYC
 Abigail Skerker, Biomedical Engineering, UTRA, 2016-2019. – Engineer @Medtronic
 Monica Alves, Neuroscience, 2016-2017. – B.S. @Brown
 Colette Bare, Electrical Engineering, 2016-2017. – B.S. @Brown
 Sarah Syrop, Biomedical Engineering, UTRA, 2015-2018. – @Philips
 Joseph Faller, Chemistry, UTRA, 2016-2018. – @McMaster Carr
 Derrick Cheng, BEO, MED-UTRA 2014-2017. – M.D. @Brown
 Placid Unegbu, Bioelectrical Engineering, UTRA, 2014-2017. – M.S. @U.Penn
 Omar Nema, Biomedical Engineering, 2014-2016.
 Benjamin Ferleger, Biomedical Engineering, 2014-2016. – Ph.D. @UW
 2015 – present **Second-Year Advisor for Undergraduate Students (2-10 students per year)**
 2014 – present **First-Year Advisor for Undergraduate Students (6-10 students per year)**

D. COMPLETED DISSERTATIONS AND THESES

Doctoral Dissertations Directed:

Dmitris Celinskis, Ph.D. (Currently Postdoc at Brown University)
 Christopher Black, Ph.D. (Currently Postdoc at Brown University)
 Radu Darie, Ph.D. (Currently Postdoc at Brown University)
 Elaina Atherton, Ph.D. (Currently Scientist at Recursion)
 Nicole Provenza, Ph.D. (Currently Postdoc at Baylor College of Medicine)
 Marc Powell, Ph.D. (Currently founder/CEO of ReachNeuro)
 David Xing, Ph.D. (Currently Postdoc at Northwestern University)
 Xiaoxiao Hou, Ph.D. (Currently Test Engineer at Apple, inc.)

Masters Theses Directed:

Sophie Brown, Biomedical Engineering, 2020. (Ph.D. at Brown)
 Tanaya Puranik, Biomedical Engineering, 2020. (Systems Engineer at Thermo Fisher)
 Ryan Thorpe, Biomedical Engineering, 2019. (Ph.D. at Brown)
 Sarah Syrop, Sc.M. Engineering, 2018. (Philips)
 Yinong Wang, Sc.M. Engineering, 2018. (Senior Data Scientist at 3M)
 Nicole Provenza, Sc.M. Engineering, 2017. (Draper Fellow @Brown)

Senior Honors Theses Directed:

Beatriz deArruda, Sc.B. Engineering (Biomedical), 2019. (Currently Ph.D. at Oxford)
 Joseph Faller, Sc.B. Chemistry, 2018. (Currently Engineer at McMaster-Carr)
 Sarah Pratt, Sc.B. Computer Science, 2018. (Currently working in NY)
 Caleb Tulloss, Sc.B. Engineering (Electrical), 2018. (Currently Ph.D. student at Columbia)
 Placid Unegbu, Sc.B. Engineering (Electrical), 2017. (Currently Ph.D. student at U. Penn)

Derrick Cheng, Sc.B. Engineering, 2016. (Currently M.D. student at Brown)

Bejamin Ferleger, Sc.B. Engineering (Biomedical), 2015. (Currently Ph.D. student at U. Washington)

Nicole Provenza, Sc.B. Engineering (Biomedical), 2015. (Currently Ph.D. Student at Cornell)

Omar Nema, Sc.B. Engineering (Biomedical), 2015. (Currently Analyst at Arcadia Healthcare Solutions)