Evan Dastin-van Rijn

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Education

University of Minnesota-Twin Cities   **Minneapolis, MN**
PhD in Biomedical Engineering, Translational Neuroengineering Lab   Fall 2021-Present

Brown University   **Providence, RI**
Bachelor of Science in Biomedical Engineering and Neuroscience   Fall 2017-Spring 2021
Magna cum laude, Honors in Biomedical Engineering
Cumulative GPA 4.0/4.0

St. John's International School   **Waterloo, Belgium**
43 points in the IB Diploma (HL: Chemistry, Math, Physics, Philosophy)   Fall 2015-Spring 2017

Research Experience

PhD Student, Translational Neuroengineering Lab   09/2022-Present
- Developed computational models to better understand the effect of striatal stimulation in a behavioral task probing cognitive flexibility in rats
- Developed a streamlined software platform for integrating behavioral tasks in operant chambers, electrophysiological recordings, video, and stimulation

Research Assistant, Borton Laboratory   09/2018-08/2021
Assisted with a study working towards the development of an adaptive system to treat symptoms of OCD using deep brain stimulation (DBS)
- Developed Period-based Artifact Reconstruction and Removal Method (PARRM), a novel method for neurostimulation artifact removal showing improved performance over existing, state-of-the-art methods
- Developed Period Estimation of Lost Packets (PELP), a solution to temporal alignment of packet losses occurring during recordings with implanted bidirectional stimulators
- Analyzed and evaluated approaches to data imputation to enable interpretation of neural timeseries with missing samples
- Performed neural data analysis that was used to meet NIH milestones
- Programmed a cognitive control task using jsPsych for use in the clinic and at home settings
- Developed a neural and video data preprocessing pipeline for accurate temporal alignment of multimodal data streams
- Developed programs and workflows to aid in data validation and quality assurance

Research Assistant, Learning, Memory & Decision Lab   05/2020-08/2021
Developed a series of computational models in MATLAB to determine and analyze differences in latent structure learning measured using a computer-based behavioral task

Research Assistant, Salomon Laboratory   05/2018-08/2018
Using Java, FileMaker, and R, incorporated the industry standard software package Maxquant into the laboratory's software pipeline.

Student, Phage Hunters 08/2017-05/2018

Designed an algorithm to generate PCR primers particular to specific bacteriophage clusters to aid in identification prior to sequencing. Primers successfully clustered more than 1500 different bacteriophage both theoretically and in practice.

Skills and Training

Programming: MATLAB, JavaScript, Java, Android, Python, HTML/CSS, Git
Software: Adobe Suite, Solidworks, Simulink, Microsoft Office
Lab: Electroencephalography, electrocardiography, circuit design, rat handling, task shaping

Publications

- **Evan M. Dastin-van Rijn**, Nicole R. Provenza, Wayne K. Goodman, Matthew T. Harrison, David. A. Borton., 2021. Accounting for missing data in neural time series with PELP: Periodic Estimation of Lost Packets. *(in preparation)*

- **Evan M. Dastin-van Rijn**, Seth D. König, Danielle Carlson, Vasudha Goel, Andrew Grande, Donald R. Nixdorf, Sarah Benish, Alik S. Widge, Ziad Nahas, Michael C. Park, Tay I. Netoff, Alexander B. Herman, David P. Darrow, 2022. Personalizing Dual-Target Cortical Stimulation with Bayesian Parameter Optimization Successfully Treats Central Post-Stroke Pain: A Case Report *(Brain Sciences)*

- **Evan M. Dastin-van Rijn**, Nicole R. Provenza, Matthew T. Harrison, David A. Borton, 2021. How do packet losses affect measures of averaged neural signals? *(EMBC 2021)*

- 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, Kelly R. Bijanki, Eric A. Storch, Jeffrey F. Cohn, Wayne K. Goodman, David A. Borton., 2021. Long-term ecological assessment of intracranial electrophysiology synchronized to behavioral markers in obsessive-compulsive disorder *(Nature Medicine)*

- **Evan M. Dastin-van Rijn**[†], Nicole R. Provenza[†], Jonathan S. Calvert, Ro'ee Gilron, Anusha B. Allawala, Radu Darie, Sohail Syed, Evan Matteson, Gregory S. Vogt, Michelle Avendano-Ortega, Ana C. Vasquez, Nithya Ramakrishnan, Denise N. Oswalt, Kelly R. Bijanki, Robert Wilt, Philip A. Starr, Sameer A. Sheth, Wayne K. Goodman, Matthew T. Harrison, David A. Borton. Uncovering biomarkers during therapeutic neuromodulation with PARRM: Period-based Artifact Reconstruction and Removal Method *(Cell Reports Methods)*

- 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, David A. Borton., 2021. Honeycomb: a template for reproducible psychophysiological tasks for clinic, laboratory, and home use. *(Brazilian Journal of Psychiatry)*

Conferences and Poster Presentations

Society of Biological Psychiatry Annual Meeting 2022 April 2022
"Rodents Solve an Extradimensional Set-Shifting Task by Forgetful Adaptive Reinforcement Learning" (Presenter)
Society of Biological Psychiatry Annual Meeting 2022 April 2022
"Characterizing Effects of Ventral Striatum Deep Brain Stimulation in Obsessive-Compulsive Disorder with Resting Magnetoencephalography" (Co-author)
Society of Biological Psychiatry Annual Meeting 2022 April 2022
"Unilateral electrical stimulation is sufficient to improve behavioral flexibility in rodents" (Co-author)
Minnesota Neuromodulation Symposium 2022 April 2022
"Rodents Solve an Extradimensional Set-Shifting Task by Forgetful Adaptive Reinforcement Learning" (Presenter)
Minnesota Neuromodulation Symposium 2022 April 2022
"Deep Brain Stimulation of the Mid-Striatum Impairs Probabilistic Reinforcement Learning in Rodents" (Co-author)
Minnesota Neuromodulation Symposium 2022 April 2022
"Effects of deep brain stimulation in the mid-striatum on compulsive behavior in an extradimensional set-shifting task" (Co-author)
Minnesota Neuromodulation Symposium 2022 April 2022
"Unilateral electrical stimulation is sufficient to improve behavioral flexibility in rodents" (Co-author)
Society for Neuroscience Annual Meeting 2021 November 2021
"Effects of deep brain stimulation treatment for refractory obsessive-compulsive disorder on ventral striatal field potentials" (Co-author)
43rd Annual EMBC October 2021
"How do packet losses affect measures of averaged neural signals?" (Presenter)
7th Annual BRAIN Initiative Investigators Meeting June 2021
"Long-term ecological assessment of intracranial electrophysiology synchronized to behavioral markers in Obsessive-Compulsive Disorder" (Co-author)
2021 Northeast Bioengineering Conference March 2021
"An adhesive sensor for measuring maternal sleeping position" (Presenter)
18th Society for Neuroeconomics Annual Meeting October 2020
"Investigating individual differences in latent structure learning in a changing environment" (Presenter)
6th Annual BRAIN Initiative Investigators Meeting June 2020
"A novel method for DBS artifact removal: Period-based Artifact Reconstruction and Removal Method for DBS" (Presenter)
6th Annual BRAIN Initiative Investigators Meeting June 2020
"Chronic VC/VS DBS for OCD modulates VC/VS spectral power during rest" (Co-author)
2019 UTRA Summer Research Symposium August 2019
"Artifact removal from Local Field Potential recordings during Deep Brain Stimulation" (Presenter)
5th Annual BRAIN Initiative Investigators Meeting June 2019
"Preliminary experience with developing adaptive Deep Brain Stimulation for Obsessive Compulsive Disorder" (Co-author)

Teaching Experience

Head Teaching Assistant, Brown University 05/2021-07/2021
Was responsible for managing problem sets, design projects, exam questions, office hours, review sessions, and guiding other TAs for Dynamics and Vibrations
Teaching Assistant, Brown University 11/2020-04/2021

Was responsible for designing problem set style homework assignments, guiding student progress, and assisting with extended, open-ended final projects for Neural Computation in Learning and Decision Making

Teaching Assistant, Brown University 11/2020-04/2021

Was responsible for managing homework, lab assignments, exams, office hours, and review sessions for Transport and Biotransport Processes

Teaching Assistant, Brown University 01/2020-05/2020

Instructed students in three, week-long, MATLAB-based, design projects for Dynamics and Vibrations and held office hours to assist in debugging project code and writing reports

Meiklejohn Peer Advisor, Brown University 08/2019-05/2020

Advised a cohort of nine first-year, engineering students on adjusting to classes and lifestyle in a university setting

Classroom Assistant, STEMS 08/2018-05/2019

Assisted teachers with lessons in the classroom for high-school students in Algebra I, Geometry, and Algebra II at Hope High School in Providence

Mentor, PAL 08/2018-05/2019

Mentored two adults with learning disabilities (Stephie and Anthony) on topics of their choosing ranging from Jewish culture to driver's education

Awards

Cirtec Medical Poster Award Minnesota Neuromodulation Symposium ($300)	April 2022
Outstanding Biomedical Engineering Senior Award	April 2021
NSF Graduate Research Fellowship	March 2021
Biomedical Engineering Graduate Merit Award	March 2021
Sigma Xi Honor Society	March 2021
Tau Beta Pi Honor Society	November 2019
Undergraduate Teaching and Research Award	May 2018
American Foreign Service Association Academic Merit Award	August 2017