Gavin Mischler

LinkedIn ◇ GitHub

EDUCATION

Columbia University August 2020 - Present
MS/PhD Student, Electrical Engineering *New York, NY*
Neural Acoustic Processing Lab

Johns Hopkins University August 2016 - June 2020
Bachelor of Science, Biomedical Engineering, GPA 3.98/4.0 *Baltimore, MD*

- **Focus Area:** Biomedical Data Science
- **Relevant Courses:** Deep Learning, Machine Learning for Signal Processing, Neuro Data Design, Probability and Statistics, Computational Biology and Bioinformatics
- **Honors:** Tau Beta Pi (Top eighth of engineering class)

RESEARCH

Mathematical Institute for Data Science September 2019 - July 2020
Undergraduate Researcher, Supervised by Dr. Benjamín Béjar *Johns Hopkins University*

- Combined sparse signal sampling theory and supervised learning to develop a pipeline for estimation of neural firings from noisy calcium imaging data.

Vestibular, Balance, Gaze Control Lab July 2017 - July 2020
Undergraduate Researcher, Supervised by Dr. Kathleen Cullen *Johns Hopkins University*

- Applied multiview embedding methods to a clinical dataset of subjective and objective measures of vestibular patient rehabilitation to predict patient outcomes and enhance clinical understanding of gold-standard tests.
- Analyzed gyroscopic motion data from vestibular patients to quantify patient deficits and improve outcomes.

WORK EXPERIENCE

Barclays July 2020 - August 2020
Quantitative Trading Summer Associate *New York, NY*

- Designed and tested a data processing pipeline to transform multiple sources of market information into a single usable signal for predictions.
- Experimented with supervised learning and multiview learning methods on alternative datasets to predict market returns using Python.

Medtronic May 2019 - August 2019
Biomedical Engineering Intern - Tachycardia Research *Minneapolis, MN*

- Developed a novel discrimination algorithm to improve cardiac arrhythmia detection.
- Analyzed a large dataset of medical signals in Python to predict future algorithm performance.

OtoGlobal Health, LLC December 2017 - May 2020
Product Development Engineer *Baltimore, MD*

- Built prototype circuitry for a novel, smartphone-based infant hearing screening device for low-resource settings.
- Worked cross-functionally to lead integration of the hardware and software (app-based controller).

Medtronic May 2018 - August 2018
Biomedical Engineering Intern - Device Product Engineering *Minneapolis, MN*

* Developed a benchtop test to characterize implanted device performance in various use-cases.

PEER-REVIEWED JOURNAL PUBLICATIONS

† *denotes equal contribution*

✦ Zobeiri, Omid A., **Gavin M. Mischler**, Susan A. King, Richard F. Lewis, and Kathleen E. Cullen. "Effects of vestibular neurectomy and neural compensation on head movements in patients undergoing vestibular schwannoma resection." Sci Rep 11, 517 (2021).

✦ Hu, Katherine†, Maya M. Lapinski†, **Gavin Mischler**†, Robert H. Allen, Amir Manbachi, and Rachel Chan Seay. "Improved Treatment of Postpartum Hemorrhage: Design, Development, and Bench-Top Validation of a Reusable Intrauterine Tamponade Device for Low-Resource Settings." Journal of Medical Devices 14, no. 1 (2020).

PREPRINTS

† *denotes equal contribution*

✦ Perry, Ronan†, **Gavin Mischler**†, Richard Guo†, Theo Lee†, Alexander Chang†, Arman Koul†, Cameron Franz†, & Joshua T. Vogelstein. "mvlearn: Multiview Machine Learning in Python." *arXiv preprint* arXiv:2005.11890 (2020).

CONFERENCE POSTERS AND ABSTRACTS

✧ Omid Zobeiri, **Gavin Mischler**, Susan King, Richard Lewis, Kathleen Cullen. Identification of Vestibular Impairment in Schwannoma Patients Relative to Healthy Controls Requires Testing During More Challenging Gait Tests. *Association for Research in Otolaryngology Midwinter Meeting*, Baltimore, 2019.

✧ Aseem Jain, Sanjay Elangovan, **Gavin Mischler**, Taha Baig, Darian Low, Hadley VanRenterghem, Siya Zhang, Keilani Caruso, Gianluca Silva Croso, John Carey, Francis Creighton. A Bone Conducting Distortion Product Otoacoustic Emissions (DPOE) System for Newborn Hearing Screening in Low Resource Settings. *Association for Research in Otolaryngology Midwinter Meeting*, Baltimore, 2019.

✧ **Gavin Mischler**, Omid Zobeiri, Susan King, Richard Lewis, Kathleen Cullen. Head Movement During Functional Gait Assessment Predicts Clinical Measures in Vestibular Patients. *Bárány Society Meeting*, Uppsala, 2018.

✧ Omid Zobeiri, **Gavin Mischler**, Susan King, Richard Lewis, Kathleen Cullen. Identification of vestibular impairment in schwannoma patients relative to healthy controls requires testing during more challenging gait tests, while vestibular loss following surgery alters standard gait. *Neuroscience*, San Diego, 2018.

PROJECTS/SOFTWARE

`mvlearn`, **mvlearn.github.io** September 2019 - Present
Co-Developer

* Developed the first major open-source Python package for multi-view machine learning.

AWARDS AND HONORS

Richard J. Johns Award for Outstanding Academic Achievement in BME	2020
Provosts Undergraduate Research Award (PURA) Fellowship	2019
William H. Huggins Award for a Junior in Electrical Engineering	2019
Biomedical Engineering Design Team Award for Most Outstanding Freshman	2017

TECHNICAL SKILLS

Languages	Python, R, MATLAB, Java, C++, C
Packages	`TensorFlow`, `PyTorch`, `scikit-learn`, `NumPy`, `SciPy`, `pandas`
Neural Data	ECoG signal analysis, Speech reconstruction

TEACHING

Biomedical Data Science Lab *EN.580.477*, Teaching Assistant — Fall 2019

PATENTS

WIPO International Patent WO/2020/081692: "Treatment of Hemorrhage with a Reusable Device". Published April 23, 2020.

VOLUNTEERING AND EXTRA-CIRRUCULARS

National Ski Patrol, Wilmot Mountain, WI — 2014 - 2016