ARIEL FELDMAN

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EDUCATION

Carnegie Mellon University — Pittsburgh, PA
Ph.D. Candidate in Neural Computation — Expected May 2025

Rice University — Houston, TX
B.A. in Computer Science & Cognitive Sciences (Neuroscience minor) — 2020

SKILLS

Programming Languages: Python, Java, C, MATLAB, R
Analysis: Time series analysis, spatial filtering, blind source separation, partial information decomposition
Tools: Git, Jupyter, MNE, VSCode, Arduino, EAI Tactors

RESEARCH EXPERIENCE

Carnegie Mellon University, *Graduate Researcher* — Pittsburgh, PA
Advisor: Douglas J. Weber — Aug. 2020 – Present

- Collaborating with Synchron to assess and enhance signal quality on the Stentrode.
- Spearheaded a collaboration with Allegheny Health Network's epilepsy unit to investigate multi-region information transfer.
- Co-designed transnasal brain stimulation technology, leading to a patent submission.
- Applied information theory to analyze grid cell encoding, demonstrating the utility of distributed source coding techniques for neural signal interpretation.

Rice University, *Undergraduate Researcher* — Houston, TX
Advisors: Caleb Kemere & Jacob T. Robinson — Jan. 2017 – Jan. 2020

- Fabricated micro-drive arrays and performed rodent brain implants for hippocampal stimulation experiments to study sharp-wave ripple complexes.
- Applied machine learning techniques to predict when a sharp-wave ripple complex would occur to reduce stimulation latency.
- Designed and implemented motion tracking analyses to validate a novel neural stimulation device, contributing to a publication in *Neuron*.

Cornell University, *Undergraduate Researcher* — Ithaca, NY
Advisors: Jesse Goldberg & Mert Sabuncu — Summer 2019

- Developed a pipeline to capture and analyze markerless motion data for behavior identification in budgerigars during interactions.

SELECTED PUBLICATIONS

- **Ariel K. Feldman**, Praveen Venkatesh, Douglas J. Weber, Pulkit Grover, "Information-theoretic tools to understand distributed source coding in neuroscience". Special Issue on "Data, Physics, and Life Through the Lens of Information Theory", *IEEE Journal on Selected Areas in Information Theory*, **2024**.
- Kriti Kacker, Nikole Chetty, **Ariel K. Feldman**, James Bennett, Peter E. Yoo, David Lacomis, Noam Y. Harel, Raul G. Nogueira, Shahram Majidi, Nicholas L. Opie, Jennifer L. Collinger, Thomas J. Oxley, David F. Putrino, Douglas J. Weber, "Spectral features of endovascular ECoG signals recorded from a Stentrode in the human motor cortex". *Journal of Neural Engineering*, **[submitted]**.
- Amanda Singer, Shayok Dutta, Eric Lewis, Ziying Chen, Joshua C. Chen, Nishant Verma, Benjamin Avants, **Ariel K. Feldman**, John O'Malley, Michael Beierlein, Caleb Kemere, Jacob T. Robinson, "Magnetoelectric materials for miniature, wireless neural stimulation at therapeutic frequencies". *Neuron*, **2020**.

PATENTS

- Mats Forssell, Chaitanya Goswami, Yuxin Gao, Yuhyun Lee, Vishal Jain, **Ariel K. Feldman**, Neil Mehta, Boyle Cheng, Pulkit Grover, "Method for Non-Invasive or Minimally-Invasive Stimulation of Deep Brain Targets", **[pending]**.

AWARDS

Henry L. Hillman Presidential Fellowship (2023), Carnegie Prize in Mind & Brain Sciences PhD Fellowship (2021), R.K. Mellon Presidential Fellowship (2020), Cornell NeuroNex REU Fellow (2019), Rice Undergraduate Research Scholars Program (2018).