

# ARIEL K. FELDMAN

## Neuroengineering Graduate Student

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## EDUCATION

### Ph.D. in Neural Computation and Machine Learning Carnegie Mellon University

📅 Sept 2020 – present

Advisor: Pulkit Grover

### B.A. in Computer Science and Cognitive Sciences Rice University

📅 Aug 2016 – May 2020

Minor in Neuroscience

## TEACHING EXPERIENCE

### Rice University ELITE Tech Camp Live Instructor Rice University

📅 Summer 2020

Teaching "Internet of Things (IOT) with Machine Learning and Python" to high school students via [Rice Center for Engineering Leadership's ELITE Tech Camp](#). I created course material, designed programming exercises and tutorials, and wrote lesson plans for the summer course.

### Lovett College Academic Fellow Rice University

📅 Mar 2018 – May 2020

Selected on behalf of the Rice University Office of Academic Advising on the basis of proven academic achievement and demonstrated willingness to help fellow students. I offer on-call aid in Computer Science, Neuroscience and paper writing (historical/STEM research) through weekly office hours, one-on-one tutoring, review sessions for several classes in my fields, and planning academic outreach events to engage students.

### ELEC 220 Lab Assistant Rice University

📅 Spring 2020

Assisted Professor in the Practice Ray Simar in conducting labs and transferring content online via Zoom during the COVID-19 Pandemic for Fundamentals of Computer Engineering. We were regarded by the University as [an example for other courses](#) involving computational and hardware components to move online in the future.

## ACHIEVEMENTS

🏆 **Cornell NeuroNex REU Program**  
Selected to receive a \$4600 stipend and conduct machine learning research for neuroscientific problems.

🏆 **Rice Undergraduate Scholars Program**  
Selected to receive a \$2500 research grant for machine learning & neuroengineering research.

🏆 **Internal Vice President of the Rice Neuroscience Society**  
Coordinated campus-wide events to engage students in neuroscience.

🏆 **Electrical and Computer Engineering Affiliates Day**  
Author on the first place winning Graduate Project.

🏆 **Gulf Coast Undergraduate Research Symposium**  
Rice University representative for Neuro-engineering.

🏆 **TEDxRiceU**  
Presented a TEDxRiceU talk on Women in Martial Arts and STEM.

## SOFTWARE LANGUAGES

Python    Java    C    C++    MATLAB    HTML  
CSS

## HARDWARE SKILLS

Embedded Systems    Arduino    Raspberry Pi  
CAD Design/3D printing    ARM Cortex-M4  
Electronics prototyping

## COMPUTATIONAL SKILLS

Multi-threading    Parallel Processing  
Neural Networks    Anomaly Detection

## NEUROSCIENCE SKILLS

Behavioral Paradigms    Microdrive Fabrication

## COMP 140 Teaching Assistant

### Rice University

📅 Fall 2019

Responsibilities include: leading review sessions, creating exam review material, grading exams and projects, and holding weekly office hours to assist students in mastery of material. Check out some of the material I provide [here](#).

## NEUR 385/585 Teaching Assistant

### Rice University

📅 Fall 2018

Responsibilities include: leading review sessions, creating exam review material, grading exams and projects, and holding weekly office hours to assist students in mastery of material. Check out some of the material I provide [here](#).

## RESEARCH EXPERIENCE

### Research Assistant

#### Realtime Neural Engineering Lab

📅 Jan 2017 - Jan 2020

📍 Rice University

I have spent the past four years working under the guidance of [Dr. Caleb Kemere](#) in the [Realtime Neural Engineering Laboratory](#). During my time in the RNEL, I have contributed to the design and fabrication of a novel experimental paradigm, developed and trained a convolutional neural network for rodent video tracking, and collaborated with [Dr. Jacob Robinson's lab](#). I most recently led my own project to investigate machine learning methodologies for predicting sharp-wave ripple events in rodent hippocampal LFP, with the goal of improving state-of-the-art detection and disruption algorithms. For these projects specifically, I have developed in Python, C, C++ and MATLAB, using Tensorflow and Keras to build networks, and have worked extensively with animals via behavioral experiments and participating in implantation surgeries.

### Research Assistant

#### Robinson Lab for Nano-Neurotechnology

📅 Feb 2018 - Jan 2020

📍 Rice University

Design and manufacture of an original implant to test the functionality of a novel material from the [Robinson Lab](#) as a wireless stimulator *in vivo*, conducted numerous behavioral experiments (unpublished). Additionally, I analyzed motion data with a slightly modified version of [DeepLabCut](#) to determine efficacy of the stimulating material. Paper resulting from this collaboration published in *Neuron*.

### NSF NeuroNex REU Fellow

#### Sabuncu Lab

📅 Jun 2019 - Aug 2019

📍 Cornell University

I spent the summer of 2019 conducting research under the supervision of [Dr. Mert Sabuncu](#) and [Dr. Jesse Goldberg](#) at Cornell University regarding machine learning applications to identifying and characterizing budgie behavior using spatio-temporal data mining. While at Cornell, I also mentored several students in the Goldberg lab in computational methods they can apply to their work, which continued after I left.

## LANGUAGES

English



Spanish



German



## PAPERS & PRESENTATIONS

### 📄 Journal Articles

- Singer, A et al. (2020). "Magnetolectric materials for miniature, wireless neural stimulation at therapeutic frequencies". In: *Neuron*.

### 👤 Presentations

- Dutta, S., **Feldman, Ariel K.**, and CT. Kemere (2019a). "Selective Disruption of Hippocampal Sharp-Wave Ripples Leads to Impaired Object-Place Recognition Memory". In: *Society for Neuroscience*. Chicago, IL.
- – (2019b). "Selective Disruption of Hippocampal Sharp-Wave Ripples Leads to Impaired Object-Place Recognition Memory". In: *UT Austin Conference on Learning and Memory*. Austin, TX.
- **Feldman, Ariel K.**, S. Dutta, and CT. Kemere (2019). "A Machine Learning Approach to Predicting Occurrence of Sharp-Wave Ripple Complexes". In: *Rice Undergraduate Research Symposium*. Houston, TX.
- **Feldman, Ariel K.**, Eugene Kim, et al. (2019). "Building a Basis for Budgie Behavior". In: *Cornell NeuroNex*. Ithaca, NY.
- **Feldman, Ariel K.**, S. Dutta, ER. Ackermann, et al. (2017). "Development Of The RElevator For Exploring 3 Dimensional Spatial Representations Of Rodent Hippocampal Place Cells". In: *Gulf Coast Undergraduate Research Symposium*. Houston, TX.