Eric Kenji Lee

4020 Aurora Ave N., Apt. 409 | Seattle WA 98103 | erickenjilee@gmail.com | (808) 375-4435

EricKenjiLee | EricKenjiLee

Education

University of Washington

M.S. in Applied Mathematics
(in progress)

University of Puget Sound

B.S. in Biochemistry and Math;
Minor in Neuroscience

Awards and Honors

Puget Sound Trustee Scholarship
ETC Outstanding Tutor
Puget Sound Travel Grant
UPS Summer Research Grant

Relevant Coursework

Methods in Data Science
Scientific Computing
Intro. to Programming
Mathematical Modeling
Nonlinear Dynamics
Linear Algebra
Calculus I/II/III
Neuroscience Capstone
Biochemistry I/II
Molecular Biology
Cellular Biology
Organic Chemistry I/II

Lab Techniques

Mouse handling (2 years)
2-photon Ca^{2+} imaging (1.5 years)
Intrinsic signal imaging (2 years)
Transcardial perfusion (1/2 year)
Fine-tool microdissection (2 years)
Cryosectioning (1/2 year)
Fluorescence imaging (1 ½ years)
Q-PCR (academic course)
Western blot (academic courses)

Programming Languages

Python (3 years)
MATLAB (2 years)
Java (0.5 years)
R (0.5 years)
PostgreSQL (1 year)
Git VCS (0.5 years)

Data Analysis Skills

Numerical Methods
Image Processing
Fourier Analysis
Partial Differential Equations
Markov Chains
Unsupervised Methods
Clustering
Linear and Logistic Regression
Neural Networks
Dimensionality Reduction

Research Experience

Research Associate I, the Allen Institute – Oct. 2015 to Present

- Conducted *in vivo* mapping of mouse (*Mus musculus*) visual cortex through a cranial window while the mouse was observing a visual stimulus (moving grating) using intrinsic signal imaging (~600 exps) and 2-photon Ca^{2+} imaging (~400 exps).
- Trained an ensemble classifier (kNN and a convolutional network) with Keras/TensorFlow to classify segmented areas in the mouse cortex. Useful for automating visual map annotation and for identification of novel areas.
- Restructured ISI QC workflow away from manual data entry and subjective assessment to an automated Pass/Fail system with PDF report generation. This entailed the creation of a large object-oriented Python package utilizing various libraries such as PsycoPG2, Pandas, SciPy and others.
- Suggested and led eye tracking hardware changes based on pilot experiments and coordinated QC between operators. Engaged with all teams of the process (software, hardware, and operators) to fix previously un-processable camera data to deliver on SMART goals which helped better constrain inferred receptive fields.

Research Technologist I, UW Seattle – May 2015 to Sep. 2015

- Conducted field-work and conducted behavioral assays (sound-source localization) on midshipman fish (*Porichthys notatus*). Carried out dissection, perfusion, and cryosectioning of brains (~30 fish).

Student Researcher, Univ. of Puget Sound – Sep. 2013 to May 2015

- Conducted image segmentation and analysis of fluorescence microscopy images of developing transgenic *zebrafish* using ImageJ and MATLAB.
- Conducted fine-tool microdissection of zebrafish embryos and imaged to quantify GnRH-3 receptor expression resulting in an SfN poster and publication.

Research Intern, UC Berkeley – May 2014 to Aug. 2014

- Conducted PIV (particle tracking) analysis in MATLAB of protist *Vorticella campanula* flagellar feeding behavior in a microfluidic device. These organisms have been purported to be potential drivers of bioremediation.
- Used point-tracking software in MATLAB to examine the swimming behavior of larval tunicates and sea slugs under the influence of laminar currents. This was done to examine how best to rehabilitate coral reefs from an oceanographic perspective.

Research Assistant, Univ. of Hawaii MRI – May 2013 to Sep. 2013

- Carried out a project comparing the changes in working memory of patients with HIV-associated neurological deficits (HANDS) vs. controls after a regimen of cognitive tasks. Statistical analyses were conducted on fMRI data in SPM8.
- Characterized the default-mode network using resting-state fMRI with ICA to look for perturbations of diagnostic value.
- Helped to rework lab workflows and constructed new SoP's to expedite data acquisition and analysis in the lab along with using MATLAB scripts to automate several tasks.

Posters

The incorporation and uses of eye tracking in a large-scale pipeline for the Allen Institute's Brain Observatory. **Lee E.K.**, *et al*. Annual Meeting of the Society for Neuroscience (2017).

The Allen Brain Observatory: a standardized and ongoing survey of evoked neuronal activity in the mouse visual cortex. Lecoq J. *et al*. Annual Meeting of the Society for Neuroscience (2017).

Highly conserved functional boundaries of the visual cortex are observed using standardized methods for intrinsic signal imaging in a broad survey of the mouse visual cortex. Griffin F. *et al*. Annual Meeting of the Society for Neuroscience (2016).

Impact of Bisphenol A on the developing GnRH3 neural system and locomoter behavior in Japanese Medaka. Inagaki T, **Lee E.K.**, Ramakrishnan S. Annual Meeting of the Society for Neuroscience (2014).

Publications

Neuropathological and transcriptomic characteristics of the aged brain. Miller J. *et al*. *eLife* (2017).

Aberrant cortical activity in multiple GCaMP6-expressing transgenic mouse lines. Steinmetz N. *et al*. *eNeuro* (2017).

Low dose exposure to Bisphenol A alters development of gonadotropin-releasing hormone 3 neurons and locomotor behavior in Japanese Medaka. Inagaki T, Smith N, **Lee E.K.**, Ramakrishnan S. *Neurotoxicology* (2016).