Youngmin Park, PhD
Department of Otorhinolaryngology
University of Pennsylvania
3400 Spruce St. 5 Ravdin
Philadelphia, PA 19104

October 16, 2018

Search Committee
Northwestern University

Dear Search Committee Members,

I am applying for the assistant professorship position in the Northwestern University Department of Engineering Sciences and Applied Mathematics. I completed a PhD in mathematics at the University of Pittsburgh under the supervision of G. Bard Ermentrout, and I am now a postdoc at the University of Pennsylvania under the supervision of Maria N. Geffen.

I am an ambitious applied mathematician who positions himself at the forefront of discoveries in both mathematics and biology. At Pittsburgh, I developed my mathematical repertoire by applying dynamical systems theory to reduce the dimensionality of famous neural models, aiding in novel insights into these systems. I am currently on sabbatical at the University of Pennsylvania, where I introduce ground-breaking insights and models for data produced by one of the world's leading auditory labs. This immersive study of the leading biological problems will lead to mathematical insights I otherwise would not attain.

Northwestern harbors a wealth of resources to aid in my journey at the interface of mathematics and biology. In particular, Hermann Riecke and Daniel Abrams have substantial contributions in pattern formation, coupled oscillators, and general dynamical systems theory, which are topics especially congruent to my research.

Under Bard's supervision I wrote three papers spanning diverse topics from coupled oscllators to neural field models, and published a book chapter on computational neuroscience. I maintained collaborations from my masters institution, and published a fourth paper in non-smooth dynamical systems theory. My research resulted in winning the prestigious Andrew Mellon Predoctoral Fellowship at the University of Pittsburgh, which is awarded to doctoral students of exceptional promise and ability. I was the first math-bio student to receive this award.

Under Maria's supervision, I am developing a state-of-the-art model that unifies the many disparate optogenetic results in the auditory cortex, which implicate inhibitory neuron subtypes on complex auditory processing. My other duties are data-intensive: I use subspace identification methods to partially observed calcium imaging data to construct a functional connectivity matrix, then apply clustering methods on this matrix in order to detect spatial clustering.

My teaching portfolio boasts four years of teaching at different capacities (lectures, recitations, grading), at different levels (calculus sequence, differential equations, linear algebra, and discrete math), for three terms per year (Spring, Summer, and Fall). My teaching evaluations are consistently strong. As a result of my teaching I was shortlisted for the Elizabeth Baranger teaching award, the most prestigious teaching award at the University of Pittsburgh.

As part of my application I include a curriculum vitae, research statement, and teaching statement. Please request additional details as needed. I look forward to our correspondence.

Sincerely,

Youngmin Park, PhD