Jimmy Hyun Jin Kim

Present Address
416-1500 Chicago Avenue
Evanston, IL 60201

Permanent Address
706-35 Warrender Avenue
Toronto, ON M9B5Z5

Education

Center for the Physics of Biological Function, Princeton, NJ. 2017-present
Graduate Student Researcher.

Northwestern University, Evanston, IL. 2015-present
Ph.D. Candidate, Physics.
Graduate Certificate in Integrated Data Science
CGPA: 3.919

University of Toronto, Toronto, ON. 2011-2015
Honours B.Sc. with High Distinction, Mathematics and Physics Specialist.
Philosophy Minor.
CGPA: 3.97

Honors and Awards

The Hymie and Roslyn Mida Student Award in Theoretical Physics	2015
Trinity College Provost's Scholar	2015
NSERC Undergraduate Student Research Award	2013,2014
Dean's List Scholar	2012,2013,2014
The Coxeter Scholarship in Mathematics	2013
The William Ramsay Scholarship in Physics	2013
The Harry Boxen Memorial Scholarship in Physics	2013
Chancellor's Scholarship	2012,2013
Dr. John Knowles Colling Memorial Scholarship	2012
Summer Undergraduate Research Fellowship	2012
University of Toronto Scholar	2011
The Wasteneys Admission Scholarship	2011

Certificates

Neural Networks for Machine Learning by University of Toronto (Coursera)	2017
Computational Neuroscience by University of Washington (Coursera)	2017
An Introduction to Evidence-Based Undergraduate STEM Teaching with Distinction (CIRTL)	2016
Machine Learning by Stanford University (Coursera)	2016
Certificate in High Performance Computing (SciNet)	2015
Certificate in Scientific Computing (SciNet)	2015

Teaching Experience

Teaching Assistant Jan. 2018-present

- Assisted Dr. Arthur Schmidt at Northwestern University
- Course: PHYSICS 130-2 College Physics
- Algebra-based physics course covering electromagnetism
- Led discussion sessions consisting of 40-50 students, held office hours, and evaluated quizzes and tests.

Teaching Assistant Sep. 2016-June 2017

- Assisted Dr. Deborah Brown at Northwestern University
- Course: PHYSICS 135-1,2,3 General Physics
- Calculus-based physics courses covering mechanics, electromagnetism, and modern physics.
- Led discussion sessions consisting of 20-50 students, held office hours, and evaluated quizzes and tests.

Project Experience

Deep reinforcement learning for active learning in NLP Q1 2018-present
- Supervised by Dr. Douglas Downey at Northwestern University
- Implementing deep Q-network to facilitate active learning for language modelling

Visualizing neural decoding with head direction cells September 5-15, 2017
- Final project for IDEAS Focus Summer School - Visualization
- Built an interactive visual demonstration of neural decoding process in head direction cells using HTML, CSS, and JavaScript supplemented with D3 library

Soccer Success: ML for predicting the outcome of soccer matches April-June 2017
- Course project for EECS 349 Machine Learning at Northwestern University
- Implemented a Python pipeline for predicting the outcome of soccer matches using expert handcrafted in-game stats from the FIFA video game franchise

Research Experience

Superlinear precision and memory in simple population codes Q4 2016-present
- Supervised by Dr. David Schwab at Northwestern University
- Analytically derived optimal scaling relations of sensory and memory networks; developed simulation programs to numerically confirm the theoretical results; publication in preparation

Superconductivity and magnetism in quantum materials Summer 2014
- Supervised by Dr. Young-June Kim at University of Toronto
- Supported by NSERC Undergraduate Student Research Award
- Synthesized iridium-based single crystals and characterized them magnetically (using SQUID) as well as structurally (using 4-circle diffraction and the LAUE method); participated in KFe_2As_2 high pressure X-ray diffraction experiment at the Argonne National Laboratory

Neuronal tracking and activity measurement in C. elegans Fall 2013-Spring 2014
- Supervised by Dr. William Ryu at University of Toronto
- Continuation of the NSERC project in the preceding summer; made further improvements to the tracking process including implementation of a 3D gradient flow tracking algorithm

Biological Physics - Neuronal structural dynamics Summer 2013
- Supervised by Dr. William Ryu at University of Toronto
- Supported by NSERC Undergraduate Student Research Award
- Developed image processing software to track and quantify fluorescence intensity (proxy for activity) from multiple neurons in *C. elegans*

Optical Tweezers Experiment Summer 2012
- Supervised by Dr. David Bailey at University of Toronto
- Supported by Summer Undergraduate Research Fellowship
- Calibrated and tested the optical tweezers apparatus used for an advanced physics laboratory course

Publications

Pan-neuronal screening in Caenorhabditis elegans reveals assymetric dynamics of AWC neurons is critical for thermal avoidance behavior.
Authors: I. Kotera, N.A. Tran, D. Fu, **J.H.J. Kim**, J.B. Rodgers, W.S. Ryu
eLife **5**, e19021 (2016)

Talks

"Too much precision can be bad", Seven Minutes of Science December 6, 2017

Other Activities

Mentor for the Physics Mentorship Program at University of Toronto 2017-present
IDEAS Traineeship at Northwestern University 2017-present
RSG Research Communication Program at Northwestern University Fall 2017
Cargese Summer School on Theoretical Biophysics June 26-July 7, 2017
Ontario Summer School on High Performance Computing July 13-17, 2015

	Volunteer for 100 in 1 Day	June 7, 2014
	BIMR Summer School on Modern Methods of Crystal Growth	May 27-30 2014
	Volunteer for Science Rendezvous	May 12, 2012 and May 10, 2014

Languages English and Korean
Python, MATLAB, Mathematica, C++, HTML, CSS, JavaScript