Junbong Jang

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EDUCATION

Master of Science in Artificial Intelligence
Korea Advanced Institute of Science and Technology (**KAIST**), Daejeon, South Korea — August 2021 - Current
Bachelor of Science in Computer Science
Worcester Polytechnic Institute (**WPI**), Worcester, MA — August 2016 - December 2019

PROFESSIONAL EXPERIENCES

Research Assistant II, Boston Children's Hospital, Dr. Kwonmoo Lee — October 2020 – August 2021
Research Associate, WPI, Dr. Kwonmoo Lee — February 2020 – October 2020

- Develop a deep learning-based segmentation pipeline for profiling cellular morphodynamics in live cell movies taken by phase-contrast and fluorescence microscopies.
- Collaborate with Massachusetts Medical School to create a deep learning-based pipeline to screen adequacy of Fine Needle Aspiration (FNA) samples from thyroid nodule patients.
- Forecast number of COVID-19 infections per county by SIR model given time series data clustered by UMAP

Undergraduate Thesis, WPI, Dr. Dmitry Korkin — June 2019 – December 2019

- Joint Neuroscience Research with McLean Hospital to understand and diagnose mental illness and suicidality from clinical and MRI data.
- Developed a diagnosis pipeline with a machine learning method, random forest.
- Discovered significant features that contribute to depression, dissociative disorder, or suicidal ideation by recursive feature elimination.
- Diagnosed suicidality with 85% accuracy using the clinical dataset and diagnose depression, dissociative disorder, and PTSD with 90% accuracy using the MRI dataset.

PUBLICATIONS

- **J. Jang***, C. Wang*, X. Zhang, H. Choi, X. Pan, …, K. Lee. A deep learning-based segmentation pipeline for profiling cellular morphodynamics using multiple types of live cell microscopy. ***Cell Reports Methods***. 1, 100105. 2021.
- H. Choi, C. Wang, X. Pan, **J. Jang**, M. Cao, J. Brazzo, Y Bae, K. Lee. Emerging machine learning approaches to phenotyping cellular motility and morphodynamics. ***Physical Biology***. 2021
- K. Vaidyanathan, C. Wang, A. Krajnik, …, **J. Jang**, S. Heo, J. Kolega, K. Lee, Y. Bae. A machine learning pipeline revealing heterogeneous responses to drug perturbations on vascular smooth muscle cell spheroid morphology and formation. ***Scientific Reports***. 11, 23285. 2021

TEACHING EXPERIENCES

Biological Data Mining, WPI — October 2019 - December 2019

- Taught development of machine learning and neural network model in Python
- Helped individual students with homework problems and projects.

Systems Programming Concepts, WPI — August 2019 - October 2019

- Taught programming in C/C++ and test-driven development
- Supervised weekly labs and graded homework.

AWARDS & FUNDING

$94,500 Merit Scholarship, WPI — August 2016 - December 2019