Jihyeon Je

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Education

Duke University Durham, NC
BSE in Biomedical and Electrical & Computer Engineering, Minor in Computer Science May 2023
Coursework in Biomedical Engineering (Medical Instrumentation, Materials), Electrical Engineering (Microelectronics, Quantum Engineering), Solid Mechanics, Computer Science, Cell and Molecular Biology
2020 Woo Fellow, 2021 DTech Scholar
GPA: 3.8/4.0

Research Experience

Broad Institute of MIT and Harvard, Imaging Platform, Cimini Lab Cambridge, MA
Research Intern May 2021 – Aug 2021

- Developed ML-based image analysis tools and workflows for bioimage analysis
- Built a computational pipeline for 2D and 3D image segmentation and reconstruction

Duke Woo Center for Big Data and Precision Health, Lafata Lab Durham, NC
Undergraduate Researcher / 2020 Woo Fellow May 2020 – present

- Working on developing an automatized feature extraction tool for the analysis of next-generation pathomic signatures of inflammation from renal biopsy data

NCMIR (National Center for Microscopy and Imaging Research), Mark Ellisman Lab San Diego, CA
Intern May 2017 – Aug 2020

- Worked on computational reconstruction and segmentation of electron microscope data, particularly involving brain and tissue scans
- Developed CDeep3M-Model Zoo and other DL-based image analysis tools and segmentation pipeline for feature extraction for large-scale biological data

Duke University Caron Lab Durham, NC
Intern Sep 2019 – Mar 2020

- Worked on 3D reconstruction and statistical analysis of dendritic spines from EM images

UNIST (Ulsan National Institute of Science and Technology), Protein Engineering Lab Ulsan, South Korea
Research Assistant Mar 2015 – Jul 2016

- Developed a fusion nano probe using affibody molecules for targeted cancer therapy

Additional Experience

Wolfram Alpha Remote
Student Ambassador, Researcher May 2018 – present

- 2018 Wolfram Summer School Alumni
- Research focus on mathematical and computational analysis of the structure of viral capsids
- Developed the Protein Database Data Importer Function for the Mathematica functionality repository

Duke University Department of Electrical and Computer Engineering Durham, NC
Teaching Assistant Jan 2021 – present

- Hold lab sessions, office hours, and provide tutoring for students in Electrical & Computer Engineering 280: Signals and Systems

Leadership & Activities

Duke Undergraduate Machine Learning Durham, NC
Co-President Sep 2019 - present

- Organize yearly Datathon and Machine Learning Day events
- Host guest speakers, manage funding, and plan monthly activities.

Duke iGEM Durham, NC
Subteam Lead Jan 2020 - present

- Developing a microfluidics-based organoid-tumor coculture platform for high throughput drug screening
- Creating a computational tool to quantify organoid growth and drug efficiency

Duke ARAC (America Reads America Counts) Durham, NC
Volunteer Sep 2020 - present

- Volunteered at Durham Public Schools tutoring children to help them enhance primary-level reading and math skills

Abstracts and Publications

Sotolongo G, **Je J**, Li X, Wang Y, Zee J, Wang B, Chen Y, Talawalla T, Hodgin J, Madabhushi A, Ozeky T, Mariani L, Holzman L, Janowczyk A, Barisoni L, Lafata K. Segmentation and Classification of Lymphocytes in the NEPTUNE Digital Kidney Biopsies via PatchSorter. United States and Canadian Academy of Pathology abstract. 34:847. **Poster presentation** to be delivered at the USCAP meeting, March, 2022.

Je J, Lucas A, Sterling D, Cimini B. Network Optimization with Limited Bioimage Data for Robust Semantic Segmentation. Society of Biomolecular Imaging and Informatics. **2nd Place Best Poster Award**, presentation delivered at the 2021 High Content meeting, remote, October, 2021.

Sotolongo G, **Je J**, Zee J, Chen Y, Li X, Wang Y, Hodgin J, Madabhushi A, Janowczyk A, Lafata K, Barisoni L. Cortical Tubulointerstitial Mononuclear Inflammation in Renal Biopsies is a Quantitative Biomarker of Clinical Outcomes in NEPTUNE Glomerular. United States and Canadian Academy of Pathology abstract 34:847. **Poster presentation** delivered at the USCAP meeting, remote, October, 2020.

Haberl M.G.**,** Wong W., Penticoff S., **Je J.**, Madany M., Borchhardt A., Boassa D., Peltier S.T., Ellisman M.H. *CDeep3M-preview: Online segmentation using the deep neural network model zoo*.
Preprint at: https://doi.org/10.1101/2020.03.26.010660

Technical Skills

Programming

Advanced:	Python, Java, MATLAB
Intermediate:	C++, CSS, JavaScript, HTML, SQL

Software CellProfiler, Fiji/ImageJ, Qupath, CAD, IMod

Practical Skills

Cell Biology:	Mammalian cell culture (cancer cells), stable inducible cell line generation, DNA/RNA transfection
Microscopy:	Light, widefield and confocal microscopy, serial block-face scanning electron microscopy (SBEM)
Immunoassays:	Western blotting, flow cytometry