Won June (Kevin) Cho

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EDUCATION

The Johns Hopkins University — Expected to Graduate Feb 2024
Master of Science in Chemical and Biomolecular Engineering — **Baltimore, MD, USA**
GPA: 3.96/4.0

The Johns Hopkins University — Aug 2018 - May 2022
Bachelor of Science in Chemical and Biomolecular Engineering — **Baltimore, MD, USA**
Minor in Applied Mathematics & Statistics
GPA: 3.8/4.0

PROJECTS

Semantic Segmentation of Human Skin Tissue H&E Images to Extract Cellular Biomarkers of Aging
Graduate Student Researcher

- Performed digital annotations of serially sectioned skin H&E tissue images and registered the z-stack images for preprocessing.
- Built a supervised DeepLabV3+ image segmentation model in PyTorch and post-processing pipeline to find novel biomarkers of aging.

Virtual Stain Conversion of IHC Pancreatic Tissue /Unstained Skin Tissue Images to H&E Using Generative Models
Graduate Student Researcher

- Performed image registration on pancreatic/skin tissue IHC-HE/Unstained-HE image pairs and preprocessed the image pairs for training.
- Currently fine-tuning pix2pix (GAN) model and image-to-image schrödinger bridge (SGM) model to compare sampled image quality.

Kaggle Competition- "HuBMAP- Hacking the Human Vasculature"
Independent Kaggle Project

- Participated independently in the above Kaggle competition to sharpen image segmentation techniques– established workflow from image preprocessing to training, tuning, and inferencing different types of state-of-the-art detection and segmentation models.

EXPERIENCES

Johns Hopkins Institute of Nanobiotechnology Laboratory– Wirtz Lab — Sep 2022 – Present
Graduate Student Researcher — **Baltimore, MD, USA**

- Digitized, annotated, and preprocessed serially sectioned histological slides for quantification of in-situ cell morphology such as extracellular matrix (ECM) structure and cell-to-cell/cell-to-tissue spatial interactions.
- Participated in designing an image registration, segmentation/generation model, and post-processing pipeline using Python/MATLAB.

Novartis Institutes of BioMedical Research (NIBR) — Jun 2022 – Aug 2022
Oncology Data Science Intern — **Cambridge, MA, USA**

- Researched and programmed a process in R to analyze/refine gene signatures and calculate gene signature scores from different kinds of cancer patients' bulk RNA-Seq data and pseudobulk single cell RNA-Seq (scRNA) data **(link to poster).**
- Deconvolved the application of in-house gene signatures in the in-house clinical biomarker analysis workflow.

Johns Hopkins Institute of Nanobiotechnology Laboratory– Mao Lab — May 2021 – Jun 2022
Undergraduate Research Assistant — **Baltimore, MD, USA**

- Collaborated on multiple projects focused on drug/gene delivery using lipid/polymer nanoparticle-based immunoengineering approaches, such as host antigen presenting cell (APC) targeted mRNA cancer vaccine and oral liver-targeted malaria pDNA vaccine.
- Formulated and optimized pDNA/mRNA LNPs (lipid nanoparticles), performed and analyzed in vitro transfection/proliferation assays, designed and conducted mice in-vivo screenings/tumor studies and their following immunoassays to evaluate in vivo antitumor efficacy.

Cowell Biodigm Co. — Jun 2020 - Sep 2020
Data Science Intern — **Seoul, South Korea**

- Researched several inhibitors that target oncogenes/tumor-suppressor genes and programmed an independent project in R where differential gene analysis of patient RNA-Seq data was followed by pathway analysis to screen for drug targets for new compounds.

SKILLS

Languages/Frameworks/Libraries/Others: Python, MATLAB, R / PyTorch, Ray, Tidyverse / OpenCV, Openslide / Github, ImageJ, Linux
General: Image segmentation/generation/registration, Immuno-oncology, Immuno-engineering, RNA-Seq Analysis
Others: Native in English, Native in Korean, Limited Chinese, Personal DL/AI blog

PUBLICATIONS

- **Multi-step screening of DNA/lipid nanoparticles and co-delivery with siRNA to enhance and prolong gene expression**

Zhu, Shen, et al. *Nature Communications (2022)*