MIRAE (SUNNY) KIM

miraesunnykim@gmail.com | 832-955-6707 | Houston, TX 77006

EDUCATION

Rice University - *Houston, TX* — **PhD in Computer Science** — Dec 2025
University of Texas at Austin - *Austin, TX* — **MSE in Biomedical Engineering** GPA: 4.00/4.00 — May 2020
University of Texas at Austin - *Austin, TX* — **BS in Biomedical Engineering** GPA: 3.74/4.00 — May 2020

Relevant courses: Secure and cloud computing, Probabilistic algorithms and data structure, Logic in computer science, Network analysis, Sequence analysis, Machine learning with graphs

EXPERIENCES

Graduate Research Assistant/Fellow - Rice University: ylab, Dr. Vicky Yao — Aug 2020 - Present

- Build biology-aware implementations of machine learning for tissue specificity and epigenetics using Python.
- Perform data wrangling and engineering for large-scale single-cell and bulk sequencing and microarray using R.

Data Science Intern - Enveda Therapeutics — May 2023 - Jul 2023

- Designed and deployed scoring algorithms for plant-based bioactive molecules using Python.
- Improved true positive rate by 55% by modularly adapting existing algorithms.
- Communicated with both data scientists and experimentalists while meeting deadlines with positive feedback.

Research Assistant - University of Texas at Austin: NanoBiosensor and Molecular Tracking Lab — Jan 2016 - May 2020

- Built an artificial neural network to classify cancer based on single-particle tracking (SPT) trajectories in Python.
- Adapted data wrangling and engineering methods for in-house molecular biophysics data.
- Developed an assay using microscopy and LabView and analyzed molecular dynamics using MATLAB.
- Received university-wide research fellowship and was part of inaugural research accelerated master's program.

Engineering Lab Intern - ElectronInks — Jan 2019 – May 2019

- Formulated and tested conductive silver inks for biomedical applications using organic chemistry and experimental data analysis.

RELEVANT PUBLICATIONS & PRESENTATIONS

***** indicates co-first authorship, [#] indicates co-corresponding

Kim, M., Dannenfelser, R., ... & Yao, V., Ontology-aware DNA methylation classification with a curated atlas of human tissues and cell types. *bioRxiv*, (2025)

Kim, M., Dannenfelser, R., ... & Yao, V., Ontology-aware prediction of tissue-specific DNA methylation. *ISMB*, (2024)

Kim, M., Cui, Y., & Yao, V., Predicting tissue and cell type-specific DNA methylation using structured learning. *ISMB*, W-063. (2022)

Kim, M.*, Hong, S.*, Yankeelov, T. E., Yeh, H. C.[#], & Liu, Y. L.[#], Deep learning-based classification of breast cancer cells using transmembrane receptor dynamics. *Bioinformatics*, 38(1), 243-249. (2022)

Kim, M., & Liu, Y. L., Transmembrane Receptor Dynamics as Biophysical Markers for Assessing Cancer Cells. In *Handbook of Single-Cell Technologies* (pp. 865-885). Singapore: Springer Singapore. (2021)

RELEVANT AWARDS AND HONORS

Rice University: The Ken Kennedy Institute - **Computational Science and Engineering Fellowship** — Aug 2020
Rice University: School of Engineering Dean's Office - **Loewenstern Fellowship** — Aug 2020

TEACHING, MENTORING, AND LEADERSHIP

Graduate Student Ambassador - Rice University: Graduate and Postdoctoral Studies — Fall 2022 - Present
Research Mentor to Undergraduate - Rice University: ylab (Avey Etaghene, John Paul Marconi) — Summer 2024
Executive board - Rice University: Korean Graduate Student Association — Fall 2022 - Spring 2024
Teaching Assistant - Rice University: Intro to Computer Networks — Spring 2023
Research Mentor to Undergraduate - Rice University: ylab (Christina Wong) — Spring 2023
Teaching Assistant - Rice University: Bioinformatics: Networks — Spring 2022
Research Mentor to Undergraduate - Rice University: ylab (Huzaifa Ali) — Spring 2022
Research Mentor to Undergraduate - Rice University: ylab (Jackie Wu) — Fall 2021