MIRAE (SUNNY) KIM

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

EDUCATION

Rice University - *Houston, TX* **PhD in Computer Science** Dec 2025
Relevant coursework: *Probabilistic Algorithms, Machine Learning with Graphs, Secure & Cloud Computing*
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

TECHNICAL SKILLS

Programming: Python, R, MATLAB, SQL, LabView
Machine Learning & Data Science: Deep learning, Predictive modeling, Feature engineering, Probabilistic models, Graph ML, Statistical analysis, Data visualization
Bioinformatics & Biology: Multi-omics, Epigenetics, DNA Methylation, Genomics, Mass Spectrometry, Single-cell Analysis
Tools & Platforms: PyTorch, TensorFlow, scikit-learn, Git, Linux, AWS/Cloud Computing, Azure

EXPERIENCE

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

- Build a Python library for ontology-aware classification of large-scale epigenetic datasets (10k+ samples).
- Develop predictive models for tissue- and cell-type–specific DNA methylation (published in bioRxiv 2025).
- Apply machine learning, data wrangling, and statistical analysis to multi-omics sequencing and microarray data.

Data Science Intern - Enveda Therapeutics May 2023 - Jul 2023, May 2025 - Aug 2025

- Designed and deployed machine learning algorithms for biomolecule mass spectrometry data, improving true positive rate by 55%.
- Streamlined feature engineering workflows in Python, achieving 50× performance gains.
- Collaborated with cross-functional teams of data scientists and experimentalists to deliver scalable solutions.

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.
- Engineered and analyzed molecular biophysics data using Python, R, MATLAB.
- Received university-wide research fellowship and was part of inaugural research accelerated master's program.

SELECTED PUBLICATIONS

* 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.*, 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)

RELEVANT AWARDS AND HONORS

Intelligent Systems for Molecular Biology (ISMB) - oral presentation July 2024
Rice University: The Ken Kennedy Institute - **Computational Science & 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 - Spring 2025
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