Tae Hoon Kweon

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Research Interests

Artificial Intelligence (AI) in Bioinformatics
- AI models to enhance understanding of genetic variations and their implications on gene expression

AI-driven Precision medicine
- AI model predicts personalized drug response and identify promising individual drug candidates

Machine Learning in Drug discovery
- Models to design novel molecular structures, assess drug-ability, and predict various binding potentials.

Education

Seoul National University (SNU) Seoul, Republic of Korea
M.S. in Computer Science and Engineering Sep. 2023 – Present
(Advisor: Prof. Sun Kim)

The University of Michigan - Shanghai Jiao Tong University Joint Institute Shanghai, China
B.S. in Electrical and Computer Engineering Sep. 2016 – Aug. 2021
- Mandatory military service after graduation (2 years)

Research Projects

Development of AI-based Model for Translational Research on Drug Responsiveness of Breast Cancer Patients
- Developing patient-level deconvolution model Aug. 2024 – Present
- co-working with SNU Hospital (Prof. Han-Byoel Lee)

Corresponding research:

Improving drug response prediction through bulk tumor deconvolution from single cells Feb. 2024 – Present
- Bridge the gap between *in vitro* and *in vivo* datasets
- Plan to adopt a generative model for bulk tumor deconvolution

Analyzing the gene-level relationship between intratumoral heterogeneity of promoter DNA methylation and drug response Sep. 2023- Jun. 2024
- Developed a web-based exploratory data mining tool to identify significant correlations between intratumoral heterogeneity of promoter DNA methylation and drug response
- Gives an insight to understand drug response mechanism and guides precision oncology initiatives

Conference

Tae Hoon Kweon, Bonil Koo, Sungjoon Park, Thibaud Southiratn, Sun Kim. Web-based Exploratory Data Mining System for Analyzing the Gene-level Relationship between Intratumoral Heterogeneity of Promoter DNA Methylation and Drug Response. In *Proceeding of the 2024 Korea Computer Congress*, 2024

Teaching

Seoul National University
- **University Teaching Assistant,** Algorithms Fall 2024
- **Teaching Assistant**, IT fundamentals for Bioinformatics Spring 2024
- **University Teaching Assistant,** Algorithms Fall 2023

Extracurricular Activities

Smart Human Resource Development (SMHRD) Gwangju, Republic of Korea
ML-based Big Data Analysis course Dec.2020 – Feb. 2021
- SMHRD Kaggle competition (1st / 27 teams) Jan. 2021
  - Task: Personal Income Classification from multivariate personal data
- SMHRD Final project (1st / 27 teams) Feb. 2021
  - Task: YouTube creator growth predictions (multivariate time series forecasting)

Coursera courses

- AI For Everyone, DeepLearning.AI (Andrew Ng) May 2023
- Python Data Structures, University of Michigan May 2020
- Programming for Everybody (Getting Started with Python), University of Michigan May 2020

Technical Skills

Programming language	Python, C/C++, MATLAB, R
Machine learning	Pytorch, Tensorflow
Web	React, D3.js, HTML, CSS