

# Tae Hoon Kweon

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## Research Interests

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### 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

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### Seoul National University (SNU)

M.S. in Computer Science and Engineering

(Advisor: Prof. Sun Kim)

Seoul, Republic of Korea

Sep. 2023 – Present

### The University of Michigan - Shanghai Jiao Tong University Joint Institute

B.S. in Electrical and Computer Engineering

Shanghai, China

Sep. 2016 – Aug. 2021

- Mandatory military service after graduation (2 years)

## Research Projects

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### Development of AI-based Model for Translational Research on Drug Responsiveness of Breast Cancer Patients

Project Manager

Aug. 2024 – Present

- co-working with SNU Hospital (Prof. Han-Byoel Lee)
- National Research Foundation of Korea grant funded by Korea government (MSIT)

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

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**Kweon TH, Koo B, Park S, Southirath T, Kim S.** 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

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Seoul National University

- **Teaching Assistant**, IT fundamentals for Bioinformatics
- **University Teaching Assistant**, Algorithms

Spring 2024

Fall 2023

## Extracurricular Activities

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Smart Human Resource Development (SMHRD)

Gwangju, Republic of Korea

ML-based Big Data Analysis course

Dec.2020 – Feb. 2021

- SMHRD Kaggle competition (1<sup>st</sup> / 27 teams)

Jan. 2021

- Task: Personal Income Classification from multivariate personal data

- SMHRD Final project (1<sup>st</sup> / 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

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**Programming language** Python, C/C++, MATLAB, R

**Machine learning** Pytorch, Tensorflow

**Web** React, D3.js, HTML, CSS