





# MYOUNGCHUL KIM


## Data Scientist


 English: Fluent


 Japanese: Fluent, JLPT N1


 Korean: Native


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## ABOUT ME

I'm an Astrophysicist used to analyzing large datasets to find astronomical signals and recently graduated from Le Wagon Data Scientist & AI boot camp. I'm seeking to utilize programming skills backed by my scientific background and data science knowledge.

## EXPERIENCE

### Data Scientist

#### Fracta

 November 2024 – Ongoing

 Tokyo, Japan

### Teaching Assistant for Data Science & AI

#### Le Wagon

 October 2024 – Ongoing

 Tokyo, Japan

### Data Science & AI Bootcamp

 October 2024 – Ongoing

 Role: Teaching Assistant

 Team size: 13

- Instructed **Python for Data Science**, emphasizing data extraction, manipulation, visualization, and statistics, and linear algebra principles.
- Provided expert guidance in **Machine Learning and Deep Learning**, with a focus on Scikit-Learn workflows and neural network architecture design.
- Delivered advanced training in **ML Engineering**, covering Python package development for GCP and the ethical implications of AI technologies.

### Python Data Scientist/Analyst

#### Turing

 July 2024 – January 2025

 Remote

### Multilingual SFT and RLHF Implementation for Next-Generation AI

 July 2024 – January 2025

 Role: LLM Dataset Creation

 Team size: 6

- Performed **Supervised Fine-Tuning (SFT)** and **Reinforcement Learning with Human Feedback (RLHF)** across **English, Korean, and Japanese** datasets to improve AI model alignment with human preferences, enhancing the accuracy and reliability.
- Analyzed model performance, focusing on **Loss Patterns** and **Output-Based Evaluations** to enhance robustness.
- Curated model responses through **Comparative Analysis** and **Preference Pair evaluation**, ensuring accurate and contextually appropriate outputs.

### AI Training for Japanese Writers

#### Outlier

 July 2024 – October 2024

 Remote

### Fine-Tuning and Validation of AI-Generated Japanese Voice

 July 2024 – October 2024

 Role: LLM evaluation

 Team size: 12

- Conducted **validation of AI-generated voices**, focusing on voice quality through data augmentation, pitch, and speech rate to ensure natural and contextually accurate outputs.

- Evaluated voice model performance, ensuring clarity, consistency, and cultural accuracy.

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## Graduate Research Assistant, Ph.D.

### International Center for Hadron Astrophysics (ICEHAP)

📅 April 2017 – December 2023

📍 Chiba University, Japan

#### Search for Ultra-high Energy Neutrinos from Askaryan Radio Array (ARA) by Template Method 🔗

📅 April 2018 – December 2023

👤 Role: Project Leader

👥 Team size: 6

- Classified astronomical signal by **Principal Component Analysis (PCA)**, after obtaining features from **~200 TB** of radio-frequency dataset.
  - Optimized the PCA based on **Frequentist Statistics** and **Pseudo Experiment**.
  - Implemented the **Fast Fourier Transform (FFT)**, **Interferometry**, and the **Matched Filter**, for **feature extraction**.
- Implemented analysis pipeline used by **large CPU & GPU clusters** developed with **scientific Python & C++ packages**. It leads to **wide use by international collaborators**.
- Evaluated results by calculating **statistical significance**, including **systematic uncertainty**, and **Monte Carlo simulation**.

#### Development of In Situ Antenna Model for Simulation

📅 April 2017 – March 2019

👤 Role: Data Management

👥 Team size: 4

- Performed **high-precision calibration for the radio-frequency antenna** to measure property.
- **Extracted feature pattern** from raw data after noise & signal analysis.

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## Graduate Research Assistant, MSc.

### Neutrino AstroParticle Physics Lab (NAPPL)

📅 March 2015 – February 2017

📍 SungKyunKwan University, South Korea

#### IceCube Camera System to Study Properties of the Antarctic Ice 🔗

📅 March 2015 – February 2017

👤 Role: Project Leader

👥 Team size: 5

- Classified intrinsic camera noise appearing in extremely low-temperature conditions from images using **feature extraction**.
- Developed **Python package** to control the camera by **Raspberry Pi** and **automatic data collection**.
- Evaluated the performance of camera system by applying statistical techniques to **large image datasets**.

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## PROJECT

#### Sound to Symphony (AI Music Generation) 🔗

##### Le Wagon Data Science & AI Bootcamp

📅 January 2024 – March 2024

📍 Le Wagon, Tokyo

👤 Role: Data Management

👥 Team size: 4

- Generates new music by **Recurrent Neural Network (RNN)** that can be easily customizable by musical software
- **Architectures RNN to learn musical patterns** from **large classical music datasets** that are expressed in numerical form.
- Deployed the project into the **Streamlit** by utilizing **FastAPI**
- Built the connection between generated music and musical software Abelton

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## EDUCATION

#### Data Science & AI Bootcamp

##### Le Wagon

📅 January 2024 – March 2024

📍 Japan

- Thorough study in Python for Data Science, with expertise in data extraction, manipulation, and visualization, backed by a strong foundation in statistics and linear algebra.

- Delving into Machine Learning and Deep Learning, with practical application in building comprehensive workflows utilizing Scikit-Learn and designing neural network architectures.
- Proficiency in ML Engineering, involving the development of Python packages for large-scale data tasks in GCP, and a deep awareness of the ethical considerations surrounding AI deployment.

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## Completion of Ph.D. program (ABD), AstroParticle Physics

### Chiba University

📅 April 2017 – December 2023

📍 Japan

- Research topic: Search for Ultra-high Energy Neutrinos Using Eight Years of Data from Two ARA Stations by the Neutrino Template Method

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## Master of Science, AstroParticle Physics

### SungKyunKwan University

📅 March 2015 – February 2017

📍 South Korea

- Thesis title: Performance study of camera system for the IceCube-Gen2 detector

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## Bachelor in Science, Physics

### SungKyunKwan University

📅 March 2011 – February 2015

📍 South Korea

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## TECHNICAL SKILLS

### Coding Tools:

Python

C++

ROOT

Vim

HTCondor

CVMFS

Latex

G-Collab & Jupyter

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### Data Analytics:

NumPy

SciPy

Scikit-learn

Pandas

SQL

Matplotlib

Seaborn

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### Modelling:

TensorFlow

Deep Learning

Unsupervised Learning

NLP

CNN

Time series

Ensemble Methods

Statsmodels

LLM

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### Deployment:

GCP

Docker

FastAPI

Streamlit

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### Hardware Experience:

Electronics

Optics

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## SELECTED PUBLICATIONS

### 📄 Journal Articles

- P. Dasgupta, M. S. Muzio, *et al.*, "Progress Towards a Diffuse Neutrino Search in the Full Livetime of the Askaryan Radio Array," *PoS*, vol. ICRC, p. 1226, 2023.
- M. Kim *et al.*, "Enhanced Ultra-High Energy Neutrino Search at the Askaryan Radio Array using Template-based Techniques," *PoS*, vol. ICRC, p. 1148, 2023.
- D. Bose, M. Jeong, K. Woosik, J. Kim, M. Kim, C. Rott, *et al.*, "PINGU camera," *PoS*, vol. ICRC, p. 1145, 2015.

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## AWARDS



### Japanese Government Monbukagakusho Scholarship (MEXT)

Graduate Research Assistant in Ph.D., 2017 – 2020



### Teaching Assistant (T.A.) of Korea & Japan Joint Government Scholarship

Teaching Assistant for a freshman Korean students, 2017 – 2018



### BK21+ Research student scholarship

Graduate Research Assistant in Msc., 2015 – 2017



### Operating Assistant scholarship

Physics Experiment Assistant, 2016 – 2017



### CK Research student scholarship

Research Assistant in Bsc., 2014

## INTERESTS

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Classical Music

Orchestra

Contrabass

Universe

Fourier Transform