Bosung Jung

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RESEARCH AREAS

Development of Generative Artificial Intelligence Model Using Image Data

Analyzing optimizers through fractional derivatives and applying fractional derivatives in Gradient Descent.

Improving Language Model for solving mathematical problems.

SKILLS

Programming Language

Python	Capable of implementing desired algorithms and have experience writing deep learning training code.
R	Can understand R code and translate to Python
SQL	Acquired the SQL Developer (SQLD) certification administered by the Korea Data Agency(K-DATA).
Collaboration Tools	Git, Docker, NAS

PUBLICATIONS

Journal Articles

2024 Bosung Jung, Donghun Lee, Doyoon Kim "Impossibility of Optimizing Time-Fractional Gradient Descent With a Convex Function As the Objective Function." *Journal of the KIISE*, Accepted.

2023 Sungwon Park, Bosung Jung, and Hongjoong Kim, "Generating Synthetic Raman Spectra of DMMP and 2-CEES by Mathematical Transforms and Deep Generative Models" *Journal of the KIMST 2023, vol.26, no.6, pp. 422-430 (9 pages)*.

RESEARCH EXPERIENCE

2024: AIMO Kaggle competition project in AI+Math Lab@K

Applying Prompt Engineering to enhance LLM's mathematical problem-solving abilities, building datasets for Fine-Tuning

2024: Earthquake imputation Project in AI+Math Lab@K

Selecting datasets for inference and evaluation from approximately 17,000 waveforms, implementing metrics for evaluation, and identifying issues within the code.

2023: Collaborative Project with Korea Exchange (KRX)

Contributed to the development of a hedging algorithm for IRS products involving defaulting members

Designed an algorithm using dynamic programming to minimize the sum of absolute values of group $PV01$ values

2022: Collaborative Project with Agency for Defense Development (ADD)

Contributed to simulating Raman spectra data

Utilized discrete Fourier transform and discrete wavelet transform to simulate graphs

After visualizing simulated graphs, applied VAE and GAN for additional simulation

Updated June 2024