

Eugene Baek

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## Experience

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**Machine Learning Intern – 2Digit** September 2022 – May 2023

- **Fine-tuned** an **NLP** model for **sentiment analysis** using **PyTorch**, improving **classification accuracy** by 15% from data curation.
- Created and maintained a Korean sentiment **dataset** for financial news and user comments using **Pandas**.

**Software Developer Intern – Symcor** June 2021 – Feb 2022

- Designed and implemented an **automation** pipeline in **Python** to generate quarterly risk reports, reducing manual reporting time by 70%.
- Streamlined access to in-house risk metrics by creating a **MySQL** database and **REST API** in **Flask**, saving the team up to 40 hours per quarter in data-retrieval.

**QA Developer – Fidelity Investments** Jan 2020 – May 2020

- Automated mutual fund data verification reducing operational processing time by 80% and enhancing data integrity through a streamlined validation process across hundreds of funds.
- Validated **API** requests and performed **API load testing** using **JMeter**, verifying the functionality and integrity of servers under stress conditions.

## Projects

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**Text-to-Video Generation Research (ongoing) – Pytorch, Diffusion Models**

- Researching and testing the use of **diffusion models** for improved prompt fidelity by generating images prior to video generation.
- Created a text-to-image-to-video pipeline in **Python**, now in on-going testing.

**Expense Tracker – Python, Pandas, Computer Vision, Streamlit**

- Developed an expense tracker in Python using **Azure Document Intelligence** to analyze receipts and bank statements and generate consolidated financial summaries.
- Successfully analyzed over 1000 receipts and bank statements with over 96% accuracy.

**Neuralink Compression Challenge – Python, Numpy**

- Hypothesized the use of **differential encoding** to exploit the temporal nature of brainwave data for the purpose of more efficient storage and transmission.
- Programmed an **encoder** and **decoder** achieving a compression ratio of 1.83

## Education

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**University of Waterloo – BAsC in Computer Engineer, Honours** April 2026

**Relevant Courses** – Compilers, Data structures & Algorithms, Databases, Operating Systems

## Technical Skills

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**Programming Languages** – C, C++, Python, Java

**Machine Learning Frameworks** – Pytorch, Keras, Scikit-Learn

**Data Tools** – Pandas, Numpy, SQL

**Development Tools** – Git