

Guillermo Rivera Alfaro

F-2 Visa

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Research and Work Experience

Brand Engagement Network | Seoul, South Korea

August 2022 – Present

AI Engineer

- Deployed text-to-SQL models in real-time production databases for the automotive industry, improving data retrieval efficiency and accelerating decision-making.
- Leveraged OCR and visual language models to convert unstructured data into consistent, structured outputs, streamlining parsing and analysis workflows.
- Designed and built a unified framework integrating ASR, retrieval-augmented generation (semantic similarity, reranking, query expansion with LLMs), and TTS, achieving sub-second latency in real-time applications.
- Led the deployment and monitoring of AI applications on NVIDIA GPUs using Triton Inference Server, following HTTP and gRPC protocols to maximize GPU utilization and throughput for ASR, LLMs, and TTS systems.
- Experience in optimizing ASR, Language Models, and TTS models using PyTorch, TensorRT, and ONNX, for maximum throughput and performance.
- Developed Dockerfiles to containerize LLMs for GPU and CPU environments, instrumenting observability with OpenTelemetry, Prometheus, and Grafana.

Ewha Womans University | Seoul, South Korea

April 2023 and October 2023

Research Project Mentor

- Mentored a team of senior computer science students on the development of a customized AI chatbot and community app designed to provide essential information for international students at Ewha Womans University.

Daewoong Pharmaceutical | Seoul, South Korea

April 2022 – February 2023

Big Data Analyst Intern

- Built web crawlers using Selenium and BeautifulSoup to scrape from online marketplaces and internal Daewoong websites, and performed sentiment analysis on the collected text using RNN and Transformer-based models.
- Conducted research into the development of chatbots using Neural network-based word embedding in Korean language and semantic similarity, with the aim of expanding this approach to other languages.

Intelligent Signal Processing Lab at Korea University | Seoul, South Korea

July 2021 – July 2022

Lab Intern

- Studied the fundamentals of machine learning for computer vision and natural language processing.
- Completed deep learning projects involving text classification, image segmentation, and the use of Generative Adversarial Networks for generating faces using PyTorch and TensorFlow / Keras.

Education

Daewoong AI and Big Data Academy | Yongin, South Korea

April 2022 – May 2022

- Graduate-level course on artificial intelligence and data science, covering data analysis, image classification, and natural language processing.
- Extensive study of Pandas for data analysis and Matplotlib for visualization.

Korea University | Seoul, South Korea

March 2019 – February 2023

- BSc in Electrical Engineering, graduated with Great Honors (GPA 4.06 / 4.5).
- Title of graduation research project: "Your wish is my (Python) command: Text-to-code generation with FLAN". Obtained a maximum BLEU score of 33.39 on the CoNaLa dataset using FLAN-T5 base model.
- Relevant coursework: Signals and Systems, Probability and Stochastic Processes, Pattern Recognition, Computer Vision, Internet Programming, and Engineering Design.
- 4 Academic Excellence Awards.

Sun Moon University | Cheonan, South Korea

March 2018 – February 2019

- Intensive Korean Language Course.
- 2 Academic Excellence Awards.

Skills

Programming Languages: Python, Rust, C++, SQL

API Development: FastAPI, Axum, Flask, gRPC, REST, OpenAPI/Swagger

Machine Learning & Deep Learning: PyTorch, Triton Inference Server, PyTriton, ONNX, TensorRT, CUDA, Triton Lang, Hugging Face Transformers

Cloud & DevOps: Google Cloud Platform, Amazon Web Services, Docker, Docker Compose, Bitbucket Pipelines, Terraform

Databases & Caching: PostgreSQL, MongoDB, Redis

Tools & Observability: Git, OpenTelemetry, Prometheus, Grafana

Languages: Spanish (Native), English (Near-native), Korean (Advanced)

Awards and Achievements

Daewoong Big Data Scholarship: Selected among foreigner data scientists in Korea to participate in big data projects sponsored by Daewoong Pharmaceutical from April 2022 to March 2023.

Korean Government Scholarship Program (KGSP): 2018 Salvadoran recipient of the KGSP scholarship by the Korean Government granting full tuition and a monthly stipend.

Physics Olympiads: Silver medal at the 20th Ibero-American Physics Olympiad in 2015. Bronze Medal at the 2nd Latin American University Physics Olympiad in 2016 and honorable mention at the same competition the following year.

Test of English as a Foreign Language: TOEFL 111 / 120

Test of Proficiency in Korean: TOPIK Level 5: 213 / 300