Jeong Hoon Choi
Los Angeles, CA 90007

📞 +1 (323) 630-6334
✉ choijeon@usc.edu
🏠 https://csian98.github.io
in LinkedIn

EDUCATION

- **University of Southern California** — Aug 2024-Present
Master of Science in Applied Data Science | GPA 4.0 / 4.0 — Los Angeles, CA
Course: Foundation of Data Management, Machine Learning for Data Science, Foundations and Application of Data Mining, Analysis of Algorithms
- **Kyung Hee University** — Mar 2017-Feb 2023
Bachelor of Science in Physics & Computer Science | Big Data and Artificial Intelligence Track | GPA 3.8 / 4.3 — Seoul, Republic of Korea
Course: Computational Physics, Physics with Big Data Analysis, Semiconductor Physics, Quantum Information, Computer Structure, System Programming

SKILLS

- **Programming Languages:** C/C++, Python, R, Java, Bash, SQL, Assembly (x86), Emacs Lisp, Makefile, HTML, XML, LaTeX

- **Frameworks:** CUDA, Boost, OpenMPI, Scikit-Learn, Keras, TensorFlow, PyTorch, Hugging Face, Spark, Flask, Django, Selenium, Metasploit

- **Technologies:** Linux, Git, Hadoop, Docker, AWS (EC2, DynamoDB), MongoDB, MySQL, PostgreSQL, Firebase, Tableau, Jupyter Notebooks

- **Languages:** English *(Fluent)*, Korean *(Native)*, Mandarin Chinese *(CEFR C1)*

PROJECTS

- **Automatic trading program using Transformer | StradIAN** — Jun 2024-Present
C++, CUDA, Boost, Python, TensorFlow, Keras, Linux (Arch Linux), MariaDB — Los Angeles, CA
  - Developed real-time trading and price collection algorithms for **High-Frequency Trading (HFT)**, along with order routing algorithms for cryptocurrency, stock market, index funds and exchange rates, and implemented a **Backtesting environment** for strategy validation
  - Designed long-term price prediction algorithms using **Quantitative Analysis (Quant)** and **Transformer Deep Learning models**
  - Implemented reliable, **Responsive Decision-making system** for portfolio optimization and manager priority settings
- **Natural Language Query Parser** — Aug 2024-Nov 2024
Python, NLTK, TCP, SSL/TLS, Selenium, Meta Llama 3.2, Linux (Ubuntu), MariaDB, MongoDB — Los Angeles, CA
  - Developed a **Crawler** to collect real-time cryptocurrency, stock market, and index fund prices, enabling continuous data updates for analysis
  - Implemented a framework for **User Interface** and **Relational Algebra Transformation** and execution of SQL queries across multiple tables
  - **Fine-tuned the Meta Llama 3.2 LLM model** to achieve higher accuracy and used it to improve natural language parsing for precise query results
- **XPS data multi-label classifier using 1D CNN Deep Learning | XPS Analyzer** — Sep 2021-Feb 2023
C/C++, Python, PyTorch, NIST SESSA, Linux (Fedora) — Seoul, Republic of Korea
  - Created a framework to generate **75k** high-dimensional synthetic X-ray photoelectron spectroscopy datasets using NIST's SESSA software
  - Built a **4.5M parameter model with 1D CNN layers** to predict contamination thickness and the types and distribution of 81 elements
  - Achieved high predictive accuracy with an R^2 score of **0.998** for contamination layer thickness and **0.990** for elemental distribution

EXPERIENCE

- **Research Student | Surface Physics & Organic Nano Device Lab** — Mar 2022-Feb 2023
Python, Scikit-Learn, R, Shiny, Bash, Dialog, Linux (Ubuntu) — Seoul, Republic of Korea
  - **Automated AES and XPS optical equipment**, integrating them into a server-based system for streamlined operation and data management
  - Developed a framework to replace Origin for automated graph editing and visualization of multi-dimensional data on the server
  - Proposed and trained senior researchers in applying Machine Learning (ML) and Deep Learning (DL) to **Optical Surface Analysis** research
- **Research Assistant with Stipend | Surface Physics & Organic Nano Device Lab** — Sep 2021-Feb 2023
C++, CUDA, Python, MATLAB — Seoul, Republic of Korea
  - Collaborated with the Korea Institute Of Standard and Science (KRISS) to research XPS data analysis methods using Machine Learning (ML) and Deep Learning (DL) Technologies
  - Conducted research using **PCA, FFT, and Compressed Sensing** techniques to enhance the resolution of data lost during measurement processes
  - Installed a high-performance **Docker Server with multiple GPUs** for research lab use, optimizing computational resources for intensive tasks
- **Research Student | Complex System & Information Lab** — Nov 2020-Feb 2022
C, OpenMPI, Fortran, Bash, Linux (Fedora) — Seoul, Republic of Korea
  - Oversaw the expansion and upkeep of the **large-scale Multi-Processor (MP) Server** supporting **4** computational physics research labs
  - Developed parallel algorithms for CPU using **Numerical methods and Monte Carlo simulations** to optimize computational efficiency
- **Data Science & Analytics Internship | Maple Investment Partners** — Jun 2020-Jul 2020
Python, Scikit-Learn — Seoul, Republic of Korea
  - Built a System to **Collect and Analyze** venture investment data, providing insights into investment trends and opportunities
  - Researched and analyzed the solar energy upstream industry, offering **data-driven investment insights** for strategic investments

LEADERSHIP & ACHIEVEMENTS

- **Military Service - Republic of Korea Air Force** — Jun 2018-May 2020
*Served as a **Squad Leader**, overseeing **30** personnel in the Military Police* — Gyeonggi-do, Republic of Korea