JUNBUM CHO

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EDUCATION

Avon Old Farms School Sep 2022 - Present
University of Pennsylvania, *Pre-baccalaureate Data Science Camp* July, Aug 2024

HONORS & AWARDS

Head of School List Award (GPA of at least 3.80) May 2023, May 2024, May 2025
Brown University Book Award May 2025
Excellence in Multivariable Calculus (Highest Grade) May 2025
Bausch and Lomb Honorary Science Award May 2025
Academic Excellence Award (Top GPA among 10th grade) May 2024
Excellence in AP Calculus BC (Highest Grade) May 2024
Leadership Pin (Head of Environmental Club) May 2024
Community Service Pin (explanation?) May 2023
National Latin Exam, *(Intermediate Reading Comprehension Award)* Feb 2024
Korea Code Fair (KCF) Finalist Jun 2024 - Oct 2024
Connecticut Science and Engineering Fair (CSEF) 3rd Honors Mar 2025
International Youth Mathematics Competition (IYMC) Finalist Oct 2023 - Nov 2023
3rd Korea Institute of Music Prodigy Concours (First Prize, Clarinet Division) July 2022
21st National Student Music Scholarship Concours (First Prize, Clarinet Division) Apr 2021

DATA SCIENCE / STATISTICS RELATED ACTIVITIES

Crime Detection Software ("Autone"), Developer/Creator Dec 2023 - June 2024

- Developed an AI-driven app, "Autone," that uses audio machine learning algorithms to detect crime and analyze data, increasing law enforcement response by 9.09%.
- Integrated real-time data from local police databases, enhancing the app's predictive and reliability; incorporated real-time alerts and visual crime maps, increasing user retention by 15%.

Research Paper regarding LLMs and Deep Learning, Author Mar 2025 - June 2025

- Designed a DL-LLM Modular System that integrates a customized Deep Learning model with large language models to improve on-device reasoning, classification accuracy, and few-shot efficiency. Demonstrated reduced latency and server dependency across multiple frontier LLMs by 21.5% through modular task allocation and optimized audio data processing.
- The research paper is currently under peer review at the *National High School Journal of Science (NHSJS)*.

UPenn *Pre-baccalaureate Statistics & Data Science Program*, *Participant* May, June 2024

- Engaged in hands-on sessions learning Exploratory Data Analysis, a method of identifying patterns and anomalies, and collecting initial observations in various datasets. Primarily utilized Python, accompanied by semi-real-world datasets such as stock data from Yahoo Finance.
- Learn the basics of data collection, cleaning, and analysis methods with a professional Data Science professor, mainly focusing on gaining knowledge in statistics, such as probability. Experience 6.5% more accuracy in selecting successful stock choices based on the concepts taught.

Inspirit AI (AI Program developed by Stanford alumni), *Participant* Jul 2020 - Sep 2020

- Gained foundational knowledge in A.I. via a series of lectures, coding assignments, and group projects.
- Developed an AI project to mitigate LLM hallucination and bias by analyzing gender role datasets, improving

ChatGPT-3.5 Turbo's accuracy and reducing bias by 10.01%.

Extra Curricular Activities

All-in-one Sports Management App ("AOF Athletics"), Developer/Creator June 2024 - Dec 2024

- Designed and launched an athletics management app for Avon Old Farms School and the Founders League (athletic league of 11 CT & NY preparatory schools), streamlining team scheduling and real-time match updates. Available on Apple App Store: https://apps.apple.com/us/app/aof-athletics/id6593683974
- Secured partnership with Veracross to implement secure data synchronization, enhancing school management efficiency and app adoption. Presented to Board of Directors, Principal, and administrative staff.

Research Paper regarding the Drug Design for Fungal Disease Candida Apr 2024 - Present

- Investigate the molecular interaction between a fungal pathogenic protein and its inhibitor using a range of bioinformatics tools and structural analysis techniques; collaborated with a college professor and school's biology instructor.
- Publication pending in American Biology Teachers (ABT), a peer-reviewed professional journal for K-16 biology teachers.

Research Paper regarding Performance Analysis of LLMs in Financial Bubble Prediction June 2025 - July 2025

- Pioneered LLM application for financial bubble prediction using quantitative macro-financial data, extending beyond conventional text-based sentiment methods. Conducted rigorous performance comparison across traditional deep learning models, LLMs, and hybrid architectures.
- The research paper is currently under peer review at the *National High School Journal of Science (NHSJS)*.

Common Computer (South Korean Software Company), *Intern* June 2025 - July 2025

- Independently researched emerging Web 3.0 technologies; created educational posts via social media (@ainetwork_ai); led Web3 AI Lab sessions; translated complex Web 3.0 concepts into accessible content.
- Contributed foundational research to the company's AIFFEL project; integrated autonomous AI agents with Web3 protocols, including MCP (Model Context Protocol), A2A (Agent-to-Agent), and mem0.

Applied Math Club, Co-*Head* Sep 2023 - Present

- Organized problem-solving workshops and competitions, achieved top ranks in math contests, such as IYMC.
- Introduced a peer-mentorship program that increased members' problem-solving skills, leading to higher overall math grades among participants.

Environmental Club (Campus-wide sustainability initiatives), Co-*Head* Sep 2023 - Present

- Led recycling and energy conservation initiatives, reducing food waste by 13.3% in September 2024; awarded leadership pin for outstanding club leadership.
- Collaborated with the school's Nimrod Club and local farm to initiate campus-outreach activities, particularly reutilizing leftover food waste as food sources for the cattle of the farm.

Investment Club, *Active Member* Sep 2022 - Present

- Analyzed market trends and presented investment strategies that helped members understand the complexities of financial markets.
- Led a team of four in simulated investment competitions, achieving the highest portfolio growth in the club by 7.4% and demonstrating a strong grasp of financial analysis and decision-making skills

Personal Website, *Creator* June 2022 - Present

- Developed a personal website (junbumcho.com) showcasing my journey in learning computer programming, including project showcases and blog posts, which has attracted over 150 views.
- Continuously updated the site with new content, transforming it into a comprehensive visual resume and teaching platform that highlights my technical skills and dedication to continuous learning.