Alexander Yoon

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EDUCATION

Georgia Institute of Technology — ***Atlanta, Georgia***

Master of Science in Computer Science: Machine Learning — *May 2026*

Bachelor of Science in Computer Science | GPA: *3.81* — *May 2025*

- Relevant Coursework: Data Structures & Algorithms, Machine Learning, Design & Analysis of Algorithms, Probability & Statistics, Combinatorics, Objects & Design, Object-Orientated Programming

EXPERIENCE

GEORGIA TECH, EDX LINEAR ALGEBRA COURSE — Atlanta, GA

Curriculum Developer — ***January 2023 – Present***

- Developed additional practice quizzes complete with comprehensive solutions for the Georgia Tech EdX Linear Algebra course.
- Enhanced a four-part Linear Algebra course through meticulous analysis, editing, and refinement, elevating its efficacy as an educational asset.
- Conducted in-depth research on other EdX courses to benchmark and integrate successful strategies into our curriculum, benefiting our 4,000 enrolled students.
- Leveraged large language models to anticipate and prevent potential pitfalls and distractors in problem-solving for enhanced student learning outcomes.

GEORGIA TECH, MEDFORD RESEARCH LAB — Atlanta, GA

Undergraduate Research Assistant — ***August 2023 – December 2023***

- Effectively utilized Linux on Georgia Tech's supercomputer infrastructure to process and analyze high-dimensional datasets of up to 200 features.
- Implemented LASSO and L1 regularization to perform dimensionality reduction on infrared spectrum data for ethanol analysis which allowed for our LDA model to converge.
- Utilized Python's ASE library to generate atomic structures and subsequently employed Quantum Espresso for multi-faceted calculations including energy, forces, density, and electrostatic potential, allowing us to calculate the change of energy when an adsorbate is attached to the surface of an adsorbent.

PROJECTS

ART VALUATION PREDICTION | *Python, BeatufiulSoup, Tableau, Catboost* — ***January 2024***

- Employed BeautifulSoup to scrape and analyze sentiment from over 30 art market articles spanning a decade, utilizing NLTK for sentiment analysis. The derived metrics were integrated as additional features to enrich our model's training data.
- Utilized polynomial regression techniques to generate predictive trend-lines for art piece market prices, ensuring model accuracy by mitigating overfitting and underfitting.
- Implemented a gradient boosting model to estimate current valuations, achieving a remarkable Root Mean Square Error (RMSE) of 0.07 despite working with a limited dataset.

MACHINE LEARNING SOCCER PREDICTION | *Python, sklearn, PyTorch, NumPy, Matplotlib* — ***August – December 2023***

- Worked on a team of 5 to build and train logistic regression, random forest, and artificial neural network models using Scikit-Learn and PyTorch to predict soccer match outcomes with 70% accuracy, beating benchmark betting odds data by 8%.
- Developed feature engineering strategies, performed dimensionality reduction, and conducted hyperparameter tuning to reduce overfitting, improving model accuracy by ∼10%.

3RD INFANTRY DIVISION TANK DECOY | *C++, Arduino (ESP8266)* — ***January 2023***

- Developed compact radio-emitting devices designed as tank decoys, strategically exploiting the electromagnetic spectrum to provide our military with the tactical advantage.
- Established a client-server configuration enabling simultaneous control of multiple decoys, enhancing operational flexibility and effectiveness.
- Optimized decoy performance by integrating a deep sleep feature, significantly extending the device lifespan by over twofold.
- Implemented random relay cycling to simulate frequency hopping, augmenting the decoy's deceptive capabilities and operational resilience.

ROTC FTX PERFORMANCE ANALYSIS | *Excel, Pandas, Seaborn, Matplotlib, Jupyter Notebook* — ***August 2022***

- Utilized Python's Pandas library to efficiently process and format Battalion performance data collected during the Field Training Exercise (FTX).
- Conducted thorough data analysis, uncovering notable grading bias among particular instructors towards specific markers.
- Leveraged Seaborn and Matplotlib to create compelling data visualizations, facilitating the presentation and validation of research findings.

SKILLS

Technologies: Java (Android Studio), Python (NumPy, sklearn, BeautifulSoup), SQL, Tableau, Excel, Git, Linux, Bash, LaTeX

Involvements: Boxing Club, Big Data Big Impact, Wreck Camp, Hackathons, Delta Chi Fraternity