Ayush Singh

732-619-0499 | singh.ayush05@gmail.com | linkedin.com/in/ayushsingh42 | github.com/AyushSingh42

Education

University of Illinois Urbana-Champaign Champaign, IL
B.S. in Computer Science + Linguistics, Minor in Econometrics *May 2027*
GPA: 3.85/4.00

Relevant Coursework: Data Structures, Algorithms and Models of Computation, Machine Learning, Computational Linguistics, Computer Architecture, System Programming, Deep Generative Models

Experience

Member of Technical Staff Intern June 2025 – August 2025
Inflection AI *Palo Alto, CA*

- Contributed to PyTorch's Torchtune library by implementing step-based checkpointing, enabling flexible model saving during fine-tuning and fleshing out async checkpointing tooling to allow for faster checkpointing, allowing for models to checkpoint up to 10x faster; merged via PR #2384
- Modified internal style benchmarks to better assess performance of new models trained, modified MT-Bench and SAGE Bench for use in EQ specific domains.
- Improved internal data flywheel by adding parallel execution, increasing synthesis of preference data by up to 50%, and implemented workflows to synthesize data from 112K scenarios to be used in finetuning future models.
- Reproduced OpenAI Model Spec using internal tooling and iterated on it in order to create a behavior manual for use on training in house models.

Research Assistant September 2024 – January 2025
University of Illinois Urbana-Champaign *Champaign, IL*

- Working with Dr. Halil Kilicoglu to use BERT in order to classify medical journal entries on PubMed by publication type based on the abstract, title, full text of paper, and the author's previous publication history
- Utilized Bio.entrez library to gather articles from PubMed and used Pandas and NumPy in order to analyze publication patterns and visualize how new publication types are used in medical research

Projects

Expected Points Analytics Dashboard | *Python, Scikit-learn, XGBoost, Pandas, Flask, Plotly* 2025

- Developed a machine learning pipeline to predict expected points (xP) from NBA shot-level data using features such as shot location, shot type, defender distance, game context, and time remaining.
- Engineered custom features including shot zone categorization, player role context, and time-pressure indicators to improve predictive performance.
- Built an interactive web dashboard to visualize results: full player cards showing xP vs. actual performance, shot charts, and a team-level xP analysis tab.

ChessVision | *Python, OpenCV, PyTorch, Stockfish API, Android Studio* 2025

- Developed a mobile app that utilizes computer vision and AI to recognize chess board positions from images and analyze them in real time.
- Implemented OpenCV for image processing, YOLO for piece detection, and Stockfish for move evaluation, enabling deep tactical and positional insights.
- Optimized the image recognition pipeline to achieve over 95% accuracy in board detection, reducing processing time to under two seconds per analysis.

HeartML | *Python, JavaScript, Django, MySQL, Pandas* 2024

- Developed a logistic regression model that predicts heart disease with 91% accuracy using dataset of 310k entries
- Built end-to-end website with simple UI for elderly patients using Django, Python, Javascript, and Bootstrap3
- Incorporated goal management and personal information storage using MySQL database queries with permission checks

Technical Skills

Languages: Java, Python, C/C++, JavaScript, HTML/CSS, C#, SQL, R, YAML, Bash
Frameworks: React, Node.js, Flask, PyTorch/Torchtune, Pandas, NumPy, FastAPI, Django, PostgreSQL
Developer Tools: Git/Github, VS Code, SLURM, Android Studio, Unity, Tableau, Firebase