Jayadev Ghanta

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Paul G. Allen School of Computer Science & Engineering, University of Washington

Education

University of Washington, Seattle Expected June 2027
B.S. Computer Science and B.S. Mathematics (GPA 4.0/4.0)
- Coursework: Data Structures and Algorithms, Hardware/Software Interfaces, Real Analysis, Discrete Math, Linear Algebra, Intermediate C++ and Java.
- Planned: Deep Learning, Systems Programming (Winter 2025), NLP, Distributed Systems (Spring 2025).

Euler Circle (Advanced Math Institute) 2023 – 2025
Undergraduate-level coursework in Nonstandard Analysis, Cryptography, Combinatorial Game Theory, Complex Analysis
- Research papers in Ramsey Theory (paper), Elliptic Curve Cryptography (paper), and Error-Correcting Codes (paper).

Experience

University of Washington — Noah's ARK (NLP Group) 2025 – Present
Undergraduate Researcher (1 of 10 undergrads) *Seattle, WA*
- Processed 226 classical-music records linking YouTube and IMSLP by building a retrieval pipeline in **LangChain**, **Crew.AI**, and **CLaMP-3**, enabling early-stage alias alignment for cross-modal corpus curation.
- Automated large-scale web crawling and metadata normalization pipelines using Python, BeautifulSoup, and pandas, aligning 200+ performances with annotated scores.

Dartmouth-Hitchcock Medical Center (Levy Lab) Summers 2023 – 2024
Research Intern (1 of 60 students selected) *Lebanon, NH*
- Ranked malignant cells in 480 cytology slides using a **Multiple-Instance Learning** model with **AutoParisX + PyTorch**, reaching 0.91 AUC on Urothelial Carcinoma detection and presenting results at the colloquium.
- Built virtual staining systems with GANs and graph neural networks for histological images.

Independent Research — Harvard (Dr. Akshay Jagadeesh) 2023 – 2024
Student Researcher *Remote*
- Generated 100+ synthetic Alzheimer's MRI scans via **Conditional GANs** and **WGANs** in **PyTorch**, and validated latent progression trends using **t-SNE** visualizations.
- Code: github.com/jayadevgh/DementiaResearch.

Honors & Leadership

2025 DubHacks Top 3 Winner — AWS Track (Project Link).

AIME Qualifier (Top 5%) — 2022, 2023.

USACO Silver Division — Codeforces Specialist (1438).

Projects

Transformer-based Linguistic Corruption Scoring | *PyTorch, NumPy* 2025
- Trained two lightweight **Transformer** models (char + BPE, 12 M params) in **PyTorch** on 1 M sentences, lowering mean NLL by 0.42 and classifying fluency across 100 k test lines 93 % accurately.
- Code: github.com/jayadevgh.

Bond | *Kotlin, Jetpack Compose, Firebase, AWS Bedrock, BLE* 2025
- Real-time proximity app for intelligent user matching and interaction tracking.
- Built proximity-matching app in **Kotlin + Jetpack Compose** with **Firebase + AWS Bedrock AI**, sustaining 50 concurrent users and reliable **BLE** detection up to 48 m range in field tests.
- Code: github.com/jlu31/BLEBonders.

Independent Study — GPT from Scratch, DL from Scratch 2025, 2023–2024
- Implemented full **BPE tokenizer** and Transformer stack in **NumPy**, matching nanoGPT perplexity and published 3 technical blogs read by 100 + viewers on model internals and autodiff design.
- Built a NumPy-based deep learning microframework from scratch (tensors, autodiff, backprop, optimizers: done by hand).
- Links: GitHub GPT From Scratch — GitHub DL From Scratch — Medium.

Technical Skills

Languages: Python, C, C++, Java, Kotlin, JavaScript, SQL, LaTeX, Linux
Frameworks & Libraries: PyTorch, NumPy, Pandas, Matplotlib, Scikit-learn, TensorFlow, Jetpack Compose, Firebase, AWS Bedrock, LangChain, Crew.AI, Android BLE
Tools: Git, GitHub, VS Code, Android Studio, Google Cloud Run, Docker, Jupyter, Vim
Topics: Machine Learning, Deep Learning, NLP, BLE Networking, Distributed Systems, Optimization, Cryptography, Combinatorics, Real Analysis