Varun Chitturi

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EDUCATION

University of Pennsylvania   Philadelphia, PA
Accelerated Masters in Computer Science; **GPA: 4.00/4.00**   *Aug 2025 – May 2026*
B.S.E in Computer Science; **GPA: 4.00/4.00**   *Aug 2023 – May 2026*
Concentration in AI and Minor in Math

Relevant coursework: Machine Learning; Graph Neural Networks; Linear Algebra; AI Lab; Natural Language Processing; Statistics for Data Science; Computer Systems; Programming Lang. and Techniques; Data Structures and Algorithms

SKILLS

Languages: Python, C/C++, Swift, Java, OCaml, HTML/CSS/JS, SQL, Shell

Technologies: PyTorch, AWS/Google Cloud, SwiftUI, Swift Core Data, Swift on Server (Vapor), Git/Github, Docker, Terraform, NumPy, Flask, Svelte, Firebase, Postgres, Figma, Continuous Integration/Deployment

EXPERIENCE

Alelab - University of Pennsylvania   Philadelphia, PA
Research Assistant   *May 2024 – Present, Full-time*
- Developed generative image watermarking architectures based off CNNs and diffusion models to synthesize images with hidden and robustly embedded watermarks.
- Implemented generative watermarking models such as Stable Signature and Recipe for Watermarking Diffusion Models using a new constrained objective with dual learning as described in PACC Learning.
- Conducted in-depth analysis between watermarking models with different architectures varying loss constraints, dual learning rates, and other hyper parameters. Model performance was tracked during training using WandB.ai.

ESE 2000: AI Lab - University of Pennsylvania   Philadelphia, PA
Teaching Assistant   *May 2024 – Present, Full-time*
- Independently devised comprehensive solutions for machine learning labs, including Variational Autoencoders, Variational Diffusion Models, Actor-Critic Reinforcement Learning, and Large Language Models.
- Authored in-depth explanations accompanying solutions, ensuring clarity and rigor by integrating detailed mathematical proofs. Created lecture notes and published them at personal website.
- Conducted weekly office hours for the course, providing individualized support to students on machine learning concepts, coding assignments, and labs.

DataChat AI   Madison, WI
Software Engineer Intern   *July 2022 – May 2023, Full-time*
- Managed cloud infrastructure, CI/CD pipelines, and DevOps services for DataChat.AI, optimizing deployment processes and enhancing system reliability.
- Designed a novel microservice architecture to handle machine learning tasks concurrently, improving system scalability and reducing request dead locks.
- Transferred our entire AWS Kubernetes deployment from UI-based to IAC (Infrastructure as Code) using Terraform, while automating infrastructure updates through CircleCI, Docker Compose, and AWS.

PROJECTS

Generative Diffusion Model for Video
- In collaboration with researchers from Google Deepmind and ASU, developed a generative diffusion model for video using the DDPM algorithm, implementing it from scratch using Hugging Face UNets.
- Designed, developed, and automated data collection in Unreal Engine using the Unreal Python API, generating 2D projections, depth maps, and normal maps to create a comprehensive dataset for model training.

Ease Attendance | *Website*
- Designed, developed, and launched easeattendance.com, a web platform designed to seamlessly integrate with Zoom meetings, streamlining the way educators manage attendance.
- The platform offers real-time attendance insights supported through websockets and can store detailed statistics for students via distributed NoSQL databases.
- Utilized AES-256 encryption to encrypt all student records in our databases in order to comply with FERPA data privacy requirements and make our product available to all US schools.

AI Poverty Prediction using Satellite Imagery | *Paper*
- Authored a research paper focused on leveraging deep learning computer vision techniques for predicting poverty levels in various global regions using overhead satellite imagery.
- Addressed the challenge of limited reliable economic data in developing areas, offering a more cost-effective alternative to traditional surveys. Explored the impact of data quantity and augmentation on network performance in order to improve the model.

Algorithmic Stock Trader
- Developed a headless server for automated options day trading, integrating a TradingView-hosted algorithm with the Ameritrade API. Utilized RSI (Relative Strength Index) to optimize trading positions.
- Performed backtesting to check algorithm performance. Realized a 30% gain in 3 months of using the algorithm.

AWARDS

USA Computing Olympiad   *Dec 2019*
USACO Gold Division

ACTIVITIES

Division 1 Athlete   *Aug 2023 – May 2026*
University of Pennsylvania Varsity Squash Team
- Currently in the starting lineup for the #1 ranked collegiate squash team in the country.
- Contributed to winning the Ivy League 2023-24 Season and 2024 Collegiate National Championships.