

# Ainesh Chatterjee

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## Education

### University of Maryland (College Park)

Dual BS in Computer Science (Machine Learning) and Mathematics

December 2025 | GPA: 3.384

University + CS Honors, Dean's List

- **AI/ML:** Graduate NLP; Computer Vision; HRI/Embodied AI; Intro to: Multimodal DL, AI, ML, Data Science
- **Math:** Calculus III; Advanced Linear Algebra; Differential Equations; Abstract Algebra; Transform Methods; Numerical Analysis; Financial Models
- **CS:** Algorithms; Data Structures; Computer Systems; OOP; Programming Languages; Quantum Computing
- **Stat:** Applied Prob&Stat; Probability Theory

## Publications

- *Ipelets for the Convex Polygonal Geometry*, published at SoCG 2024, 2024
- *AgreeMate: Teaching LLMs to Haggle*, published at arXiv, 2024

## Projects

### Vizier | Team Lead/ML Developer

- AI newsletter MVP (Bitcamp 2025) using test-time MoE + document-expert LLMs for improved retrieval

### CoronaSafe | Team Lead/Developer

- Python/Flutter risk assessment using time-weighted foot-traffic + density analytics
- Congressional App Challenge Winner (2021 MD-08); Guest Speaker, USPTO APPLY Yourself (2022)

## Skills

- **Languages & Platforms:** Python, C/C++, Java, Linux, Docker, Git, CI/CD, FastAPI, React, Flask, PostgreSQL
- **AI/Agents:** Transformers, Agentic LLMs, DSPy:GEPA, MCP, Claude Code SDK, Context Engineering, Mechanistic Interpretability, RAG, PyTorch
- **Cloud & Data:** AWS (EC2, Fargate, Lambda, S3, Bedrock, SageMaker), Neo4j, Pandas, NumPy, Dask, Selenium, BeautifulSoup
- **Awards:** Congressional App Challenge Winner, Dean's Scholarship, Eagle Scout

## Experience

### Tilli Software

AI Engineering Intern

Edge:XDEX:Agent

July 2025 - Present | Hybrid

- **Engineered** end-to-end Tilli Agent MVP (Pocketflow, Google Agent ADK) for utility customer web portals
- **Developed** Scrape2MCP for site → structured API/browser actions; generated template-derived MCP servers (Claude Code SDK)
- **Architected** shared, multi-tenant MCP Super-Server (tool store) and Bedrock Agentcore deployment; instrumented automated performance logging ↑ **cache-hit**; ↓ **p50 latency & token cost**
- **Launched** Tilli Agent **served 150k+ initially; rollout planned to ~3M**

### Johns Hopkins University Applied Physics Laboratory

Computer Science Intern — Interim Clearance

Force Projection Sector: Ocean Systems & Engineering Group

May 2024 - Aug 2024 | Laurel, MD

- **Developed** enhanced GAIfo agents and an optimized variant outperforming baselines over long horizons
- **Enhanced** SCRIMMAGE mass-simulation with higher scenario complexity and expert controllers
- **Revamped** GitLab CI pipelines **~25% faster with vulnerability remediation**
- **Optimized** shared Docker base image across repos **~50% faster builds; ~40% lower memory**

### University of Maryland MIND Lab

Data Science/ML Research Intern

Breathing Analysis Project

October 2023 - December 2024 | College Park, MD

- **Created** visualization dashboard and dataset structures for large-scale breath-data analysis
- **Optimized** dataset loading with Dask + multithreading **~400%+ throughput improvement**
- **Implemented** supervised methods for improved breath segmentation