# Ishaan Gupta

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## Education

**University of Maryland, College Park, MD** Expected May 2026
*Computer Science, Bachelor of Science* **(GPA: 3.8)** | **Dean's List : 6 semesters (Fall 2022 - Fall 2025)**
**Coursework:** Machine Learning, Advanced Data Structures, Data Science, Computer Graphics, Network Design, Deep Learning

## Professional Experience

**Inzone.ai** | *Software Engineer* May 2025 - Present

- Architected the backend system for InZone.ai, a personalized AI social app **(7,500+ downloads)**, designing scalable service layers, **API** routing, and data models to support real time social features across a cross-platform **Flutter** client.
- Designed and implemented a **Firestore**-backed data architecture with compound queries, batched writes, and real-time listeners, enabling low-latency feed delivery and concurrent data sync at scale.
- Integrated **GPT-4** via **OpenAI API** into the in-app chat system, building a **LangChain** based orchestration layer with custom prompt pipelines to power **context-aware conversational AI**.
- Delivered a **3D avatar** asset pipeline (**glTF/GLB** ingestion, compression, mobile performance tuning), coordinating between **Unity** real-time rendering and pre-rendered loops to optimize load times and memory usage on mobile devices.

**Department of Computer Science** | *Teaching Assistant (CMSC 351 & CMSC 425)* Feb 2025 - Present

- Taught and graded 300+ students in **Algorithms** (CMSC 351) and **Game Programming** (CMSC 425), gave technical feedback on graph algorithm implementations, complexity analysis, and Unity gameplay systems, which helped improve assignment quality and student understandings.
- Led **50+** office hours and review sessions covering algorithm analysis, graph/sorting techniques (CMSC 351) and **Unity** architecture, gameplay systems, and debugging (CMSC 425).

**OMSE, University of Maryland** | *Tutor* Jun 2023 - Present

- Tutored 150+ hours across introductory CS, calculus, and physics courses, developing targeted problem solving frameworks that improved student exam performance.

**University of Maryland** | *Research Assistant* Feb 2025 - Sep 2025

- Designed **LLM** based pipelines for automated financial analysis and CFA-style question answering under faculty supervision
- Developed custom **Retrieval-Augmented Generation (RAG)** pipelines for CFA-style question answering and financial analytics.
- Fine-tuned **Qwen2.5-1.5B** using **LoRA** parameter-efficient training for financial **NLP** tasks.
- Improved accuracy from **63%** to **77%** on CFA benchmarks **(+18–22%)** and **85%**+ F1 score on Financial Phrasebank classification.

**Ernst & Young** | *Data Science Intern* Jun 2023 - Jul 2023

- Developed a **logistic regression model** achieving **93%** accuracy on client acquisition prediction, outperforming the team's prior heuristic-based approach by **15+** percentage points.
- Conducted **feature engineering, exploratory data analysis** (EDA), and **model validation** on large-scale financial datasets.
- Contributed insights to the marketing team to target high-conversion prospects, leading to an increase in borrower acquisition.

## Projects

**AI- Classification:** Built a **KNN** model with **SMOTE** balancing on a dataset of **1,000+** patient biomechanics records ~ **94%** accuracy.
**B-Tree:** Implemented an order-**m ≥3** B-Tree in Python; custom rotations/splits/merges for balanced insert/delete/search operations.
**Memory Dive (VR & PC):** Designed a **cross-platform** co-op murder-mystery in **Unity**. **Photon Fusion + XR Toolkit** for multiplayer.
**Dhammapada:** Created an immersive first-person dungeon crawler in **Unity** with **Blender** enemies, traps, bosses, and adaptive AI.
**RPG Adventure:** Built third-person action adventure in **Unreal (Blueprint; C++)** with UI, combat, NPCs, and desert/oasis world.
**MicroCaml Implementation:** Engineered a dynamically typed **OCaml** subset with lexer, parser, and interpreter for **AST** execution.
**CFC (Ongoing):** Developing an RTS game in **Unity** with base-building, multi-resource economy, taking inspiration from RTS games.

## Skills

**Languages**: Python, Java, C/C++, C#, Rust, OCaml, TypeScript, JavaScript, SQL, Assembly (MIPS)
**Web & Cloud:** React, Next.js, Node.js, Flask, Tailwind, WebGL, AWS, GCP, MongoDB, Firestore, Kubernetes, Docker
**ML/AI:** PyTorch, Transformers, Hugging Face, LoRA fine-tuning, RAG pipelines, scikit-learn, TensorFlow, NLP
**Engines & Game Tech:** Unity, Unreal Engine (C++ & Blueprints), Photon Fusion, XR Interaction Toolkit, Blender
**Tools & Frameworks**: Git, SourceTree, Linux, CI/CD, Vercel, Seaborn, Matplotlib, Numpy, RestAPIs, LangChain