Caleb A. Gupta

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EDUCATION

University of Pennsylvania | Philadelphia, PA
School of Engineering & Applied Science **May 2024**
Candidate for B.A.S, Computer Science Minors: Math, Physics
School of Engineering & Applied Science (GRASP Lab) **Dec 2024**
Candidate for M.S.E, Robotics Concentration: Artificial Intelligence
Cumulative GPA: 3.93/4.00

Engineering Entrepreneurship Fellow 2023: 1 of 12 students selected for work-study program in tech venture leadership

WORK EXPERIENCE

NASA Jet Propulsion Lab, *Software Engineering Intern* | Cal Tech **Jan 2023 - Aug 2023**
- Work on Perseverance Mars Rover's simulation software for autonomous driving and rock collection that aims to aggregate samples and return to Earth within the decade to check for signs of life
- Build dozens of low latency features in C++ and OpenGL for planning operations and generating command sequences to be sent to both the Rover and the attached Ingenuity Helicopter on the surface of Mars daily
- Integrate 3D visualization for exploration of the operations area, stereoscopic image display for high-resolution examination of the downlinked imagery, and command-sequence editing tools for analysis
- Received the NASA Group Achievement Award as part of the rover simulation subteam

UPenn RoboCup Team, *Head of Computer Perception / Co-Team Lead* | Philadelphia, PA **Sep 2020 – Present**
- Manage computer vision projects for 15 students and integrate deliverables with teams on executive board
- Launched neural network that improved goalpost detection from 65% to 96% accuracy at 2022 International RoboCup

Verisk Analytics, *Product Management / Software Engineering Intern* | White Plains, NY **Jun 2022 – Aug 2022**
- Maintained data infrastructure for government bank stress tests and complete deliverables for 3 major U.S. banks regarding market analytics within the Argus Financial Branch that has been acquired by TransUnion
- Coordinated with AWS to migrate On-Prem data sets composed of 350+ SQL/SSAS databases to the cloud
- Successfully pitched data flow models to VP of Data Management, prioritizing optimization and comprehensibility

Somatix, *Machine Learning / Software Engineering Intern* | New York City, NY **Jul 2021 – Feb 2022**
- Designed M.L. classification algorithms regarding step to distance translation and smoking motions for healthcare tech startup that analyzes hand gestures to monitor geriatric patient's medicine/liquid intake, falling, walking, etc.
- Worked on Raspberry Pi microcontroller to resolve issues regarding wifi and bluetooth connectivity to the band

RESEARCH

U.C. Berkeley SPAR, *Student Researcher* | Berkeley, CA **Mar 2023 - Present**
- Publish paper "Towards Reliable Misinformation Mitigation: Generalization, Uncertainty, and GPT-4" in EMNLP 2023
- Show limits of classical NLP models designed for misinformation classification compared to recent LLMs (ChatGPT)
- Built soft classification models off of fuzzy clustering in order to incorporate levels of truth in ambiguous statements

DeepSpec, *Student Researcher* | Philadelphia, PA **May 2021 – Sep 2021**
- Wrote specifications and verification of OCaml programs at joint UPenn-MIT-Princeton-Yale Lab in order to verify the correctness of a cryptographic family of algorithms and multiprocess systems useful in the design of distributed systems
- Work with research partner was presented and awarded National Honorable Mention from the NCWIT

PROJECTS

See Project Portfolio Website: caleb.guptafamilyri.com

DigiNotes | Note Digitization Tool **Sep 2023 - Dec 2023**
- Automates a picture of a white board to have generative diagrams, LaTeX based equations, and transcribed text
- Utilized C.V. techniques of perspective correlation, enhancement, diagram / line segmentation, and OCR text recognition

Mini-Minecraft | World Exploration Game **Mar 2022 – May 2022**
- Built a First-person, interactive, infinite 3D World from scratch (no game engine) using C++ and the OpenGL pipeline
- Key features include distinct biomes and terrains, A.I. npc, inventory/crafting systems, multithreading, and red-stone

PennBook | Social Media Platform **Sep 2021 - Dec 2021**
- Leveraged AWS for cloud infrastructure (DynamoDB and S3), Spark for friend/news/post computations, web socket for chats (socket.io), AJAX with jQuery for page integration, and absorption algorithms for recommendations
- Implemented media site that contains standard features including chats, friends, postings, news, and visualizations.

SKILLS

C++, Java, C, Machine Learning, Git, OCaml, bash, Python, SQL, JavaScript, Node, OpenGL, Spark, AWS, CAD, Linux