

KUNAL GUPTA

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EDUCATION

Cornell University | B.S. Computer Science + Electrical & Computer Engineering minor **May 2024 | GPA: 3.65**

Notable Courses: Data Structures & Object-Oriented Programming, Analysis of Algorithms, Embedded Systems, Data Science, Foundations of Robotics, Fast Robots, Functional Programming, UNIX, Linear Algebra, Differential Equations, Digital Logic

WORK EXPERIENCE

Amazon | Incoming Software Development Engineering Intern **5/2023 – 8/2023 | Boston, USA**

Dynamic Locomotion | Robotics Engineering Intern **6/2022 – 8/2022 | Groton, USA**

Developed real-time embedded software for box manipulating fulfillment robot and high-efficiency bipedal humanoid projects

- Implemented distributed scheduler for reliable low-latency coordination between 10+ actuation PCBs and Nvidia Jetson
- Optimized fault-tolerant CANOpen and EtherCAT communication protocol firmware on ARM Cortex-M7 based SAM microcontroller
- Owned project from design to deployment, worked with cross-disciplinary teams to rapidly integrate and deliver quality product

Collective Embodied Intelligence Lab | Undergraduate Researcher **1/2022 – 10/2022 | Ithaca, USA**

Developed scalable data processing infrastructure and algorithms for swarm robot stigmergic communication research

- Produced multithreaded low-latency TCP/IP-based data relay and database infrastructure, GUI for querying and visualizing data
- Implemented optimized image segmentation algorithms with OpenCV for agent localization and ROI environment tracking
- Improved randomized test image generation and batch testing script, reduced image processing runtime from 1000ms to 150ms
- Collaborated with graduate students, postdoctoral researchers, and renowned professor to produce conference paper

Visionz | Co-Founder, CTO **4/2020 - present | Kotor, Montenegro**

Heading technology architecture and feature iteration of startup bringing AR/VR experiences to the European tourism industry

- Driving xSTAR, Smart Tourism and Recreation, extended-reality platforms in pilot for National Tourism Organization of Montenegro
- Directing development of KotorAR, AR city app unifying 50+ businesses, attractions using multidimensional predictive modelling
- Managing product vision and roadmap for feature development and deployment, produced pitch decks and marketing media
- Collaborating with customers, dev team, and stakeholders to improve user experience, address challenges, and track performance

PROJECT EXPERIENCE

Cornell Electric Vehicles | Autonomy Team Member, Electrical Team Co-Lead **11/2020 - present | Ithaca, USA**

Developing autonomy software and heading embedded systems on 60-person hyper-efficient autonomous electric car team

- Developing vehicle simulation script for data validation and visualization using ground truths, real-time feeds, pruning and inference
- Implementing YOLOv3 computer vision architecture for rapid object detection leveraging TensorFlow, Google Cloud Platform
- Programming AVR, ESP, PIC family MCUs to enable interaction between driver, autonomy hardware Nvidia Jetson, and actuation
- Collaborating with cross-functional teams, driving aggressive iteration cycle to design and debug complex embedded system

ISH Developer Community | Co-Founder, 4-time Project Lead **8/2018 – 6/2020 | The Hague, Netherlands**

Co-founded community developing IoT solutions for operations and sustainability outcomes in school and local community

- Led development of 4 interdisciplinary projects using real-time relational databases, cloud services, and networking technologies
- Developed and deployed iOS app for roster management in active use by 200+ staff at The International School of the Hague
- Engineered physical greenhouse microclimate system with control GUI and live stream webpage generating 150+ daily visits at peak

SAFE: Smart Assistance for Elders **Machine Learning, Firmware, iOS**

- Developed ANN and K-means ML models, iOS app, and sensor array for prevention of temperature-stress conditions among seniors
- Successfully piloted product in 8 old-age homes in India, wrote paper on observed training limitation and solution, pursuing patent

MARTHA: Monitoring and Restriction-Tracking Hotspot Application **Full Stack, iOS**

- Created algorithm, website, and iOS app as social distancing tool for mitigating Covid-19 transmission in urban settings
- Cornell HackOurCampus Hackathon finalist, pitched product to top SEs, pursued initial deployment on Cornell campus

SAGE: Smart Analytical Graph of Events **NLP, Web Scraping, GUI**

- Devised interactive visualization of top-read Wikipedia article nodes and common content edges, IBM Watson sentiment analysis

MAP: Mobile Autonomous Pathfinder (in progress) **Computer Vision, SLAM, Firmware**

- Engineering internet-enabled autonomous rover with SLAM and low-res object detection capabilities, traverses >1 mile per charge

SKILLS *early-stage

Languages & Frameworks: Python (*TensorFlow, Keras, Pytorch, NumPy, Pandas, Flask*), Java, C, C++, ROS, Verilog, SQL*, R*

Tools & Technologies: AWS, GCP, Git, Firebase, Microcontrollers, Linux, Robotics, Machine Learning, Computer Vision, IoT