Krishna Dubey

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EDUCATION

University of Illinois at Urbana-Champaign Urbana-Champaign, IL
Bachelor of Science in Computer Engineering - Minor in Business & Math *Aug. 2022 – May. 2026*

Canadian International School Singapore, Singapore
International Baccalaureate Diploma *Aug. 2012 – May 2022*

RELEVANT COURSEWORK

UIUC:
Vision / AI / Robotics: Deep Learning for Computer Vision (ECE 494) • Computer Vision (ECE 549) • Artificial Intelligence (ECE 448) • Applied Machine Learning (CS 441) • Principles of Safe Autonomy (ECE 484) • IoT & Cognitive Computing (ECE 479)
Core / Systems: Digital Signal Processing (ECE 310) • Embedded DSP (ECE 420) • Engineering Probability & Statistics (ECE 313) • Linear Algebra (MATH 257) • Data Structures (CS 225) • Algorithms & Models of Computation (ECE 374) • Computer Systems Engineering (ECE 391) • Distributed Systems (ECE 428)
IB (High School): 42/45

SKILLS

C++, Python, C, RISC-V, Java, ROS, Gazebo, LATEX, HTML, HTL, Tailwind, CSS, JavaScript, Node.JS, Docker, Linux, Git, System Verilog, CUDA, Agile Development (SCRUM Methodology), Jira, Confluence, IssacSim, IssacROS, Jetson, Pytorch, Tensorflow, Computer Vision, OpenCV, AI/ML

EXPERIENCE

Student Researcher - Senior Thesis Aug. 2025 – Present
Reliable Autonomy Group *Champaign, IL*

- Thesis: Vision-Based Control for Reliable Drone/UAV Autonomy, advised by Prof. Sayan Mitra.
- Integrating 3D Gaussian Splatting scene representations into visual-control pipelines, enabling differentiable perception under uncertainty.
- Designing and testing vision-based controllers in simulation (FPV drone racing framework), emphasizing robustness, reliability, and transferability to real hardware.
- Conducting extensive reliability testing across tracks and camera models to analyze failure modes and quantify system performance.
- Experimenting with multiple control approaches — direct pixel-to-torque, CNN feature extraction, and model-based pipelines (MPC), combined with deep-learning, trajectory planning, leading into RL-based techniques based on prevailing research.

Perception (Computer Vision) Engineer Intern Jun. 2025 – Aug. 2025
Sauron Systems (Sauron Industries Inc.) *San Francisco, USA*

- Designed and built a custom quadcopter drone integrating LiDAR, time-of-flight, optical flow, and camera sensors for autonomous navigation.
- Developed and integrated a custom control layer on top of an open-source flight controller to enable advanced autonomy features.
- Implemented a vision-based navigation system for GPS-denied environments, supporting multi-mission autonomy.
- Utilized IsaacROS, Isaac Sim, and ROS2 for system testing, validation, and simulation of real-world mission scenarios.

Software Engineer Intern
A* (a-star) Venture Capital

Aug. 2025 – Sept. 2025

San Francisco, USA

- Building AI-driven data pipelines for a VC firm, integrating into Affinity via API (planned orchestration via Prefect, similar to Dagster and Airflow) and communications ingestion with OCR, RAG, and LLM-based NLP to analyze, summarize, and classify information.
- Automated market and startup research on founders, products, and competitors using AI/ML-powered techniques, producing relationship scores, trend insights, and deal progress tracking to support investment decisions.
- Partnered directly with investors to design tools that enhance deal sourcing, diligence, and portfolio monitoring, gaining hands-on experience with venture capital workflows from the ground up.

Fullstack Software Engineer Intern
Alpha Pro (alphapro.ai) - AI-based Startup focused on Financial Analysis

May. 2024 – Aug. 2024

Singapore, Singapore

- Developed and maintained robust, continuously updating web scrapers using Node.js and Crawlee to gather data from major financial news sources.
- Utilized Python and large language models (LLMs) such as LLaMA 3 to preprocess and analyze financial articles, ensuring data accuracy and relevance.
- Designed and implemented full-stack solutions, including frontend development and building key data pipelines, to create an integrated system for real-time financial sentiment analysis.

Student Researcher
CAP (Compilers, Architecture, Parallel Computing) Research Group

Sep. 2023 – Jan. 2024

University of Illinois at Urbana-Champaign, IL

- Worked under the mentorship of 5th year PhD student Kun Wu who is advised by Prof. Wen-Mei Hwu.
- Worked on a project titled: "Memory-intensive CUDA Kernel Trace Analysis and Automation", which entails: utilizing profiling tools to analyze CUDA kernels and targeting performance bottlenecks. This will be used to develop a Python-driven automation process to optimize workflows and enhance the tuning process.
- Utilised technologies such as NVIDIA CUDA Compiler, NVIDIA NVVC & Cutlass and OpenAi's Triton compiler for C/C++ and Python kernels.

Digital Office (Software) Intern
M1 Limited (Telco)

Jun. 2023 – Aug. 2023

Singapore, Singapore

- Collaborated with cross-functional teams from M1 and tech consultants at Born Group (Tech Mahindra) to successfully migrate M1's website from Sitecore to Adobe Experience Manager (AEM) as part of the Web 2.0 project.
- Gained expertise in Adobe Experience Manager (AEM) and Sitecore CMS platforms to seamlessly execute migration tasks and ensure data integrity.
- Developed and deployed various web components for the m1.com.sg site using a tech stack that included HTML, CSS, JavaScript, HTL, and Java, enhancing its compatibility with AEM.
- Employed Python-based data analytics tools to create dataframes for webpage data sorting and analysis. Utilized web scraping libraries like Scrapy and Selenium to extract critical data from web pages.
- Conducted research in Search Engine Optimization (SEO), focusing on optimizing page titles to drive increased traffic to the mobile roaming webpages, thereby contributing to potential revenue growth for the company.

PROJECTS

Autonomous Drone Perception and Control Software
- Developed an autonomous drone pipeline that performs visual perception-based gate detection and implements a trajectory planner with a model predictive controller to navigate through an arena in minimal time, passing through all gates by executing aggressive maneuvers typically seen in drone racing upon Microsoft's AirSim drone racing lab simulator.
- Focused on and built a robust machine learning based computer vision based perception pipeline (with only a 6.2% error rate) utilizing a hybrid approach involving a custom trained YOLOv5 model along with traditional computer vision methods.

Unix V6 inspired Operating System
- Developed a Unix V6–inspired OS with multi-threading, virtual memory, preemptive multitasking, and low-level system calls; implemented ELF loader, paging, process abstraction, and device drivers using virtio.
- Optimized latency-critical kernel components through efficient inter-process communication, reference counting, and rigorous QEMU/GDB validation of memory allocation, system calls, and device I/O.