

Pranav Doma

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EDUCATION:

New York University - MS, Computer Engineering | CGPA -3.73

08/2022 - 05/2024

Coursework-Robot Perception, Computing Systems Architecture, Real-Time Embedded Systems, Deep Learning, Digital Signal Processing, Machine Learning, Applications of AI for Predictive Maintenance (NVIDIA DLI)

S. V National Institute of Technology - B.Tech, Electrical Engineering | CGPA-7.24

07/2017 - 06/2021

SKILLS: C++, C, Embedded C, Python, Matlab, Assembly, LLVM, LLVM MCToll, SIMD (AVX2/SSE), GPGPU (CUDA), PyTorch, JAX, ONNX Runtime, Fixed-Point Arithmetic, Linux Kernel Modules, ACPI, RTOS, QEMU, Git, GitHub Actions, Docker, Podman, GDB, Android Studio, HPC (Slurm, Singularity), Oracle Cloud, Sensor Modeling (TOF, FMCW Radars), Performance Profiling, CrewAI, LangChain, Redis.

WORK EXPERIENCE:

MultiCoreWare Inc- Software Engineer Internship (Embedded systems, Sensor Eng.) | Urbana Champaign 10/2024 - present

- Contributing to Autoware Foundation on real-time obstacle perception, working on vision-based segmentation, depth estimation, and path prediction for autonomous driving.
- Focused on training, data auditing, model quantization via ONNX Runtime for real-time inference.
- Building llvm-mctoll for static binary translation between ARM and X86, debugged instruction-level behavior via GDB and validated app binaries using Android Studio emulation workflows.
- Device enumeration in the ACPI namespace, Developed Linux kernel modules; debugged I2C and UART communication.

New York University- Assistant Research Scientist | New York

05/2024 - 10/2024

- Developed a language-guided motion planning framework that achieved a 27.1% reduction in computational nodes and 39.1% improvement in instruction compliance over baseline planners.
- Designed a multi-agent LLM architecture for high-dynamic vehicle maneuvers, enabling iterative refinement of control parameters through physics-based validation, improving maneuver success rates to 90% and outperforming single-agent systems by 46%.

TRC Robotics -Robotics Software Engineer & Business Development Associate | Remote

10/2023 - 10/2024

- Built and deployed Docker/Podman containers, implemented Grafana dashboards, and managed Keycloak authorization for ROS-based systems.
- Migrated servers and optimized CI/CD pipelines, enhancing system reliability and deployment efficiency.

Delhivery - Station Manager | Hyderabad

07/2021- 03/2022

- Managed last mile supply chain operations; oversaw a team of 30+ and improved key performance metrics: FDDS, LPMA, Closure, and CSAT.
- Engaged in customer-facing meetings to troubleshoot integration issues, provide updates, and ensure the target meets client expectations and resolves performance concerns.

PROJECTS:

CUDA GPU Programming Portfolio | (CUDA, Cpp, SIMD):

|Spring 2025

- Implemented a suite of CUDA applications (vector addition, matrix operations, convolution, softmax, image processing) with memory coalescing and shared memory tuning.
- Built SIMD-optimized CPU versions using AVX2/SSE instructions for direct performance comparison.
- Built custom CUDA conv2D kernels on image data sourced from OpenCV.

Hardware-Software Co-Design for RISC-V | Processor Simulation and Transformer Encoder Acceleration: | Fall-2023

- Built a 5-stage pipelined, cycle-accurate RISC-V simulator resolving RAW hazards through forwarding and stalling.
- Designed custom RISC-V instructions (fixed-point MAC, fast softmax, saturated vector ops) to accelerate Transformer workloads.
- Achieved **8.1× speedup** (29,000 → 3,680 cycles) for transformer encoder inference through hardware-software co-optimization.

Stock Price Forecasting with Sentiment Analysis (Pytorch, Neural Networks, Statistic Analysis):

| Spring-2023

- Achieved a 4-5% prediction error in stock forecasting using deep learning models (Transformer, DP LSTM, CNN LSTM), Outperforming traditional ARIMA models.
- Performed sentiment analysis on 6,000 news articles and integrated insights with 15 technical indicators, boosting forecasting accuracy.
- Leveraged NYU's Greene HPC cluster with Singularity containers and Slurm for job management.

PUBLICATIONS:

- ManeuverGPT-Agentive Control for Safe Autonomous Stunt Maneuvers** - arXiv:2503.09035v1 [cs.RO]
- LLM-Enhanced Path Planning: Safe and Efficient Autonomous Navigation with Instructional Inputs**-arXiv
- Explainable Autonomous Mobile Robots: Interface and Socially Aware Learning** -Late Breaking Report, IEEE-ROMAN-2024
- A Review On Wind Farm Reliability With Hybrid Cable Connection** - Book Chapter, Energy Conversion Systems: An Overview, Nova Science Publishers. ISBN: 978-1-53619-200-1