Neeraj Gopalakrishnan

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Education

Purdue University, West Lafayette, IN — Aug 2023 – May 2025
MS in Computer Science — GPA: 3.8/4.0

College of Engineering Guindy, Anna University, Chennai, India — Aug 2019 – June 2023
BE in Computer Science and Engineering — GPA: 3.78/4.0

Skills

Technical Skills

Languages: C, C++, Java, Python, Go, SQL, TypeScript
Frameworks/Tools: React, Node.js, TensorFlow, PyTorch, Flask, Scikit-learn, OpenCV, Docker, Kubernetes, Git, CodeQL
Cloud: AWS (EC2, S3, SageMaker), Google BigQuery
Systems: Linux/Unix, Git, Emacs, Wireshark, Scapy
Specialties: Distributed Systems, Secure Code Generation, LLMs, Generative AI, Software Security, Adversarial ML

Experience

Purdue University, West Lafayette, IN — May 2024 – Present
Machine Learning Researcher

- Researched vulnerabilities in LLMs (jailbreaking, alignment-breaking) to build robust AI systems.
- Designed alignment tuning pipelines to adapt models to diverse ethical frameworks.
- Engineered Membership Inference defenses using adversarial and statistical approaches.
- Built LLM usage detection techniques to ensure research survey integrity.
- Preparing publication for a top-tier security conference (USENIX or ACM CHI).

Danlaw Inc., Novi, MI — Jul 2022 – Aug 2022
Machine Learning Engineer Intern

- Developed a real-time speech emotion recognition model using MFCCs and CNNs, achieving 92% accuracy.
- Reduced inference latency by 30% through on-device processing and optimized data pipelines.
- Delivered a 0→1 prototype in a high-contingency startup environment (BitBew spin-off).

Ashok Leyland, Chennai, India — Oct 2021 – Jan 2022
Data Science Intern

- Developed a sales forecasting dashboard, improving seasonal vehicle allocation efficiency by 12%.
- Enhanced fleet uptime by 20% by identifying critical spare parts for predictive maintenance.
- Used telematics data to optimize fleet routing, increasing aftermarket profitability by 10%.

Projects

Robust LLM Code Generation

- Fine-tuned an LLM for secure code generation, reducing static analysis vulnerabilities by 25%.
- Used CodeBLEU and BertScore for quality evaluation; integrated CodeQL to automate scanning.

AudioGPT: Voice-Controlled GPT Assistant (Mobile App)

- Developed a speech-driven AI assistant using GPT-3 and TTS/STT integration.
- Reduced latency by 20% via optimized audio streaming and preprocessing.

Autonomous Vehicle with Deep Reinforcement Learning

- Trained self-driving car agent using Deep Q-Learning and ARS for navigation.
- Improved lane tracking accuracy and reduced crash events by 30% on Pi-based prototype.

Systems & Security Projects

- Exploited and mitigated classic C vulnerabilities (buffer overflows, ROP, Return-to-libc).
- Designed and tested security countermeasures for XSS, SQL Injection, CSRF attacks.