

NIRVEK PANDEY

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Education

University of California San Diego B.S. in Computer Science, Regents' Scholar	La Jolla, CA September 2022 – December 2026
<ul style="list-style-type: none">Fundamentals: Object Oriented Programming, Advanced Data Structures, Computer Security, Theory of Computation, Design and Analysis of Algorithms, Software Engineering, Database SystemsAI/ML: Search & Learning Algorithms, Modeling, Deep Learning, NLP, Recommender Systems and Web MiningSystems: OS, Networked Services, Parallel Computing, Graduate OS, Data Center Systems, Wireless Systems	

Experience

Data Science Intern Newton(Neurolens)	Costa Mesa, CA June – September 2024
<ul style="list-style-type: none">Collaborated with data architects to implement an ETL system using SQL and Azure Pipelines, separating analytics workloads that improved pipeline reliability by 27% and accelerated R&D analysis.Built an ML pipeline with OpenCV and PyTorch to detect suppressed eye-tracking signals with 84% accuracy in identifying suppressed measurement and enabling more reliable data interpretation for optometry research.Created data visualizations utilizing Matplotlib and Seaborn to illustrate the impact of architectural updates.Influenced stakeholder decisions to invest in regression-based modeling for next-generation device development.	
Software Engineering Intern <i>UC San Diego</i>	

Projects

Personal Portfolio Site <i>Next.js, Go, Firebase, PostgreSQL, Google Cloud Run</i>	January 2025 – Present
<ul style="list-style-type: none">Upgraded full-stack portfolio from static React to Next.js + Go microservice architecture, implementing SSR, batched loading, and CDN/CMS caching to achieve 90% fewer API calls and 300% faster load times.Integrated Google Drive API for dynamic, location-tagged content management, enhancing personalization while maintaining high availability through automated CI/CD with Docker, GitHub Actions and Vercel.	
Research - OS Performance Analysis <i>Linux, C, ARM64, Python</i>	
<ul style="list-style-type: none">Developed low-level benchmarking suite in C for ARM architecture testing CPU scheduling, memory hierarchy, TCP/IP protocols, and file system I/O performance across multiple operating system layers.Quantified storage bottlenecks by measuring a 500x latency spike for disk-based page faults and identified a 6.4 GB file buffer cache limit using pointer chasing to map the L1/L2/L3 cache and DRAM hierarchy.Benchmarked network performance using ping, ethtool, and custom socket programs, discovering an 8x latency penalty for remote file access over WiFi compared to local disk operations.	
TritonTube <i>Go, SQLite, gRPC, etcd, AWS EC2, FFmpeg, MPEG-DASH, HTTP</i>	
<ul style="list-style-type: none">Engineered fault-tolerant video platform with RESTful APIs for upload/playback, implementing MPEG-DASH adaptive streaming to optimize video quality and reduce buffering by over 50% across varying network conditions.Built scalable metadata and content services on AWS EC2 with etcd-backed RAFT consensus protocol, ensuring data consistency and high availability while supporting 100+ concurrent users for video processing workloads.	
Research - RedShift <i>CUDA, HuggingFace, Ollama, Prompt Engineering</i>	
<ul style="list-style-type: none">Extended the "Distract LLMs for Automatic Jailbreak Attack" framework by integrating chain-of-thought prompting and FastChat support, expanding attack coverage by 67% across 2,000+ attacks and 50 adversarial prompts.Enhanced an ML orchestration pipeline with LLMs as attackers, defenders, and judges; standardized adversarial datasets using custom PyTorch scripts for consistent benchmarking, tracked with WandB.	

Skills

<ul style="list-style-type: none">Programming Languages: Python, Go, Java, JavaScript/TypeScript, C, C++, SQL, HTML, CSSLibraries & Frameworks: PyTorch, NumPy, Pandas, Matplotlib, TensorFlow, Scikit-Learn, OpenCV, React, Next.js, Angular, Express.js, Node.js, Flask, Tailwind CSS, JUnit, Jest, Puppeteer, FFmpegTools & Technologies: Git, Docker, gRPC, etcd, Kubernetes, PostgreSQL, SQLite, MongoDB, Supabase, Firebase, Redis, GCP, Google Cloud Run, Vercel, Azure Pipelines, AWS EC2, AWS S3, WandB, CUDA, OpenCL, MPEG-DASH, GitHub Actions, Linux, SharePoint, Excel, PowerPoint
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