ROSHAN SIDDARTHA SIVAKUMAR
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PROFESSIONAL SUMMARY

Data science graduate student with hands-on experience in machine learning, LLM applications, and production data pipelines. Built an AI chatbot presented to Nissan NA executives, engineered a BI automation system eliminating 40+ hours of weekly manual work, and led deep learning research achieving 98% accuracy on AI-generated image detection. Seeking roles where I can build scalable, real-world AI solutions.

EDUCATION

Vanderbilt University – Data Science Institute — **Nashville, TN**
Master of Science in Data Science (GPA: 3.883/4) — August 2024 – May 2026

- Relevant Coursework: Probability and Statistical Inference, Survey of Data Science Applications, Exploratory Data Analysis, Principles of Programming and Simulation, Data Science Rights Responsibility, Machine Learning, Data Management Systems, Deep Learning, Gen AI Models in Theory & Prac, NoSQL, Data Science Algorithms

Vellore Institute of Technology — **Vellore, India**
Bachelor of Technology (GPA: 8.47/10.0) — July 2019 – June 2023
Major: Mechanical Engineering

- Relevant Coursework: Problem solving and Programming, Problem Solving and Object-Oriented Programming, Statistics for Engineers, Linear Algebra and Differential Equations, Programming Data Structures and Algorithms using Python

SKILLS

Relevant Skills: Machine Learning, Deep Learning (CNNs, Transfer Learning), RAG Architectures, LLM APIs (OpenAI, Claude, Gemini), Prompt Engineering, Computer Vision (YOLOv8, Grad-CAM), ETL Pipelines, Web Scraping, Data Visualization, Feature Engineering, Statistical Modeling, SQL Querying, NoSQL Design
Related Platforms: Python (Pandas, NumPy, Scikit-learn, PyTorch, OpenCV), SQL (MySQL), MongoDB, Tableau, PowerBI, Streamlit, Flask, Amazon QuickSight, Docker, AWS, GitHub Actions, Playwright, Azure AD, Jupyter, Git

WORK EXPERIENCE

SERVPRO — **Lebanon, TN**
Data Science Intern — Aug 2025 – Dec 2025

- Developed a Vision-Based Automation System using GPT-4 Vision to autonomously navigate legacy portals; engineered spatial reasoning logic to visually detect and bypass dynamic pop-ups, achieving 99% reliability.
- Engineered an end-to-end BI automation pipeline processing 13,500+ job records nightly, orchestrating Playwright web scraping and Microsoft Graph API distribution—eliminating 40+ hours of manual weekly reporting.
- Engineered a Python-based transformation layer (Pandas) to process raw logs into complex financial models; programmatically generated 11 pivot tables and multi-tier AR aging reports, enabling granular tracking of revenue metrics.
- Deployed a GitHub Actions CI/CD pipeline with daily CRON execution, Azure AD OAuth 2.0 authentication, and secure secrets management for 11+ credentials, achieving 100% hands-free operation.

Leadership Development Program, Vanderbilt University — **Nashville, TN**
AI Intern | Owen Graduate School of Management — Jun 2025 – Aug 2025

- Built a secure web app to automate coach-student matching for the LDP, cutting manual work from days to under 10 minutes.
- Designed an anonymized data pipeline integrating resumes, surveys and bios to generate coach matches and rationale via OpenAI API.
- Delivered a five-column Excel output with ID-based top-2 coach matches and reasoning, enhancing transparency & scalability.
- Developed an embedded AI assistant with safety guardrails, refusal logic and prompt evaluation to support business students.

PROJECTS

Nissan Dealer Training Analytics & AI Chatbot — **Nashville, TN**
Team Lead | Vanderbilt University (Capstone – Nissan North America) — Aug 2025 – Dec 2025

- Analyzed 140,000+ Virtual Academy clickstream logs across 38 job titles to identify dealer engagement patterns, revealing that training is compliance-driven with minimal mobile usage.
- Designed and deployed a survey on Nissan's training platform, collecting 800+ responses that showed 80%+ dealer interest in AI-powered product knowledge tools.
- Led development of a RAG-based chatbot prototype using AWS Bedrock and Amazon QuickSight for the 2026 Nissan Leaf, integrating web-scraped specs, official documentation, and competitor data to deliver instant product comparisons.
- Presented findings and prototype to Nissan NA executives, informing a scalable chatbot solution being developed with Bethink Lab for North American dealer rollout.

AI-Generated Image Detection using Deep Learning — **Nashville, TN**
Team Lead | Vanderbilt University (Deep Learning Course) — Oct 2025 – Dec 2025

- Proposed and led a deep learning project to detect AI-generated images from real photographs, achieving 97.94% accuracy and 0.998 ROC-AUC on 120K images using VGG16 transfer learning.
- Implemented Grad-CAM interpretability to visualize CNN decision patterns, revealing learned distinctions between synthetic texture artifacts and natural object boundaries.
- Led architecture benchmarking across VGG16, ResNet18, and EfficientNet-B0, finding EfficientNet-B0 achieved 98.42% accuracy with 26× fewer parameters—key for resource-constrained deployment.
- Reduced training time by 40% using adaptive learning rate scheduling and early stopping, converging in 11 epochs vs. 25 planned.

Scene Reader: Real-Time Visual Accessibility via Vision-Language Models — **Nashville, TN**
Team Lead | Vanderbilt University (Generative AI Course) — Sep 2025 – Dec 2025

- Designed a real-time visual accessibility system for visually impaired users, benchmarking 9 transformer-based architectures (VLMs, YOLO+LLM hybrids, RAG, Chain-of-Thought) across 564 API calls and 84 local model tests.
- Built a hybrid YOLO + LLM pipeline achieving 0.54s mean latency (3× faster than pure VLM) and $0.005/query cost through semantic caching with LRU eviction and adaptive token limits.
- Architected a multi-model pipeline integrating YOLOv8, EasyOCR, and MiDaS depth estimation with complexity-based routing and parallel execution, enabling context-aware scene understanding for navigation.
- Implemented semantic caching with SHA-256 hashing, achieving 40–60% cache hit rates and 15× speedup on hits, reducing API costs for real-world deployment.

ADDITIONAL

- Language Skills: English, Tamil and Telugu
- Certifications: Vanderbilt Certificate of Recognition – Nissan Packaging Optimization (Apr 2025), Programming & Data Structures in Python – NPTEL India, AI Analyst – IBM
- Interests: Story-driven gaming, WWE enthusiast, local hiking