Vishnu Nair

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*Passionate Software Engineer with a strong focus on **Data Science** and **Backend Development***

EDUCATION

Cornell University, Ithaca, NY — May 2027

B.S. Computer Science, AI Minor, Engineering Management Minor — *GPA: 3.96/4.0*

Relevant Coursework: Data Mining & Machine Learning, ML Applications, AI, Databases, Systems Engineering, Data Structures, Algorithms, OOP in Java, Intro to C++, Functional Prog., Applied Statistics, Multivariable Calculus, Linear Algebra

Teaching Assistant: Competitive Programming – instructing 50 students office hours biweekly

EXPERIENCE

Amazon, Incoming SWE & Analytics Intern — Aug 2025 –

Coinbase, SWE & ML Intern — May – Aug 2025

- End-to-end development of AI fraud detection pipeline using Crew AI agents, LangChain RAG (LLM + LlamaIndex), **multi-threading**, fine-tuned **XGBoost** with SMOTE balancing, Git, and a **Kafka**–**Tecton** Feature Store–**Airflow**–**Anyscale** Ray orchestration stack
- Cut review latency from 4–5 hours to **1–3 minutes** by replacing offshore agents, enabling **20x** higher throughput while maintaining **84% precision** and **89% recall**. Preserved **$50M+** in monthly revenue by **reducing 40%** user churn; deployed in **shadow** stage and directly addressed Coinbase's fraud infrastructure in response to the May 2025 breach (**70k users, $400M loss**).
- Pioneered ATO monitoring dashboard (Superset on **Snowflake** & **Databricks**) and EWMA-driven **Datadog** alerts via Stir jobs, auto-pushing anomalies to Slack, email, and **PagerDuty** for instant triage for teams.

Millennium Management, Student Employee — Dec – Mar 2025

- Developing a scalable predictive model to forecast electricity demand for the New York Independent System Operator (NYISO), ensuring real-time balance between power supply and demand **across New York State**

Cornell Data Science, SWE & ML Officer — Oct 2024 – Present

- Developing a high-performance, custom in-memory key-value store implementing the **Redis protocol** from scratch, with **TCP communication** support and **multithreading optimizations**, designed to serve as a caching layer for future CDS projects.
- Developing an **LLM**-powered file management system with **OS-level** integration for efficient file discovery, creation, and updating, using **regex**-based naming conventions and advanced **semantic search** techniques (**TF-IDF**, **embedding** models, and **cosine similarity**) for contextual retrieval of files, code, and images by content.

Beats by Dr. Dre, SWE & Data Analysis Intern — Sept – Nov 2024

- Architected a scalable **ETL pipeline** with Python, **SQL**, and **Apache Airflow**, processing **over 1 million** reviews and e-commerce data points of headphone products from Amazon and Best Buy, identifying key sales trends and sentiment patterns.
- Developed predictive models in Scikit-learn using **A/B testing** and **Agile** methodologies, achieving **82% forecast accuracy** on consumer preferences. Leveraged NLP with SpaCy and Hugging Face for **sentiment analysis**, visualizing projected **12%** Beats market share increase in next fiscal year with **Tableau**

NumberOne AI, Backend Intern — May – Sept 2024

- Engineered and deployed **LLM** safety protocols and few-shot learning system, reducing content leaks by **20,000 prompts** through **Go**-based **REST APIs**, **Kubernetes**, **Docker**. Automating the full **CI/CD** pipeline using **GitLab** for continuous integration and streamlined deployments.
- Architected **microservices** and serverless solutions using **AWS** CloudFormation for production and market launch of Wethos AI (wethos.ai/), Optimized scalability and performance of ImageGen models and LLM services by **40%** through **Vertex AI** on Google Cloud Platform (**GCP**).

NASA, Data Science Intern — June – Aug 2022

- Developed a **Machine Learning** flood prediction model using multispectral satellite data and historical soil moisture data (SMAP) with TensorFlow, reducing **error margins by 30%** for current models for South India
- Built hybrid Random Forest and Gradient Boosting models, achieving **72% prediction accuracy** in Antarctic temperature forecasting. Integrated atmospheric simulations in Fortran with Python, using Self-Organizing Maps (**ANNs**) for complex pattern recognition and Plotly Dash for visuals

Massachusetts Institute of Technology, SWE & ML Intern — July – Aug 2022

- Developed predictive models and geospatial simulations to forecast hurricane impacts on the U.S. East Coast, with findings presented to MIT, directly influencing Civil Air Patrol's recovery operations
- Engineered a Hamiltonian **path optimization algorithm** following **Traveling Salesman** variant, optimizing emergency response routes between hospitals, airfields, and disaster zones based on real-time data analysis with **98% location coverage**. Built **CNN multi-label classifiers** for low-altitude imagery analysis, achieving **70%** damage detection and **82%** infrastructure identification accuracies including low-resolution image

PROJECTS

Real-Time Video Upscaler | *Chrome Extension, ML, Docker, AWS, HLS, API dev* — Dec 2023 – April 2024

github.com/vvnu0/SharprAI

- Engineered a Chrome extension to upscale video quality in-browser from 360p to 1080p using CNNs and **PyTorch**, integrating a screen recording feature & youtube and twitch video downloader that segments and stores media assests on **Amazon S3**
- Architected **HLS routing protocols** for seamless playback of enhanced video clips in **m3u8 format**, optimizing **Content Delivery Network** (CDN) interactions to reduce stream latency, ensuring high-quality video delivery
- Deployed a scalabale Dockerized environment for ML pipeline interfaced with a **FlaskAPI** on an AWS **EC2** p2.xlarge instance, doubling video processing speeds and optimizing GPU resource allocation.

SKILLS

Languages: Python, Java, C++, SQL, HTML/CSS, JavaScript (React), OCaml, Go, C#

Cloud, Backend & DevOps: REST APIs, Microservices, Serverless Architecture, Datadog, Databricks, Snowflake, Tecton, Ray, Apache Airflow, Datahub, Flask, AWS (Lambda, S3, CloudFormation, EC2), Google Cloud Platform (GCP), Docker, Kubernetes, GitLab CI/CD

AWARDS

Cornell LII **Graduate School** Hackathon Winner — *github.com/yl3698/Hackathon*

2022 National Gold Competitive Programmer — USA Computing Olympiad Ranked Top 7%; **Java** & **C++**

Using complex algorithms & data structures