

Nikhil Manakkal

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EDUCATION

Lehigh University

Bachelor of Science in Earth and Environmental Sciences,

Bachelor of Arts in Computer Science

Bethlehem, PA

Aug 2023 – May 2027

Overall GPA: 4.00

- **Coursework:** Machine Learning, Statistics, Algorithms, Data Structures, Software Engineering, System Software
- **Study Abroad:** IFSA Tech Career Accelerator (Prague, Spring 2026); Lehigh Launch (Quito, Fall 2023)

EXPERIENCE

William M. Lapenta Intern

NOAA - National Weather Service

June 2026 – August 2026

Silver Spring, MD

- Developed Model Context Protocol (MCP) services connecting Large Language Models (LLMs) to Numerical Weather Prediction (NWP) data in NWS cloud APIs via Python middleware
- Engineered a Next.js map dashboard utilizing spatial indexing and micro-batching to render complex weather overlays up to 100,000 grid cells
- Architected an AI briefing studio integrating LLM takeaway generation and interactive Leaflet map to export 1080p NWP presentations for NBM/RRFS models
- Presented work to 40+ NWS Office of Meteorological Development (OMD) staff and senior leadership on MCP integration; Present project at 8th NOAA AI Workshop; Submitted abstracts for 2027 AMS Annual Meeting

Machine Learning Engineer

WhomLab

February 2026 – May 2026

Prague, Czechia

- Co-developed TF-IDF NLP pipeline to predict Big Five (OCEAN) personality traits, with SHAP explainability, achieving 0.67 macro F1 on par with published neural-network baselines, securing INNO-SBM research grant
- Drove experimental direction toward larger Reddit dataset, lifting macro F1 from 0.62 to 0.67 and accuracy from 55% to 69% compared to mid-point baseline
- Evaluated NLP pipelines, such as TF-IDF, sentence embeddings, with logistic regression and linear SVM classifiers, using Python's Scikit-learn library and Optuna for hyperparameter tuning

Undergraduate Research Assistant

Lehigh University

July 2025 – December 2025

Bethlehem, PA

- Assisted with GIS visualizations in QGIS for HOV Alvin, and sample collection, including CTD casts, during shipboard field operations aboard 3-week R/V Atlantis research cruise
- Conducted laboratory analyses to create environmental datasets for future scientific publications

Supervised Research Internship

Lehigh University

August 2024 – December 2024

Bethlehem, PA

- Led coding initiative in R, synthesizing, cleaning, and performing statistical analysis on particulate matter (PM 2.5) data collected from PurpleAir sensor network, reducing time spent on manual analysis by over 80%
- Visualized spatial patterns in wind direction and pollution levels through wind rose and pollution rose diagrams

PROJECTS

Find Your Historical Twin | *Python, DeepFace, React, React Router, Tailwind CSS, FastAPI*

- Led 3-person team building a full-stack facial recognition app for the Museum of Prague that matches user selfies against 500+ historical portraits, scoring runner-up for best student project as assessed by museum staff
- Architected Python backend using DeepFace to generate facial embeddings stored as vectors in PostgreSQL, enabling rapid nearest-neighbor similarity search
- Containerized the stack with Docker and deployed to a VPS alongside a React/Vite + Tailwind frontend with in-browser face capture, serving the live demo

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, C, C++, R, BASH, SH, SQL, Dart

Frameworks & Libraries: Scikit-learn, Optuna, Pandas, NumPy, DPLYR, React, Flutter, Tailwind CSS

Tools: Git, VS Code, Cursor, Claude Code CLI, OpenCode CLI