

Hanu Mandadi

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EDUCATION

Rutgers University – B.S., Data Science & Computer Science Expected May 2027

Princeton University – Certificate, Engineering & Chemistry May 2025

Mercer County Community College – A.S., Computer Science & Mathematics May 2025

EXPERIENCE

Treasurer Jun 2024 – Jun 2025

Phi Theta Kappa (MCCC) – West Windsor, NJ

- Managed chapter budget, produced monthly financial reports, and optimized resource allocation for events.

PROJECTS

Automated Prediction Market Trading Bot Aug 2026 – Present

Personal Project

- Built a Python trading system for Kalshi's prediction markets with RSA-PSS authenticated API integration, 4 concurrent signal strategies (mean reversion, momentum, market-making, rule-based), and an adaptive learning engine that reweights strategies from closed-trade history.
- Diagnosed and fixed a SQLite write-lock race condition causing trade records to silently fail while real orders still executed; redesigned the write path to be fail-safe (WAL journaling, retry-with-backoff, record-before-trade ordering) and built a reconciliation tool cross-referencing local state against live exchange fills and positions.
- Deployed as a persistent background service on a self-hosted Ubuntu server, polling live markets every 30 seconds across economic, political, and sports categories.

Retail Product Shipment Weight Prediction Model Jun 2026 – Present

Perseuss LLC, West Orange, NJ (Cartonization Software) – Client-Directed Research Project with MCCC

- Built a Python library predicting actual packed shipment weight on 66,224 real warehouse shipments, achieving 0.61 lb MAE, 92% within-1-lb accuracy, and 54% exact-match accuracy against carrier billing weight — enabling shipping labels to be pre-printed before packing.
- Diagnosed a billing-comparison asymmetry in evaluation methodology that was masking true model performance, lifting exact-match accuracy by 23 points without retraining; benchmarked Ridge against HistGB/LightGBM/XGBoost/CatBoost and fixed a critical train/serve feature-skew bug.

NIST's NanoFab Equipment Management & Operations (NEMO) Feature Enhancement Jun 2026 – Present

Micro-Nano Fabrication Center, Princeton University

- Built a Django plugin and Flask daemon to automate secure lab data access, replacing USB workflows with SMB drive mapping via HMAC-signed API and SQLite session persistence.
- Built a backfill script provisioning 376 existing MNFC users from NEMO API exports.

AI-Driven News Headline Analysis Competitions

Dec 2025 – Jan 2026

RAISE 2026 Finalist, Rutgers

- Designed an NLP pipeline analyzing 12,000 headlines across 50 news sources using embeddings, clustering, and sentiment analysis; applied VADER, TF-IDF, and PCA to study AI framing.
- Leveraged Qwen2.5-7B-Instruct to generate interpretable cluster labels and insights on AI's influence on human behavior.

VR Digital Twin Dec 2024 – Mar 2026

Princeton Materials Institute, Princeton University

- Co-led a 6-person cross-institutional team to build a VR digital twin of Princeton's Advanced Device Packaging Lab using photogrammetry, Blender, and Unity with physics-accurate mechanics.
- Deployed on VR headsets via HyperSkill with three integrated AI agents; co-authored a peer-reviewed publication in the Journal of Advanced Technological Education (Mar 2026).

Pericope — AI Research Paper Assistant pericope-xi.vercel.app

- Built and deployed a full-stack RAG-powered research assistant; users upload PDFs and chat with papers grounded in actual content, with auto-generated summaries, keywords, and methodology extraction.
- Implemented cross-paper semantic search with Qdrant Cloud vector DB and Hugging Face embeddings; Firebase token auth on backend for secure multi-user access.

SKILLS

Programming: Python, SQL, R

Data Science & ML: NLP, Predictive Modeling, Feature Engineering, Data Visualization, Scikit-learn, Pandas, NumPy

Tools & Platforms: FastAPI, Flask, React, Firebase, Qdrant, Docker, Nginx, Git, Tableau, Streamlit, SQLite

CERTIFICATIONS

Certified in Cybersecurity (CC) — ISC2

AWARDS & HONORS

Phi Theta Kappa Scholarship (Rutgers) | Professor Betty Wallace Cornelius Award (MCCC) | Dean's List (Rutgers) | Highest Honors in CS & Math (MCCC)

PUBLICATIONS

A Multi-Institutional Digital Twin and AI Educational Platform for Advanced Microelectronics Fabrication and Device Packaging Training. Journal of Advanced Technological Education, Mar 2026. <https://zenodo.org/records/19862062>