

Dominick DeVincenzo

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Education

University of Pennsylvania

Master of Computer and Information Technology

Philadelphia, PA

Dec 2025

University of Pittsburgh

B.S. in Chemistry | Minor in Italian Language and Culture

Pittsburgh, PA

Apr 2019

Experience

Software Engineer | RADA Technologies

Sept 2025 – Present

Leonardo DRS

Germantown, MD

- Develop and maintain real-time C/C++ software for multi-platform radar systems deployed across counter-drone, air surveillance, and other defense applications
- Design and optimize multithreaded processing pipelines with shared-memory IPC and muxex-based synchronization to meet hard real-time latency constraints on mission-critical sensor data
- Diagnose and resolve high-severity defects in legacy networked codebases, improving system reliability across distributed radar nodes communicating over TCP/UDP
- Extend radar system capabilities by implementing new operational modes and detection features while preserving backward compatibility with proprietary hardware and software interfaces

Data Coordinator | National Capital Area Minority/Underserved NCORP

Feb 2022 – Sept 2025

Georgetown University Medical Center

Washington D.C.

- Designed and built a proof-of-concept Retrieval-Augmented Generation (RAG) AI chatbot to explore automating patient screening using local LLMs and research documentation; demoed the tool to leadership as a potential innovation for clinical workflows
- Effectively coordinate patients and manage data for six oncology studies totaling over 100 subjects; ensuring timely and accurate data collection, entry, and verification in accordance with protocol requirement and regulatory standards
- Developed data quality assurance protocols, playing a key role in maintaining the credibility and reliability of research outcomes

Projects

Cloud-Based Distributed Search Engine | *Java, AWS EC2, KVS, MapReduce, HTML/CSS*

2025

- Architected and deployed a distributed search engine on AWS EC2, orchestrating a multi-stage pipeline spanning crawling, indexing, PageRank computation, and interactive query serving
- Engineered a multi-threaded web crawler that indexed 1M+ pages with robots.txt compliance, URL frontier prioritization, and persistent state for fault-tolerant restartability
- Optimized query latency by parallelizing KVS lookups and precomputing TF/IDF and PageRank scores into consolidated index entries, reducing per-query response time to under 1s
- Scaled a distributed indexing and PageRank pipeline across multiple Flame workers with a custom key-value store, processing millions of documents in batch
- Built a search frontend with phrase search, stop-word filtering, and a hybrid ranking model combining lexical relevance (TF/IDF) with link-analysis signals (PageRank)

Clinical Trial AI Chatbot | *Python, LangChain, Streamlit, ChromaDB, Docker, Llama 3*

2025

- Built a Retrieval-Augmented Generation (RAG) chatbot to screen patients for clinical trial eligibility by extracting inclusion/exclusion criteria from research protocol PDFs
- Implemented section-based chunking, embedding with all-MiniLM-L6-v2, and metadata tagging to enable accurate retrieval
- Used ChromaDB for vector search and LangChain to orchestrate LLM interaction with local inference via Llama 3
- Developed a lightweight Streamlit frontend with a conversational UI for guided patient qualification without storing responses
- Optimized PDF ingestion and embedding pipeline for GPU-accelerated local development using Docker across Mac and Windows
- Enabled study updates by allowing document replacement and metadata refresh, supporting evolving clinical trial requirements

BookBase | *JavaScript, React, Node.js, Express.js, MongoDB, PostgreSQL, AWS RDS*

2024

- Developed a full-stack web application for book discovery, providing advanced search and unique insights powered by optimized SQL queries and map-based exploration
- Implemented user authentication with JWT and Google/FB OAuth, enabling secure login and personalized virtual bookshelves
- Reduced query execution times by 80% through restructuring, precomputing, and indexing for high-efficiency database operations
- Developed an interactive map using React-Leaflet, allowing users to explore reviews geographically
- Preprocessed, cleaned, and integrated large datasets from Amazon and Goodreads to provide detailed book metadata, user reviews, and geographic insights

Technical Skills

Languages: Java, Python, C/C++, SQL (PostgreSQL), JavaScript, TypeScript, HTML/CSS

Frameworks: React, Next.js, Node.js, Express, Streamlit, JUnit

Systems & Infrastructure: Linux/Unix, AWS, GCP, Docker, CMake, Jenkins, Git, TCP/UDP Sockets, Protobuf

Data & ML: LangChain, ChromaDB, MongoDB, pandas, NumPy, RAG, Vector Search