

Matthew Frazier

[Website](#) | [LinkedIn](#) | [Email](#) | [\(610\) 732-8633](tel:(610)732-8633) | St. Petersburg, FL

AI Researcher and Engineer with 10+ years of experience building data, analytics, and distributed systems, with a focus on designing and evaluating LLM-based applications. Proven track record prototyping AI systems and validating their pedagogical efficacy through empirical, mixed-methods research. Applied prompt engineering, retrieval-augmented generation (RAG), and conversational system design to create AI-driven learning environments. Ph.D. in Computer and Information Sciences with research in conversational agents intersecting HCI and applied AI.

CORE SKILLS

AI & Systems: LLMs, RAG, prompt engineering (CoT, ReAct, few-shot), human-in-the-loop (HITL), vector search, inference pipelines, LangChain, LangGraph, CrewAI, Qdrant, Langfuse, MLflow, LLM-as-a-judge

Programming & Engineering: Python, SQL, TypeScript/JavaScript, microservices, REST APIs, system design

Data & Infrastructure: Airflow, Argo Workflows, AWS (Lambda, S3, SQS), Redshift, Snowflake, distributed data pipelines

Research Methods: Mixed-methods research, empirical evaluation, survey design (Qualtrics), qualitative analysis, experimental design, usability testing, concept testing, participatory design, user interviews

RESEARCH & TEACHING EXPERIENCE

PhD Researcher & Instructor | University of Delaware | Newark, DE 2018 - 2024

- Led research on conversational agents for computer science education, designing and developing LLM-based prototype systems using prompt engineering techniques (e.g., RAG, CoT, few-shot) through mixed-methods empirical studies, resulting in peer-reviewed publications. Mentored undergraduate researchers.
- Engineered and iterated on conversational AI system behavior and interaction patterns to guide student reasoning through structured Socratic dialogue rather than direct answer generation.
- Instructed undergraduate computer science courses. Created curriculum and taught programming, data structures, and computer science ethics.

Graduate Assistant & Researcher | West Chester University of Pennsylvania | West Chester, PA 2016 - 2017

- Evaluated data structures assignments (Java), assessing correctness, efficiency, and algorithmic approach.
- Developed an object detection and identity matching application (computer vision - Python, OpenCV) that analyzes university parking lot videos to detect open parking spots for student lot availability.

PROFESSIONAL EXPERIENCE (select)

Senior Software Engineer (Data Science, Scaled Media Solutions) | Goodway Group | New York, N.Y. 2021 - Present

- Designed and implemented AI-driven analytics systems within the **GOES™** (Goodway Outcome Engineering System) platform, developing LLM-based systems for natural language querying and hierarchical insight generation. Built production-grade AI workflows integrating vector search, RAG, stateful memory, prompt engineering (CoT, ReAct, few-shot), and streaming inference via REST APIs to decision-support systems.
- Improved production stability of **RealValue™**, a distributed optimization system processing **40M+** impression-level decisions daily across campaign datasets, built on microservices, ETL pipelines, and DSP integrations (e.g., The Trade Desk). Re-architected error handling (Rollbar, Datadog) and validation logic within processing systems, increasing system reliability while reducing production errors by **90%**.
- Integrated backend microservices and REST APIs across **5+** external platforms (The Trade Desk, Bing, YouGov, Google Ads, Meta). Built high-volume ETL data pipelines (Airflow, AWS MWAA, Argo Workflows, Redshift, Snowflake, S3) supporting large-scale data and analytics systems. Led DevOps initiatives and co-led AI initiatives with Data Science leadership, driving best practices and cross-team MLOps governance alignment across platform and AI systems.

- Architected full-stack and event-driven distributed systems, including AWS Lambda, SNS, SQS (FIFO), and S3 workflows to automate YouGov analysis workflows, replacing manual Jupyter notebook execution with asynchronous processing. Deployed frontend (React/Next.js, Streamlit) and data visualization interfaces for real-time insights.

Senior Technical Operations Engineer (Business Intelligence) | Goodway Group | New York, N.Y. 2018 - 2021

- Owned data reliability, integrity, and availability of marketing analytics systems. Managed end-to-end data operations and reporting infrastructure (Airflow, Redshift, S3, Tableau) under strict daily data freshness SLAs.
- Owned org-wide incident response, root-cause analysis, postmortem, and data discrepancy triage across ETL pipeline and reporting systems. Adopted preventative fixes and monitoring workflows that improved system stability and reduced recurring issues.

Principal Campaign Operations Engineer | Goodway Group | New York, N.Y. 2014 - 2018

- Launched **COLT** (Cacidi On-Line Tool), a web-based automation system augmenting Adobe InDesign templates that parameterized ad copy and legal logic. Automated campaign production, reducing creative approval time by approximately **80% (from 10-12 business days to 2 business days)** and enabling scalable execution across multi-location automotive clients (e.g., Chevrolet).
- Executed, QA'd, and reported on programmatic campaigns across platforms (The Trade Desk, Google Ads, Meta), collaborating with ad operations and media trading to improve data-driven campaign pacing and performance.

Senior Search Engine Optimization (SEO) Strategist | IONOS (1&1 Internet) | Chesterbrook, PA 2012 - 2014

- Established and analyzed SEO and Search Engine Marketing (SEM) strategies through copy and creative variation A/B testing, metatag optimization, user engagement behavior analysis (CTR, time-on-page), and keyword analysis, improving organic visibility and traffic across **300+** small business websites in US, UK, and Canadian markets (Google Analytics, SEMrush).

EDUCATION

University of Delaware | Newark, DE
Ph.D., Computer and Information Sciences (Magna Cum Laude) 2024

West Chester University of Pennsylvania | West Chester, PA
M.Sc., Computer Science (Cum Laude) 2017
B.Sc., Marketing 2010

PUBLICATIONS (select)

- Customizing ChatGPT to Help Computer Science Principles Students Learn Through Conversation (ITiCSE 2024)
- Investigating User Perceptions of Conversational Agents for Software-related Exploratory Web Search (ICSE 2022)