
SUMMARY

Ph.D. Candidate in Computer Science, Lecturer, and Software Engineer focused on **research-driven innovation**. I design and build **intelligent systems** for data platforms, **mobile** (Android/edge AI), and **full-stack web** applications combining research insight with practical development. Skilled at data/event pipelines that ingest **APIs** and streams, transform across **relational, non-relational**, and **big-data** ecosystems (**SQL/NoSQL/stream processing**), and deliver to the **cloud** via modern **containerization** and **orchestration**. Background in **computer vision** and **symbolic reasoning**, with a track record of delivering scalable, production-ready systems.

CORE SKILLS

- **Programming:** Java, Kotlin (Android), Python, C#, Node.js, JavaScript/TypeScript, React
- **Data Platforms:** Relational (PostgreSQL, MS SQL Server, MySQL), NoSQL (Redis, MongoDB), Big Data (Snowflake, Spark), **Vector Databases (Pinecone)**; schema design, normalization, performance tuning
- **Machine Learning & AI:** Computer vision (OpenCV, PyTorch, TensorFlow), model training/serving, data pipelines, ML explainability, Generative AI/NLP
- **Cloud & DevOps:** AWS, Azure; containerization & orchestration (Docker, Kubernetes); CI/CD (**GitHub Actions**, Jenkins); observability (logging, metrics, tracing)
- **Backend Services:** RESTful & SOAP APIs, microservices, GraphQL, authentication/authorization (OAuth2.0, JWT), message-driven and event-streaming systems
- **Frontend Development:** Android (Jetpack), React, Angular, cross-platform mobile (Ionic/Capacitor), Web (HTML/CSS/JavaScript)
- **Security & Compliance:** Encryption in transit/at rest, identity management, secure communication protocols

EXPERIENCE

- **Harrisburg University of Science and Technology** Harrisburg, PA
Lecturer, Computer Science & Experiential Learning Coordinator Aug 2014 – Present
 - Teach a range of courses including **Data Structures, Algorithms, Mobile Computing, Advanced Databases, Computer Vision**, and **Machine Learning**, at both undergraduate and graduate levels.
 - **Curriculum development:** modernized programming track, designed new courses, and continuously aligned curriculum with industry needs.
 - **Experiential learning:** advised capstone projects, internships, and undergraduate research guiding students from concept to production-ready systems.
 - Built **industry partnerships** to scope applied projects in data pipelines, REST APIs, and observability; integrated these into classroom and capstone experiences.
 - Conduct **machine learning workshops** for students and professionals, bridging theory with hands-on practice in model development, evaluation, and deployment.
- **Cisco** Remote
Software Engineer III (Research & Engineering) Oct 2022 – May 2023
 - Built an **Android** prototype that combines **multi-object tracking** and **speech-to-text** to capture, annotate, and stream events to backend services; leveraged **OpenCV + TensorFlow/TFLite** for on-device inference and Kotlin coroutines for async pipelines.
 - Designed a **reasoning layer** that combined rule-based logic with **LLM integration** to prioritize events and reduce false positives, then deployed as containerized microservices on **AWS** (ECR/ECS, EC2, S3) with **CI/CD** pipelines (*GitHub Actions*) for scalable, repeatable experimentation and structured observability.
 - Engineered high-performance data pipelines using **Redis** as the primary in-memory store for feature caching, fast lookups, and real-time message processing; implemented validators and idempotent reprocessing routines for clean downstream consumption.
- **NASA (JPL & Caltech collaboration)** Remote
Research Assistant & Software Engineer (Contract) Oct 2020 – Sep 2021

- Researched **autonomous safety systems**, combining **deep neural networks (YOLOv4)**, **Non-Axiomatic Reasoning (NARS)**, and multi-sensor fusion (camera, RADAR, GPS) to enable **real-time, explainable decision-making**.
- Advanced **explainable AI** by analyzing DNN activation filters to reveal interpretable features (e.g., *celestial edges, spectral patterns, light sources*) and link them to symbolic reasoning for transparent, auditable outputs.
- Deployed modular components with **Docker** on **AWS** for scalable experimentation; implemented structured logging and telemetry for reproducibility and performance analysis.
- Collaborated with NASA JPL and Caltech teams to design and validate **life-critical situational awareness systems**, demonstrating earlier warnings and higher reliability than baseline methods.

• Temple University

Philadelphia, PA

Research Assistant, Artificial Intelligence

Jan 2021 – Dec 2021

- Worked with **Dr. Pei Wang** on advancing the **Non-Axiomatic Reasoning System (NARS)**, focusing on adaptive logic for decision-making under uncertainty and limited resources.
- Developed and tested **OpenNARS-inspired components** in Node.js/TypeScript, including task scheduling, evidence accumulation, and temporal reasoning.
- Explored integration of reasoning with perception modules (**vision, language**), contributing to research on **explainable and real-time intelligent systems**.

• The APAK Group - Hershey Center for Applied Research

Hummelstown, PA

Software Engineer (Full-Stack)

Jan 2012 – Feb 2015

- Developed **automation control** applications in **.NET/C# (ASP.NET)**, **JavaScript**, and **SQL (MS SQL Server, MySQL)**; created normalized schemas, stored procedures, and real-time dashboards.
- Designed **system architectures** and **HumanMachine Interfaces (HMI)**, integrating distributed control systems to improve operator efficiency.
- Programmed and integrated **peripheral hardware/software** including servo motors, robotics, vision systems, leak testers, and data acquisition devices, leveraging industrial **network protocols**.
- Debugged and optimized system performance; supported equipment installation, on-site validation, and customer run-offs.
- Connected with industrial systems using **FactorySQL**; implemented secure role-based access, audit logs, and error handling.

• I2I Vision

Alexandria, Egypt

Web Developer & Database Administrator

Jan 2009 – Aug 2010

- Developed LAMP-stack applications in **PHP, MySQL, JavaScript, HTML/CSS**; managed database backups, indexing, and performance tuning.
- Implemented REST endpoints and admin dashboards; improved data integrity through constraints, triggers, and migration scripts.

EDUCATION

• Temple University

Philadelphia, PA

Ph.D. Candidate, Computer & Information Sciences (Artificial Intelligence)

Jan 2020 – Present

• Harrisburg University of Science and Technology

Harrisburg, PA

M.S., Information Systems Engineering & Management

Jan 2012 – Apr 2014

• Arab Academy for Science, Technology & Maritime Transport (AAST)

Alexandria, Egypt

B.S., Computer Science

Jan 2004 – Aug 2008

KEYWORDS FOR ROLE ALIGNMENT

Java, Kotlin, Python, C#, Node.js, React; Relational DBs (PostgreSQL, MS SQL, MySQL), NoSQL (Redis, MongoDB), **Vector DBs (Pinecone)**; AWS, Azure, GCP; Docker, Kubernetes; CI/CD (GitHub Actions, Jenkins); REST/GraphQL, microservices, OAuth2.0/JWT; ML/AI (PyTorch, TensorFlow, OpenCV, NLP/LLMs, explainable AI/NARS); Android, Angular, full-stack web/mobile; **Security**: application security, encryption (in transit/at rest), secure coding, **security education for students**; GDPR.