Mina Gabriel

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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** applicationscombining 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 researchguiding 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 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.