Ali Krema

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EDUCATION

University of Pennsylvania, *School of Engineering and Applied Sciences* | Philadelphia, PA   **GPA: 3.65**
***BSE in Computer Science. Magna Cum Laude* 2023**
Honors/Awards: Onsi Sawiris Scholarship Recipient '19; UPenn '23 CIS Faculty Appreciation Award; UPenn '23 CIS TA Hall of Famer
Relevant Coursework: Data Structures and Algorithms; Operating Systems; Algorithm Analysis; Database and Information Systems; Human-Computer Interaction (UI/UX); Interactive Computer Graphics
Certificates: Udacity: Advanced Android Development in Kotlin; Udemy: The MERN Fullstack

WORK EXPERIENCE

AI Engineer @ *Aydi*   **Jul 2023 – May 2025**
Tech: TypeScript, Nest.js, LLM Workflows, AWS, SQL, MariaDB, Redis, React, Next.js, RAG, VectorDBs

- Text-to-SQL & Semantic Search:
  - Engineered and implemented an LLM-based text-to-SQL pipeline using OpenAI assistants and an intent-based agent, achieving 80% accuracy on internal database schemas for natural language querying.
- AI Agronomist Assistant:
  - Developed an AI Agronomist Assistant within AydiAI, integrating LLMs with tool-calling capabilities and Server-Sent Events (SSE) for real-time, streaming responses
- AI Onboarding Tool ("Nugz"):
  - Built "Nugz," an AI-powered client onboarding tool, implementing multimodal data ingestion (PDFs, text) with an orchestration-worker workflow and parallelized PDF chunking to automate and accelerate client setup.
- Conversational AI Sales Agent:
  - Designed and led the development of a conversational AI sales agent to engage leads via WhatsApp, personalizing outreach and improving lead conversion.
- Core Backend & Inventory System:
  - Designed and implemented RESTful APIs with Nest.js for scalable backend services and complex database schemas (MariaDB).
  - Developed an Inventory Management System, adopted by over 50% of clients to manage farm operations.
  - Managed cloud deployments on AWS EC2, overseeing infrastructure for backend services.

Backend Engineer (Part-time) @ *Stealth Startup*   **Feb 2025 – May 2025**
Tech: TypeScript, Nest.js, Redis

- Contributed to the backend development of a fractional real estate investment platform processing over 10 million USD/Month
- Engineered and implemented systems for bank payment processing, contract generation, and user authentication.
- Developed an automated order expiry system using BullMQ for background job processing with Redis.
- Integrated backend services with a CRM and built features for an internal administrative dashboard

Backend Development Course Instructor @ AMIT Learning   **Jul 2024 – Sep 2024**
- Taught Node.js and MongoDB to a class of 14 students, ranging from undergraduate to graduate students.
- Conducted 17 interactive sessions over three months, meeting twice weekly for approximately 3 hours each.
- Developed course materials and curriculum, including building a course website, designing lecture slides, and creating coding exercises.

Class Instructor @ UPenn, *CIS1950: Android Development in Kotlin*   **Jan 2023 – May 2023**
- Instructed a project-based Android Development course at the University of Pennsylvania, focusing on Kotlin
- Conducted weekly 90-minute interactive lectures, engaging a class of 15 undergraduates with hands-on coding sessions
- Developed a comprehensive curriculum covering UI Design, View Binding, MVVM Architecture, APIs, RecyclerView
- Facilitated weekly office hours, providing personalized support in debugging and reinforcing key concepts

SOFTWARE PROJECTS

llm-ts, *Creator*   **(WIP)**
TypeScript, Zod LLM SDK: OpenAI, Gemini, Mistral, Ollama (local)
- Currently developing an open-source npm package to enable type-safe creation and orchestration of complex LLM workflows using Zod for schema validation and definition.
- Aims to provide a novel, developer-friendly solution for building robust and maintainable LLM-powered applications in TypeScript.

SKILLS & INTERESTS

Software/languages: TypeScript, Nest.js, Node.js, SQL, MongoDB, Docker, Python, React, Next.js, Kotlin, Java, C
Interests: CS Education, Teaching, LLMs, Applied AI, exiting vim, !CSS
Languages: Arabic (Native), English (Fluent), German (Intermediate)