

Abdelghafour El Bikha

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SUMMARY

Software engineer with AI/ML internship experience building educational AI, research assistants, and browser agents. Focused on Python, retrieval-augmented generation, model evaluation, and reliable tool execution.

EXPERIENCE

AI/ML Engineer Intern

Mar 2026 – Present

EZducate

Remote

- Built a tutoring agent that retrieves course content and routes student questions to relevant tools; tuned retrieval and re-ranking for students with learning differences.
- Personalized learning material using fine-tuned sentence-transformers; added Redis caching, request batching, and response streaming to the FastAPI backend.

Full-Stack Software Engineer Intern (Mobile)

Jun 2025 – Sep 2025

EZducate

- Built a quiz-generation pipeline using ChromaDB retrieval and Cohere re-ranking; integrated GPT-4o chat with WebSocket streaming in student-facing applications.
- Developed a Dockerized FastAPI backend with PostgreSQL and Redis; built React and Flutter interfaces with localization and right-to-left layouts across four languages.

Machine Learning Engineer Intern

Jan 2021 – Jun 2021

RifTech

Remote

- Automated quiz and summary generation with a BERT-based NLP pipeline; built FastAPI and Django APIs backed by PostgreSQL to retrieve learning-management data.

SELECTED PROJECTS

NOUS - Research Agent and CLI | *Python, LangGraph, TypeScript*

[Source](#) | [CLI](#)

- Built a research assistant that searches documents and arXiv papers, queries a knowledge graph, and returns cited answers through web and terminal clients.
- Added PostgreSQL checkpoints to resume LangGraph conversations after restarts; required user approval before tools write data and streamed tool progress to clients.
- Built automated evaluations that verify tool actions, database changes, and answer grounding; tested approval flows and cancellation using state checks and separate LLM judges.

MERIDIAN - Browser Automation | *TypeScript, Playwright, Zod*

[GitHub](#)

- Built an LLM agent that discovers browser workflows in a synthetic banking application; saved typed, versioned instructions for replay without further model calls.
- Verified that repeated API requests with the same idempotency key reuse one run without duplicate journal entries; validated account retrieval and missing-member outcomes.

Injection-Aware MPNet | *Python, sentence-transformers, XGBoost*

[GitHub](#)

- Fine-tuned MPNet with contrastive learning and trained an XGBoost detector; included harmless prompts containing attack-related terms to distinguish intent from keyword overlap.
- Evaluated detection and false positives across five benchmark families; investigated train/test overlap and rebuilt evaluation with disjoint splits. Research manuscript in preparation.

TECHNICAL SKILLS

Languages: Python, TypeScript, SQL, Go

AI and ML: PyTorch, scikit-learn, XGBoost, sentence-transformers, LangGraph, RAG, LLM evaluation

Backend: FastAPI, React, Next.js, PostgreSQL, Redis, Qdrant, Neo4j

Tools: Docker, Kubernetes, GitHub Actions, LangSmith, Prometheus

EDUCATION

Georgia Institute of Technology

M.S. Computer Science, Machine Learning

Expected 2028

Atlanta, GA

John Jay College of Criminal Justice, CUNY

B.S. Computer Science & Information Security

Dec 2025

New York, NY