BAZAL KHAN

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EDUCATION

Farmingdale State College (SUNY) **Expected December 2026**

B.S. in Computer Science — GPA: 3.7 / 4.0 *Farmingdale, NY*

- Dean's List: Spring 2023 – Spring 2026 (7 semesters) | President's List: Summer 2025
- Current coursework (Fall 2026): Advanced Data Structures & Algorithms, AI & Machine Learning, Elements of Quantum Computing, Senior Project
- Completed: Data Structures & Algorithms I & II, Software Engineering, Operating Systems, Computer Architecture, Networking, Discrete Structures, Principles of Programming Languages, Human-Computer Interaction

EXPERIENCE

PostEx **June 2026 – August 2026**

AI/ML Intern

- **RTO risk prediction (PostEx Shield):** Built a two-stage system for cash-on-delivery orders on real PostEx shipment data: a checkout-time model (17 features) and a post-order model (47 features), both LightGBM with isotonic calibration
- Stage 2 held-out test results: ROC-AUC 0.92, PR-AUC 0.91, ECE 0.02, 93% precision at 50% recall; Stage 1: ROC-AUC 0.90, PR-AUC 0.85. Both stages cleared the launch thresholds set in the technical spec
- Engineered five feature layers (order, customer, H3 geospatial, network/graph, temporal); added Optuna tuning, SHAP reason codes, and champion–challenger promotion gates for retraining
- Served both models through a Flask REST API (training, retraining, single and batch inference, feature registry) with Docker and pytest; audited the explanation layer and fixed SHAP wording that contradicted feature values in 26% of reasons
- **Product category classifier:** Fine-tuned a multilingual MiniLM encoder in PyTorch (Hugging Face Transformers) to predict parent category, child category, and 8 operational flags (bulky, fragile, cold-chain, high-value, and more) from free-text product listings, against a 97-category taxonomy
- Held-out validation (1,647 products): 96.2% parent accuracy (macro-F1 0.94), 87.7% child accuracy (macro-F1 0.86), 97.5% child top-3 accuracy; class balancing lifted child macro-F1 from 0.72 to 0.86
- Labeled ~26,000 listings with a prompt-engineered LLM pipeline (OpenAI API, majority voting, schema-constrained outputs), then balanced the set to 12,198 rows across 46 child categories; excluded a contaminated source field that leaked labels
- Selected models on child macro-F1 instead of accuracy, temperature-calibrated confidence scores, and served the model through a Flask API with training, retraining, batch prediction, and a staging-to-production registry

PROJECTS

CyberGuard — Cybersecurity Web Platform Fall 2026 – Present

TypeScript, React, Vite, FastAPI, Supabase | Senior Capstone, Team of 5

- Part of a 5-person team building a cybersecurity web platform (React/TypeScript frontend, FastAPI backend) with phishing email scanning and website risk tracking; collaborate through feature branches and pull requests on GitHub
- Built the Cyber Assistant (2,000+ lines of TypeScript/React): a guided assistant with a 30+ topic security knowledge base, keyword and intent scoring to match questions, in-app page redirects, and refusal handling for offensive-security requests

Calendar Reminder Application Fall 2025

Java, JavaFX, Firebase Firestore, MongoDB, Maven, JUnit 5 | Grade: A+

- Co-developed a full-stack desktop calendar app (2-person team, 11 Java classes, 1,400+ lines) with Month, Week, Day, and Year views, full reminder CRUD, and user authentication
- Implemented real-time cloud sync via Firebase Firestore and MongoDB, with unit tests in JUnit 5; led agile sprint planning on a GitHub Projects Kanban board and designed all UI mockups in Figma

SKILLS

Languages: Python, Java, TypeScript, SQL, C++, COBOL

ML & Data: PyTorch, Hugging Face Transformers, scikit-learn, LightGBM, Transformer fine-tuning (MiniLM), LLMs & prompt engineering, model evaluation & calibration, SHAP, Optuna

Frameworks & Tools: React, Flask, REST APIs, Docker, pytest, JUnit 5, Spring Boot, JavaFX, Maven, Git, GitHub, Figma

Databases & Cloud: SQLite, MySQL, MongoDB, Firebase Firestore

Methodologies: Agile/Scrum, OOP, Test-Driven Development