

# Hadiqa Basit

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ML Engineer who ships to production | Reinforcement Learning · NLP · LLM Agents · Scale

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## SKILLS

**Languages & Core:** Python, R, SQL

**ML / AI:** Reinforcement Learning (UCB, Thompson Sampling), NLP (spaCy, SBERT), LLM Agents (LangChain, GPT-4o), Scikit-learn, K-Means, Monte Carlo Simulation

**Data & Search:** Qdrant (Vector DB), PostgreSQL, MySQL, Redis, Pandas, NumPy

**Infrastructure:** FastAPI, Docker, GitHub Actions, Celery, New Relic, WebSockets (python-socketio), Alembic, PM2

**Statistics:** MLE, Bayesian/MCMC Estimation, Hypothesis Testing, Stress–Strength Reliability

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## EXPERIENCE

### Dubizzle Labs Dec 2023 – Present (Intern → ML Engineer)

Lahore, Pakistan

#### Intelligent Client-to-Agent Allocation (Reinforcement Learning)

- Live across MENA and Pakistan, matching ~30K clients to 1,500+ agents daily — built a **contextual bandit** with **K-Means** clustering from scratch after ruling out supervised learning on falsifiable data.
- Replaced a rigid rule-based scoring system that caused severe allocation imbalance across agents. Designed and presented the POC to the CEO and stakeholder board, receiving direct executive recognition.
- Co-architected and deployed the production service: **FastAPI**, async **SQLAlchemy/MySQL**, **Celery + Redis**, **New Relic** observability, **Docker/GitHub Actions** CI/CD. Now mentoring an engineer on extensions.

#### Dynamic Package Pricing — AI-Driven Daily Price Recommendations

- Serves 200K+ category x attribute combinations daily — built a **dynamic-pricing** system replacing manual annual pricing with automated recommendations driven by live **demand signals**.
- Engineered production **guardrails**: blocks increases on **churn risk**, tests at the margin, measures net effect via **statistical significance testing**, and auto-reverts when upside disappears.
- Authored a **controlled-rollout proposal** with success criteria, guardrail thresholds, and automatic rollback policy; presented to stakeholders for approval.

#### Multi-Tenant WhatsApp AI Sales Agent

- Production multi-tenant platform serving multiple real estate marketplaces — built an autonomous **WhatsApp AI agent** on **LangChain (GPT-4o-mini)** that qualifies investors, curates projects, and books meetings via **CRM** integration.
- Architected bidirectional **LLM↔server state tracking**, dual-safeguard **callback reliability** (no meeting silently dropped), and full **bilingual EN/AR** support with Arabic auto-detection.
- Designed **multi-tenant WebSocket** layer with token auto-refresh, orphan-socket guards, DB-driven per-tenant config, **exponential-backoff retries**, and full **request audit logging**.

#### Project Name Extraction from Call Transcripts (NER + Fuzzy Matching)

- Audited an AI transcription pipeline (**Whisper**, Urdu → English), identified a critical extraction failure mode, and shipped a **spaCy NER + fuzzy matching** service via **FastAPI** that lifted accuracy from 37% → 84%.

### Etera · Data Scientist (Contract) Sept 2025 – Dec 2025

Remote

#### Semantic Search Engine for Restaurant Recommendations

- Built a production **semantic search engine** using **SBERT** embeddings stored in **Qdrant** (vector database) with **HNSW indexing**, enabling sub-linear retrieval at scale.
  - Engineered **NLP-based noun-pair extraction** to isolate semantically meaningful tokens from free-text queries, materially improving retrieval precision over baseline keyword search.
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## PUBLICATIONS

### A Novel Poisson–Weibull Model for Stress–Strength Reliability Analysis in Industrial Systems: Bayesian and Classical Approaches

Axioms (MDPI AG) · Vol. 14, Issue 9 · August 2025 | DOI: 10.3390/axioms14090653

- Co-authored a **peer-reviewed paper** introducing the Poisson–Weibull Distribution with a **stress–strength reliability** framework; published in Axioms (DOAJ-indexed).
- Implemented **MLE** and **Bayesian (MCMC)** parameter estimation in **R** with **Monte Carlo simulation** studies validating estimator convergence. Open-sourced on GitHub.
- Cited by Liu et al. (Mathematics, 2026) as evidence for MLE statistical guarantees in the Weibull distribution family.