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# Taha Yasin Bhatti

Machine-learning engineer and researcher

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## PROFILE

Machine-learning engineer working across production agents, retrieval, privacy-aware ML, MLOps, geospatial planning, forecasting and multimodal research. Electrical-engineering training informs a systems approach to data paths, failure boundaries and deployment.

## SELECTED ENGINEERING WORK

2023-present | Lead architecture and principal engineering

### Production ML for international teams

Multi-agent commerce workflows, telecom recommendations, retrieval evaluation, privacy controls and cloud data systems. Disclosure-safe examples include a production order-and-fulfilment agent adapted across two US retail brands and a two-layer PII detection pipeline for a Canadian property group.

2025-26 | Lead architect

### Multi-agent grid and EV planning

FastAPI, Next.js and deck.gl planning environment integrating five data and modelling layers. Presented at the Asian Development Bank Asia Clean Energy Forum 2025; currently in restricted-access stakeholder validation.

2024-25 | Lead architect

### Urban air-quality sensing

ESP8266 to AWS IoT Core, DynamoDB and Lambda ingestion with AQI processing and IDW heatmaps. Diagnosed a months-long silent stream failure and rebuilt the observability path. Programme spanning eight university partners.

2025 | Lead architect

### National EV roadmap assistant

Agentic RAG across a 150-page policy roadmap with section-level citations and unsupported-claim controls.

2026 | Designer and developer

### Bilingual EV savings calculator

Urdu and English PWA for fuel and EV cost comparison, deployed through kiosk and QR interactions at a national expo.

Public programme | Algorithms lead

### EV retrofit engineering

Battery-sizing, efficiency and thermal models for a convertible motorcycle plug-in hybrid. The public campaign reached approximately seven million views.

## RESEARCH

MS thesis | In progress

### Long-horizon memory for LLM agents

Naive RAG, Mem0, A-MEM and MEM1 evaluated on LongMemEval and LoCoMo. Planned contribution: a reinforcement-learning controller for short- and long-term memory management.

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In preparation

## PersistBench

Contamination-resistant behavioural benchmark for extended agent interaction, with tasks for persistence, correction, selective forgetting, conflict handling and decision effect.

2023-25 | [Research collaboration](#)

## Care-companion robotics

LLM and RAG interaction layer, ADL and gait classification, rPPG vital estimation and multimodal agitation and risk detection. Co-author of a 2024 JMIR Research Protocols study protocol.

[Nonresident research associate](#)

## Regional stability research

RAG pipelines and graph analytics over open-source reporting for early-warning analysis.

# EDUCATION

In progress

## MS Computer Science - FAST-NUCES

Research focus: long-horizon memory and behavioural evaluation for LLM agents.

2019

## BEng Electrical Engineering - Information Technology University

Signals, control systems, embedded engineering and autonomous systems.

# SELECTED SPEAKING

2025 | [Asian Development Bank, Manila](#)

## AI for energy distribution and EV infrastructure

Asia Clean Energy Forum.

2025 | [Pakistan Energy and Vehicle Summit](#)

## Renewable energy, EV charging and BESS optimisation

Keynote on demand information and multi-agent planning.

2023 | [University of Lahore](#)

## Artificial intelligence in scientific and health-sciences research

Invited session for faculty and researchers.

# PUBLICATION

2024 | [JMIR Research Protocols](#)

## Establishing the Foundations of Emotional Intelligence in Care Companion Robots to Mitigate Agitation Among High-Risk Patients With Dementia: Protocol for an Empathetic Patient-Robot Interaction Study

Co-author. JMIR Res Protoc 2024;13:e55761. doi:10.2196/55761

# METHODS AND SYSTEMS

Agent orchestration | retrieval and evaluation | PyTorch | FastAPI | forecasting | geospatial analytics | computer vision | reinforcement learning | AWS | Azure | Docker | data orchestration | edge inference