ALI AKARMA

AI Researcher | Agentic AI | AI Safety | Trustworthy Machine Learning
Madinah, Saudi Arabia

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PROFILE

Third-year undergraduate AI researcher focusing on agentic AI systems, AI safety, and trustworthy machine learning. Author of multiple peer-reviewed publications on multi-agent architectures, AI governance, and constrained reinforcement learning. Experienced in designing policy-constrained agent pipelines and analyzing robustness and failure modes in safety-critical AI systems. Seeking research internships and future graduate study in reliable and trustworthy AI.

EDUCATION

B.S. Information Technology   *2023 – 2027*
Islamic University of Madinah, Saudi Arabia
- GPA: 4.23 / 5.00
- Merit-based fully funded scholarship
- Relevant coursework: Machine Learning, Algorithms & Data Structures, Probability & Statistics, Database Systems

RESEARCH EXPERIENCE

Undergraduate AI Researcher | Islamic University of Madinah   *Jan 2025 – Present*

- Designed multi-agent AI systems with explicit safety constraints: restricted action spaces, policy-aligned decision rules, and human-in-the-loop oversight mechanisms.
- Developed constrained multi-agent reinforcement learning architectures (C-Dec-POMDP, Lagrangian CTDE) for real-time cloudburst prediction using meteorological datasets from the Saudi National Center for Meteorology.
- Conducted failure-mode and adversarial misuse analyses for autonomous LLM pipelines, including prompt injection vectors and jailbreak robustness evaluation.
- Investigated AI governance frameworks for higher education, renewable energy IoT, and smart city digital twin infrastructures; manuscripts under review at Heliyon and PLOS ONE.
- Built open-source research prototypes (AgHealth+, FinNutriAgent, Agentic Digital Twin) with reproducible experimental pipelines and Zenodo-archived datasets.

PUBLICATIONS

Peer-Reviewed Conference Papers
- Jan, S., **Akarma, A.**, et al. "Blockchain-Monitored Agentic AI Architecture for Trusted Perception–Reasoning–Action Pipelines." *IEEE ICCA 2025*
- Syed, T.A., **Akarma, A.**, et al. "FinAgent: Agentic AI for Personal Finance & Nutrition." *IEEE ICCA 2025*
- Syed, T.A., **Akarma, A.**, et al. "Agentic AI for Cloudburst Prediction & Disaster Response." *ICBDT 2025*
- Syed, T.A., **Akarma, A.**, et al. "Agentic AI for Smart Inventory Replenishment." *ICBDT 2025*
- Jan, S., **Akarma, A.**, et al. "Agentic AI for Disabilities & Neurodivergence." *ICBDT 2025*

Accepted / In Press
- Syed, T.A., **Akarma, A.**, et al. "Agentic Digital-Twin Framework for Customer Churn Prediction in Retail Banking." *Book Chapter,* *Springer Nature*
- Syed, T.A., **Akarma, A.**, et al. "FinNutriAgent (FNA): An Agentic AI for Budget and Nutrition Planning." *ETASR*

Under Review
- Risk-Aware Multi-Agent Deep RL for Cloudburst Prediction and Coordinated Disaster Response. *MDPI Mathematics*
- Agentic AI-Enhanced Digital Twins for Smart Cities. *PLOS ONE*
- Ethical Governance of Agentic AI in Higher Education. *Heliyon*
- Ethical AI Governance for Cybersecurity in Renewable Energy IoT. *PLOS ONE*

Selected Research Projects

- **Agentic Weather RL System** — MARL framework for autonomous extreme-weather disaster coordination using radar/satellite data and C-Dec-POMDP policy learning.

  DOI: 10.5281/zenodo.19023333 | GitHub: github.com/aliakarma/agentic-weather-rl
- **Agentic Digital Twin Infrastructure** — Policy-constrained agentic AI system for real-time auditable management of smart city infrastructure via digital-twin integration.

  DOI: 10.5281/zenodo.18849073 | GitHub: github.com/aliakarma/agentic-dt-study
- **FinNutriAgent (FNA)** — Constraint-aware multi-agent planning system jointly optimizing household budget allocation and nutrition goals.

  DOI: 10.5281/zenodo.18849994 | GitHub: github.com/aliakarma/FinNutriAgent

TECHNICAL SKILLS

Languages & Frameworks	Python, Java, SQL; PyTorch, NumPy, scikit-learn, Hugging Face
LLM & Agent Systems	LLM orchestration, prompt engineering, MARL, CTDE, POMDP
AI Safety & Alignment	Failure-mode analysis, adversarial robustness, policy-based control
Research & Dev Tools	LaTeX, Git, Linux, Jupyter, Mendeley, REST APIs, Zenodo

AWARDS & CERTIFICATIONS

- **Merit-Based Fully Funded Scholarship** — Islamic University of Madinah (competitive, 2023)
- **Certificate of Appreciation** — ICBDT 2025, for presented research contributions
- **Mindware: Critical Thinking & Computational Thinking** — University of Michigan (Coursera)

LANGUAGES & SERVICE

- **Languages:** Urdu (native), English (professional proficiency), Arabic (professional proficiency)
- **Volunteer, Masjid Al-Nabawi** — Madinah (2024, 2025; 1 month each): visitor assistance and institutional service operations.

REFERENCES

References available upon request.