

Krishnam Gupta

Principal Software Engineer, Applied AI, Audere | San Francisco, California

kayjee1994@gmail.com | linkedin.com/in/krishnam-gupta-aa5b10a7 | Google Scholar

SUMMARY

Applied AI engineer with nine years of industry experience taking computer vision and machine learning from research to deployment. At Audere, a Seattle global-health nonprofit, I own the detection, localization and classification models in HealthPulse, a smartphone computer-vision system that reads rapid diagnostic tests for malaria, HIV and COVID-19 offline on low-cost phones. It has been used with more than 2.5 million tests alongside national health programmes in sub-Saharan Africa, and an independent four-country study found 96.8% agreement with an expert panel. I also designed the clinical data extraction and release testing for LLM health companions used by more than 150,000 people. Earlier, I worked on robotics perception, medical imaging at a telehealth startup, and search ranking at Microsoft.

I have published five peer-reviewed papers, four as first author, at venues including IEEE ICRA, IEEE ICPR and IEEE CAI. A sixth first-author paper is accepted for publication and oral presentation at the Pacific Symposium on Biocomputing 2027. I am the first-named inventor on a published US patent application in AI-assisted diagnosis, and I have completed more than 40 peer reviews, including for Nature Communications.

AREAS OF EXPERTISE

- Computer vision: object detection, localization, classification, stereo vision
- Medical and diagnostic imaging AI, including rapid diagnostic test interpretation and dermatology
- On-device and edge AI: model-size and latency optimization for offline use on low-memory phones
- Digital health and mobile health (mHealth) in low-resource settings
- Evaluation and release testing of large language models for clinical workflows
- Robotics perception and obstacle detection
- Translating ML research into products deployed with ministries of health

EXPERIENCE

Audere, Seattle, Washington (remote). A global-health nonprofit. *Principal Software Engineer, Applied AI*, April 2026 to present. *Senior Software Engineer*, May 2022 to March 2026.

- Helped unify HealthPulse's per-product models into one lightweight pipeline that reads multiple rapid-test products and diseases from a single system.
- Owned the detection, localization and classification stages of the interpretation models, and optimized them for constrained devices through regression testing, model-size and latency work.
- Architected a generalized pathway for previously unseen test products, and designed the routing that sends each image to a fine-tuned or generalized model.
- Enabled interpretation of several tests in a single image.
- Architected the structured-data-extraction system that turns free-form health conversations into clinical records, and designed its scenario-based release-testing methodology.
- Mentors computer-vision engineers.

Mfine, India. An AI-first telehealth startup. *Data Scientist*, January 2019 to April 2022.

- Led the computer-vision workstream and supervised imaging projects.
- Principal investigator on a dermatology study. First author, IEEE ICPR 2020.
- First-named inventor on US patent application US20220084677A1.
- Led computer-vision work for Mfine Pulse, a smartphone oxygen-saturation product that Mfine reported had more than 600,000 users.

Microsoft, Bing Local Search. *Research Engineer*, October 2017 to January 2019.

- Built search relevance and ranking models at web scale.

EDUCATION

International Institute of Information Technology, Hyderabad (dual degree)

- M.S. by Research, Computer Science and Engineering, 2018. Thesis on small obstacle detection using stereo vision for autonomous ground vehicles.
- B.Tech (Honours), Computer Science and Engineering, 2016.

SELECTED PUBLICATIONS

1. Gupta et al. **A Deployed Framework for Structured Clinical Extraction from Multi-Turn Health Conversations: From Model Selection to Scenario-Based Release Gating**. Pacific Symposium on Biocomputing 2027. Accepted for the proceedings and for oral presentation. First and corresponding author.
2. Gupta et al. **Transforming Rapid Diagnostic Tests into Trusted Diagnostic Tools in LMIC using AI**. IEEE Conference on Artificial Intelligence (CAI), 2023. First author.
3. Gupta et al. **Dual Stream Network with Selective Optimization for Skin Disease Recognition in Consumer Grade Images**. IEEE ICPR, 2020. First author.
4. Gupta et al. **MergeNet: A Deep Net Architecture for Small Obstacle Discovery**. IEEE ICRA, 2018. First author.
5. Gupta et al. **Small Obstacle Detection using Stereo Vision for Autonomous Ground Vehicle**. ACM AIR, 2017. First author.
6. Gupta. **How VLAs Fail Differently: Black-Box Action Monitoring Reveals Architecture-Specific Failure Signatures**. ICRA 2026 workshop, non-archival. Sole author.

Preprints and abstracts (co-author): Aimee, an AI-powered HIV prevention and sexual health intervention for young women in South Africa: design and pilot methods (VeriXiv, 2026). Task-Specific Computer Vision Versus Large Multi-Modal Models for Diagnostic Test Interpretation (VeriXiv, 2025; journal version under review). HealthPulse AI: Enhancing Diagnostic Trust and Accessibility in Under-Resourced Settings (VeriXiv, 2025). From Chat to Care: AI conversations as program intelligence for HIV services (AIDS 2026 poster abstract).

EXTERNAL EVALUATION AND RECOGNITION

- Lindblade et al., *Malaria Journal*, 2025. Four-country evaluation of HealthPulse with no Audere authors: 96.8% agreement with an expert panel across 106,877 images.
- Bahati et al., *BMC Digital Health*, 2025. Field evaluation of the related ConnDx system in five Kenyan health facilities, externally led with Audere co-authors.
- Rwanda's Ministry of Health authorized HealthPulse AI for test interpretation in its community EMR (2024).
- MergeNet: applied as prior art by Korean and Japanese examiners; cited in granted Bosch and NVIDIA patents.
- Alibaba DAMO Academy used the Dual Stream method (ICPR 2020) as a named baseline (MICCAI 2023).

PEER REVIEW

More than 40 completed reviews, 2020 to 2026, including:

- **Journals:** Nature Communications, JAMIA Open, JMIR AI, JMIR Formative Research.
- **Conferences and workshops:** ML4H 2026; International Conference on AI in Healthcare (AliH) 2026; MICCAI 2026 workshops UNSURE and GRail; NeurIPS 2026 workshops GlobalSouthAI and Med-Reasoner; ICML 2026 workshops SD4H, GlobalSouthML and AI4GOOD; IJCAI-ECAI 2026 GlobalSouthAI; SASIGD 2026; CADL workshop at ICPR 2020.

PRESENTATIONS

- T.H.I.N.K. AI Healthcare Conference, Stanford, 2026. Two posters on clinical AI quality assurance.
- IEEE CAI 2023, Santa Clara. Presented the HealthPulse paper in person.
- IEEE ICRA 2018, Brisbane. Presented MergeNet as a poster.