Mahesh Gorijala

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Professional Summary

AI/ML research engineer with 8+ years at Samsung Research, delivering on-device intelligence across multimodal AI, NLP, computer vision and knowledge systems. Experience spans vision-language models, multimodal LLMs and synthetic data, natural-language retrieval, information extraction, graph-based reasoning and robotic perception.

Proven track record of translating research into production capabilities deployed across Samsung Galaxy devices, complemented by peer-reviewed publications and a US patent.

Education

Indian Institute of Science (IISc) — Bangalore, Karnataka
Master of Engineering (ME) in System Science and Automation — *July 2015 — May 2017*

Rajiv Gandhi University of Knowledge Technologies — Nuzvid, Andhra Pradesh
Bachelor of Technology in Electronics and Communication Engineering — *July 2010 — May 2014*

Work Experience

Chief Engineer — March 2022 — Jan 2026
Samsung Research Institute - Bangalore — *Bangalore*

- Architected and developed a unified on-device vision-language model (VLM) supporting a range of multimodal capabilities, including image-grounded reasoning, context-aware visual description generation, cross-modal text-to-image retrieval, and visual similarity search.
- Productized an on-device semantic visual retrieval system for Samsung Gallery, enabling users to discover images through free-form natural-language queries; the capability shipped on Samsung Galaxy S24 and subsequent models.
- Investigated neural-network compression techniques based on quantum-inspired tensor operators.
- Established a multimodal LLM-based synthetic data generation framework for producing task-aligned training examples, supporting scalable development of semantic visual retrieval models.

Lead Engineer — March 2019 — March 2022
Samsung Research Institute - Bangalore — *Bangalore*

- Engineered an on-device contextual information extraction framework that transformed unstructured text sources into structured representations of financial transactions, commerce, events, travel, and other user activities.
- Designed and implemented a privacy-preserving personal knowledge graph platform for Android, combining an RDF4J-based storage layer with relationship inference to derive previously implicit connections between entities; the solution shipped on Samsung Galaxy S21 and later devices.
- Prototyped a natural-language interface for structured knowledge retrieval, translating conversational user intent into executable SPARQL queries over knowledge graphs.

Senior Software Engineer — July 2017 — March 2019
Samsung Research Institute - Bangalore — *Bangalore*

- Built a conversational user-understanding framework for intelligent home robotics, extracting behavioral preferences, activities, and contextual signals from natural-language interactions.
- Developed an environmental perception and object-tracking pipeline for mobile home robots, enabling object recognition and continuous spatial tracking in dynamic indoor environments.

Skills

- **Multimodal & Generative AI**: Vision-Language Models (VLMs), multimodal LLMs, synthetic-data generation
- **NLP and Knowledge Systems**: Information extraction, retrieval, knowledge graphs, SPARQL
- **Computer Vision and On-device ML**: Image grounded reasoning, image retrieval, object detection/tracking
- **Programming and Frameworks**: Python, Rust, C, PyTorch
- **Deployment**: Model integration and inference pipelines, Android ML systems

Patents and Publications

- "POP-VQA: Privacy Preserving, On-Device, Personalized Visual Question Answering." Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision. 2024
- "An On-device Deep-Learning Approach for Attribute Extraction from Heterogeneous Unstructured Text." Proceedings of the 18th International Conference on Natural Language Processing (ICON). 2021
- "Image generation and editing with variational info generative Adversarial Networks." arXiv preprint arXiv:1701.04568 (2017)
- Patent: Method and system for modifying search query for a user (US11989193B2). 2022

Key Academic Achievements

- **All India Rank 4** in **GATE–2015** Electronics and Communication Engineering
- Recipient of Robert Bosch Center for Cyber-Physical Systems (IISc) Masters Projects Support Grant