Gautham Manuru Prabhu

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Education

Manipal Institute of Technology, Manipal 2020 – 2024
B.Tech. in Computer Science and Engineering *CGPA: **8.91/10***

Work Experience

Cisco Systems Jan 2024 – Present
Software Engineering Intern → Software Engineer I → Software Engineer II *Bengaluru, India*

Software Engineer II, AI Acceleration Team *Oct 2025 – Present*

- As sole engineer, designed and built an agentic hardware test-triage platform (RAG, LLM diagnosis, MCP servers) over **3.5M+ manufacturing test records** from switches, routers, line cards, and ASIC-based boards.
- Deployed in factories worldwide, it finds root causes for **about 70% of previously undiagnosed** test failures, including on new product introductions (NPI) with no failure history.
- The agent reads functional test (FCT), in-circuit and boundary-scan (ICT, JTAG), and burn-in (ESS) logs, and traces each failure to the likely board, component, or ASIC behind it.
- Contributed to a support-queue agent that resolves **30% of routine requests**; presented it to Cisco's Chief Supply Chain Officer. Together the two systems cut case volume **35%** and MTTR **40%**, saving **$450,000** a year.
- Took the platform from prototype to production with security, platform, infrastructure, and transformation teams, and turned test and quality engineers' manual failure-analysis steps into agent workflows.
- Mentor **5+ junior engineers** on software engineering, agent design, code review, and operations.

Software Engineer I, Supply Chain Transformation *Aug 2024 – Sep 2025*

- Built a failure-classification suite that groups hardware test failures from FCT, ICT, and burn-in stations by likely cause, and added agentic AI to failure analysis on test lines for ASIC-based networking hardware.
- Built metrics engines tracking **10+ manufacturing quality metrics** across **200+ hardware product lines**.
- Deployed computer-vision automated optical inspection (AOI) on assembly lines in multiple global factories; it flags connector edge gaps from camera images, replacing manual visual checks.
- Split legacy monoliths into **10+ FastAPI microservices** on Kubernetes, serving **8 global manufacturing sites**.

Software Engineering Intern, Supply Chain Organization *Jan 2024 – Jun 2024*

- Rebuilt a **Python 2** workflow as microservices with CI/CD, cutting deployment from **6 hours to 4 minutes**.
- Built a supplier-name standardization pipeline that improved consistency across **50,000+ supplier records**.

Technical Skills

Hardware Test	Manufacturing test (FCT, ICT, boundary scan/JTAG, burn-in/ESS), hardware failure analysis, NPI, board- and ASIC-level test data, automated optical inspection (AOI)
Computer Eng.	Digital logic design, computer architecture, embedded systems, microcontrollers, Arduino
Languages	Python, C, C++, Embedded C, SQL, Bash
Systems	Linux, distributed systems, microservices, REST APIs, CI/CD, FastAPI, Next.js
Cloud & DevOps	Docker, Kubernetes, AWS, GCP, Jenkins, GitHub Actions, Git
Databases	PostgreSQL, MySQL, MongoDB, Redis, Elasticsearch, Neo4j
LLM & Agents	LangChain, LangGraph, LangSmith, MCP, RAG, Ragas, DeepEval, Pinecone, Weaviate
ML	PyTorch, PyG, DGL, Hugging Face, PEFT (LoRA), scikit-learn, OpenCV, NetworkX, Qiskit

Research Experience

MiCoSyS Lab, San José State University Mar 2026 – Present
Research Intern | Advisor: Dr. Saptarshi Sengupta *Remote*

- Tested if LLM semantics help temporal link prediction on DTGB graphs (Enron, ICEWS1819) under a common protocol. Reproduced CROSS and compared it with DyGFormer and a structure-aware gate (**100** negatives, **5** seeds); gains varied by dataset and appeared mainly on unseen nodes. Poster accepted at Stanford's Graph Learning Workshop [W1].

Medical Informatics Lab, IIT Kharagpur Summer 2023
Research Intern | Advisor: Dr. Subhamoy Mandal *Remote*

- Built dual-encoder, cross-attention vision models to detect age-related macular degeneration from thermal and structural OCT, robust to missing modalities; presented at the Digital Health Symposium [T1].

Cybersecurity and Quantum Computing Group, MIT Manipal 2022 – 2023
Undergraduate Researcher | Advisor: Dr. Vivekananda Bhat K. *Manipal*

- Benchmarked QSVC, Pegasos QSVC (extended to four classes), and quanvolutional networks for ECG-image heart disease classification; the quanvolutional network reached **97.31% accuracy**, **3.88 points** above a CNN. Funded by a **$10,200 MeitY–AWS QCAL grant**; published in *IEEE Access* [1].

Biometrics and Software Engineering Group, MIT Manipal 2022 – 2023
Undergraduate Researcher | Advisor: Dr. Srikanth Prabhu *Manipal*

- Co-developed EyeEncrypt, secure retinal vessel segmentation for **3,000+ fundus images** (Diffie–Hellman, AES-256); demonstrated it to Kasturba Medical College ophthalmologists [4], [5].

Department of Information and Communication Technology, MIT Manipal 2022 – 2023
Research Intern | Advisor: Dr. Nisha P. Shetty *Manipal*

- Fine-tuned BERT and XLNet on **15,073** anti-vaccine tweets; mapped misinformation clusters in a Reddit user graph [2].

Leadership

- Lead Volunteer, Cisco Emerging Talent Recruitment, University Connect Track 2026 – Present
- Track Lead Volunteer, Cisco Global Supply Chain, Innovation Track 2026 – Present
- Co-founder and Technical Head, Project Kalpana; led an 8-person team on a $13K R&D grant 2022 – 2023
- General Secretary and Treasurer, ACM Manipal Student Chapter 2022 – 2023
- Technical Head, The Astronomy Club of Manipal 2021 – 2023

Honors and Achievements

- **Winner**, Offensive Summit Capture the Flag (CTF) security competition, Cisco 2026
- **25+** Cisco Connected Recognition awards for technical work, mentoring, and volunteering 2024 – 2026
- **Second runner-up**, Cisco Intern Case Study Competition 2024
- Reviewer, International Conference on Machine Learning and Data Engineering (ICMLDE) 2025
- **$10,200** MeitY–AWS Quantum Computing Applications Lab (QCAL) research grant [1] 2023
- Undergraduate Research Sponsorship Grant, Manipal Academy of Higher Education 2023
- Grand finalist, Global Quantum Science and Technology Hackathon (top **16** of **1,626** teams) 2022
- Grand finalist and team lead, Smart India Hackathon (**160,000+** students) [3] 2022
- Thayil Lonappan George Memorial Endowment Award (3rd rank in school, AISSCE) 2020
- NTSE State Scholar, Government of Karnataka (rank **21** of **151,000+** candidates) 2018

Publications and Talks

Six peer-reviewed publications and one accepted workshop poster; 60+ citations (Google Scholar).

[1] S. Prabhu, S. Gupta, **G. M. Prabhu**, A. V. Dhanuka, K. V. Bhat. "QuCardio: Application of quantum machine learning for detection of cardiovascular diseases." *IEEE Access*, vol. 11, pp. 136122–136135, 2023. [doi]

[2] C. Rao, **G. M. Prabhu**, A. R. Kumar, S. Gupta, N. P. Shetty. "Addressing vaccine misinformation on social media by leveraging transformers and user association dynamics." *Procedia Computer Science*, vol. 235, 2024. [doi]

[3] **G. M. Prabhu**, T. Gupta, M. V. Srujan, A. R. Soumya, A. Palorkar, A. Chowdhury. "VIKAS: A multimodal framework to aid in effective disaster management." *ATIS 2022*, Springer CCIS, vol. 1804, 2023. [doi]

[4] G. Hegde, S. Gupta, **G. M. Prabhu**, S. V. Bhandary. "EyeEncrypt: A cyber-secured framework for retinal image segmentation." *ATIS 2022*, Springer CCIS, vol. 1804, 2023. [doi]

[5] G. Hegde, S. Prabhu, S. Gupta, **G. M. Prabhu**, A. Palorkar, M. V. Srujan, S. V. Bhandary. "A systematic review of deep learning approaches for vessel segmentation in retinal fundus images." *Journal of Physics: Conference Series*, 2023. [doi]

[6] A. A. Iyer, **G. M. Prabhu**, T. Gupta, S. Deshmukh, R. Rivankar. "Exploring design optimisation techniques of a radio telescope using fixed costing constraints." *Journal of Physics: Conference Series*, 2023. [doi]

[W1] **G. M. Prabhu**, S. Gupta, M. Choudhary, A. Nagarajan, K. Potika, S. Sengupta. "On link prediction using node-pair LLM semantics and structure in temporal text-attributed graphs." *Stanford Graph Learning Workshop (SNAP)*, 2026 (poster).

[T1] **G. M. Prabhu**, S. Gupta, S. Rathinam. "Enhanced analytics and procedural decision-making for ocular diagnostics using multi-modal data." *Digital Health Symposium*, IIT Kharagpur, 2023.

[T2] **G. M. Prabhu**, S. Gupta. "SatelTensor: Satellite data exploration via tensor decomposition." *TCML*, IISc, 2023.