Surya Santhosh

10+ Hackathon Winner
HackHarvard 2024 Winner

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Education

Expected Oct 2026 — **B.Tech Computer Science and Engineering (AI)**, *Amrita Vishwa Vidyapeetham*, Coimbatore, Tamil Nadu, India, *CGPA: 8.98/10*

2020-2022 — **All India Senior School Certificate Examination (Physics, Chemistry, Math, CS)**, *Bhavans Public School*, Doha, Qatar

Skills

Programming Languages: Python, C, Java, C++, JavaScript, SQL, MATLAB, Dart, Swift

Technologies/ Frameworks: TensorFlow, PyTorch, cv2, Pandas, NumPy, Django, Flask, FastAPI, Node.js, MongoDB, Flutter, React, bs4, ScrapeGraph, Neo4j, Gemini-1.5-flash, groq, OpenAI, CrewAI, Langchain, Langsmith, Langserve, Unsloth, Flowers, Hugging Face, Ollama, LoRA, RASA, Azure, GCP, AWS

Experience

Sep 2024 - Oct 2024 — **Research & Development (Project Based)**, Harvard University, Cambridge, MA, USA

- Designed and developed an AI-powered app promoting eco-friendly and healthy lifestyle choices.
- Built with Flutter (Dart) and Streamlit (Python) for the frontend, FastAPI for RESTful APIs, and MongoDB Atlas for vector storage. Leveraged Langchain, LlamaIndex, and ScrapeGraph.AI for data preprocessing and scraping, Hugging Face's BGE-Large for embeddings, and Gemini-1.5, GPT-4, and Groq LPUs for inference. Integrated Firebase for user management and Neo4j for knowledge graph creation.
- Recognized with 1st Place (Best Hack) among 600+ teams from 284+ universities, judged by 40+ industry experts (including Microsoft, Google) and mentored by Prof. Leslie Valiant (Turing Award Winner) and Prof. David J. Malan (CS50). (5M+ views across Social Media)

Gained experience in agile development, teamwork, and research methodologies.

May 2024 - Aug 2024 — **Research Intern**, Amrita AI Research Lab, Coimbatore, TN, India

- Developed an AI system for early glaucoma detection, enhancing diagnostic speed and accuracy.
- Built and deployed an AI exam platform for 2,000+ students, creating personalized knowledge graphs (KGs) to represent individual understanding and challenge students at their optimal learning level.
- Conducted Apriori analysis on gut bacteria datasets to identify patterns linked to Irritable Bowel Syndrome (IBS), contributing to disease understanding and potential diagnostic improvements.
- Organized and led a Workshop for 600+ students on Generative AI, LLMs, and text-to-image generation.

Developed skills in AI model development, data analysis, and technical instruction.

Feb 2024 - Apr 2024 — **Software Engineer (Project Based)**, Intel Corporation, Coimbatore, TN, India

- Designed and developed Comicify, an AI app that turns PDFs into comics
- Built using Gemini and GPT-4 APIs for Q&A mapping, fine-tuned Google's Gemma with LoRA and Intel OneAPI tools, and leveraged Stable Diffusion for comic generation. Data processing involved Hugging Face, tokenization, and web scraping for dataset creation. Used Intel® tools (Python®, OpenVINO™, DevCloud) and frameworks like FastAPI and Streamlit for efficient development.
- Recognized with Best App Award and a $1,500 prize among 1000+ innovative projects, judged by Intel's global AI experts and presented at the Intel AI DevSummit 2024, broadcasted to 10,000+ viewers worldwide.

Gained proficiency in software engineering best practices, public speaking, and community building.

Research Work

2024 **Image Colorization**, *Leveraged Python along with TensorFlow/PyTorch for model development and training by utilizing a CNN architecture as the backbone for image processing and feature extraction.*,

2024 **Accelerated AI-Powered Image Generation in Comic Creation by Leveraging Intel OneAPI and Tiber AI Cloud**, *By utilizing Intel's ecosystem, significant improvements in processing time and efficiency were achieved compared to conventional platforms.*,

2024 **Human-Computer Interface (HCI) utilizing Electrooculography (EOG) signals to enable English text input through intuitive eye movements.**, *The system processes horizontal and vertical EOG signals, extracting features using Continuous Wavelet Transform (CWT) and delta-delta features, and classifies strokes with a hybrid CNN-GRU model. Achieving high training (99.9%) and validation (97.26%) accuracy.*,

2024 **Experimental Framework for Optimizing Recommendation System Models in a Dating Application**, *Explored and implemented various recommendation system models, including Cosine Similarity, Generative AI-based matching, Knowledge Graphs-based matching, Louvain community detection for clustering, and Reinforcement Learning to incorporate user feedback.*,

2024 **Optimizing ABB IRB 140 Robotic Arm Movements Using Shortest Path Algorithms in a 3D Simulation**, *Designed a 3D simulation of the ABB IRB 140 robotic arm, optimizing movement efficiency using Dijkstra's algorithm to minimize path length, energy use, and mechanical wear, incorporating realistic physics, motion constraints, and obstacle detection.*,

2024 **Deep Learning-Based Glaucoma Detection Using Optic Disc Segmentation in Fundus Images**, *Developed a deep learning model for early glaucoma diagnosis, fine-tuning SAM for optic disc segmentation, Integrated Explainable AI for medical interpretability, Utilized RTX 3050 GPU for efficient training.*,

Projects (Portfolio)

2024 **Traveling Pixel**, *Applying the traveling salesman problem to pixel art.*, This code uses simulated annealing to find the shortest path to visit all black pixels in an image. Then it generates an animated GIF showing the order of traversal.,

2024 **Image Convolver**, *Transforming Visuals with Convolutional Kernels in C.*, Applying convolutional kernels to explore image manipulation techniques like blurring, edge detection, and grayscale conversion, Implemented in C with parallel processing for optimal performance.,

2024 **Friends: The One Where Nobody Laughs**, *Isolating Dialogues with AI*, Used LSTM networks to mute laugh tracks and background music from a popular American TV show Friends, creating clean dialogue tracks for machine learning and audio analysis.,

2024 **Monte Carlo Simulator**, *Monte Carlo Simulation of Muon Beam*, Developed a Monte Carlo simulation to model the production of a high-brilliance muon beam through electron-positron scattering near the reaction threshold.,

2024 **Birth Buddy App**, *AI Assisted Maternal Support*, Developed Birth Buddy, an AI-powered app providing personalized pregnancy guidance, diet and exercise plans, and real-time baby insights to empower expectant mothers.,

Coursework (Undergraduate)

AI/ML Mathematics for Intelligent Systems I-VI (Optimization, Probability, Statistics), Python for Machine Learning, Deep Learning, Natural Language Processing (NLP), Reinforcement Learning (RL), Intelligence of Biological Systems I-IV, Big Data Management Systems

Computing Systems	Elements of Computing Systems I-II, Database Management Systems, Operating Systems, Computer Networks, Data Structures and Algorithms, Object Oriented Programming, Finite Language Automata, Compiler Design, Cloud Computing, Computational Physics
Signal Processing	Introduction to Communication Systems, Speech Processing, Signal and Image Processing

Knowledge Sharing & Talks

2024 **Keynote Speaker, Intel AI Dev Summit**, Intel Corporation, Bengaluru, India
Keynote on AI-powered comic generation using Intel OneAPI, broadcasted to 10,000+ viewers.

2024 **GenAI Hands-on Workshop**, Amrita Vishwa Vidyapeetham
Workshop for 600+ students on Generative AI, LLMs, and text-to-image generation.

2023 **Image Processing and Computer Vision Workshop**, Amrita Vishwa Vidyapeetham
Taught 140+ students image processing in C, covering edge detection and object recognition.

2023 **Class on Linear Algebra and Its Applications**, Amrita Vishwa Vidyapeetham
Class on linear algebra applications in machine learning, computer graphics, and quantum mechanics.

Awards

2025 All India Rank (AIR) 4, IIT Madras Hackathon ($15,000)
2024 1st Place, Harvard University HackHarvard 2024 ($4,500, 5M+ views, Harvard Gazette Daily)
2025 1st Place, Codecademy x Logitech Coding Challenge 2025 ($900)
2024 1st Place, Intel OneAPI GenAI Hackathon 2024 ($1,500)
2024 1st Place, ValueHealth GenAI in Healthcare Hackathon 2024 ($700)
2024 1st Place, Amrita Institute of Medical Sciences, Best Diabetic Care App Track ($400)
2024 1st Place, Microsoft MLSA OpenAI Challenge 2024 ($600)
2024 5th Place, Codecademy World Coding Games NYC 2024 ($300)
2024 27th Place, Kaggle AI International Math Olympiad 2024
2024 $200 Grant, Intel AI Dev Summit, India 2024 Bengaluru
2023 8th Place, CodeBot GenAI Hackathon, Anokha Techfest 2023
2023 Finalist, Smart India Hackathon 2023
2023 Finalist, IETE Linux Capture-The-Flag (CTF) Competition
2023 1st Place, Integration Bee, Anokha Techfest 2023
2023 Best Image Processing Pipeline Implementation Award (C Programming Course)

Trainings/Courses

Aug 2024 CS50: Introduction to Computer Science (Harvard University, David J. Malan)
Jun 2024 Deep Learning Specialization (Coursera, Andrew Ng)
May 2024 Generative Adversarial Networks (GANs) Specialization (DeepLearning.AI)
Sep 2024 Advanced TensorFlow for AI Development (Google AI)
Jul 2024 Oracle Cloud Infrastructure 2024 Generative AI Certified Professional (Oracle)
Aug 2024 Machine Learning/AI Engineer Professional Certification (Codecademy)
Aug 2024 Computer Science Certification (Codecademy)
Jul 2020 Python 3 Certification (Codecademy)
Aug 2024 Database Management Systems (LinkedIn Learning)
May 2024 Generative Adversarial Networks (GANs) Specialization (DeepLearning.AI)
Sep 2024 Advanced TensorFlow for AI Development (Google AI)