

Tulasi Raman R

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Summary

Pre-final year software engineering student with practical experience in software development through various projects. Skilled in problem-solving and building functional applications, with a strong desire to continue learning and growing in the field. Eager to apply technical knowledge and collaborate on innovative solutions in a dynamic environment.

Education

Vellore Institute of Technology, Chennai Campus

Sept 2021 - Jul 2026*

Master of Technology, Software Engineering **CGPA:**

8.59

- Relevant Coursework: Project Planning, Requirements Engineering, Software Architecture and Design, Project Management, Testing, Software Configuration and Management, Agile, Data Structures and Algorithms.

NSN Matriculation Higher Secondary School, Chennai

Jun 2007 - Jun 2021

- 12th Grade in TN State Board Curriculum **Score: 91.5%**
 - 10th Grade in TN State Board Curriculum **Score: 90%**
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Work History

Research Intern

Mar 2024 - Present

Centre for Advanced Data Science (CADS), VIT Chennai

- Working on on-device textual scene reconstruction for Spatial computing utilizing **Paligemma**, **InternVL** and **LLaVA** multi-modal language models for a text-based **Retrieval Augmented Generation** (RAG) from input videos.

Software Engineer at Impower Centre

Jan 2023 - Dec 2023

- Spearheaded the end-to-end development of a comprehensive website for Impower Centre, a multidisciplinary clinic specializing in occupational & speech therapy, and behavior correction, catering to patients with such conditions.
 - The portal utilized secure NextAuth authentication and a MongoDB database, with role-based access control for three distinct user dashboards. It integrated Google APIs for scheduling appointments and Google Meet, and included a blog feature built with React Markdown and Cloudinary for file storage.
 - Played a pivotal role in client relations and requirement engineering.
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Skills

ClouOps

- AWS Elastic Cloud Compute, S3 buckets, Elastic File Storage, VPC, IAM, Rekognition

- Docker, Jenkins, Terraform

Languages and Database

- Python, C, C++, C#, JavaScript, Java, Ruby, TypeScript, Dart, Bash
- Oracle SQL, MySQL, MS-SQL, Azure SQL, SQLAlchemy, MongoDB, Firestore, Hadoop, MapReduce, Hive

Development

- **Web:** HTML, CSS, Bootstrap, TailwindCSS, Flask, Django, MongoDB, ReactJS, NextJS, REST APIs, Postman.
- **App:** Android SDK (Java), Dart, Flutter, .NET for WinUI3
- **Game/XR:** Unity, Blender

Machine Learning and Data Analysis

- **Python modules:** numpy, pandas, PyTorch, OpenCV, matplotlib, seaborn, sklearn, lazypredict, TensorFlow
- **Deep learning:** CNN, LSTM
- **Natural Language Processing:** LLMs, MMLM, VLMs, RAG, GPT, prompt refining, prompt engineering

Others

- Prompt Engineering, Selenium, Scrapy, Figma, CI/CD

Projects and Publications

- **Parallelizing K-Means Clustering for Scalable Predictive Marketing Using OpenMP, MPI, and CUDA (2024)** : Proposed an efficient parallel K-Means clustering method using OpenMP, MPI, and CUDA to segment 2M+ customer transactions, optimizing execution time and scalability for real-time marketing insights. *(On going)*
- **Extended Reality as an Assistive Technology for Patients with Neurodegenerative Diseases (2024)** - Designed an XR solution using Unity AR and OpenCV for real-time face recognition, enhancing social interactions and cognitive support for neurodegenerative patients. *(DOI: 10.1109/ICECCE63537.2024.10823464)*
- **Podkast AI (2024):** An OpenAI powered podcast summarization tool that takes in an audio file and generates transcript, summary and similar podcasts and a cover art for the podcast. Build with GPT 3.5, GPT 4, DALL-E 3 for WinUI3 framework as a native app for windows in C#.
- **Threat Level Midnight (2024)** - An open-world action game made with Unity Engine and C#. Huge HDRP city with optimized vehicle traffic system, NPC spawn system, both First and Third Person perspectives.
- **HealthWave (2023)** - Quick diagnosis app for common medical concerns using GPT3.5-Turbo with Android Java and Prompt Engineering for safe and precise recommendation that derives information from context and asks follow-up questions to clarify concerns.
- **Portfolio and CMS Page for Microsoft Innovations Club (2023)** - A full stack portfolio site and content management system for Microsoft Innovations Club that facilities REST operations on portfolio data, implemented with ReactJS, TailwindCSS and supabase.

- **KYC Validation with Aadhaar QR (2023)** - An instant KYC validation tool that extracts a person's image from Aadhaar QR code bytestream data and matches it with frames extracted from camera feed. Built with OpenCV and PyAadhaar.
- **Medical Diagnosis through conversational intelligence using Large Language Models:** Leverages large language models to enhance medical diagnosis through interactive conversations, offering context-aware questions and refined diagnostic insights, potentially transforming healthcare. (DOI: 10.1007/978-981-97-4711-5)
- **Driver Drowsiness detection (2022):** Instant sleepiness detection tool targeted for late night drivers, implemented a deep learning-based approach using TensorFlow, Keras and OpenCV.
- **Medical Diagnosis with BioBERT (2022)** - A PyTorch project aimed to diagnose diseases based on user inputs using BioBERT and GPT-2.
- **Flask Blog App (2022)** - A quick and easy Flask-based web application for blogging built with Python3, SQL, HTML, TailwindCSS and Jinja templates.

Accomplishments

- **VITISH 2024 - Grand Finalist** - Grand finalist of VITISH 2024 by V-NEST, VIT Chennai, as one of the top 45 teams out of 548 entries in this national-level hackathon, part of Smart India Hackathon.
- **Letter of Appreciation** - Received a letter of appreciation from a Penn State University professor for international research collaboration.
- **Hackoverflow - Grand Finalist** - Developed an e-KYC tool with Aadhaar authentication with AWS Rekognition for face matching with OpenCV and Firebase.
- **Krypthon 2023 - 1st Runner Up** - Won ₹50,000 for designing the best expense tracker solution.

Volunteering

- **Web Development Lead at Microsoft Innovations Club, VIT Chennai [Student Community]:** Organized multiple technical events and coordinated interviews. Ideation of multiple innovative project ideas and task allocation to members. Proposed and implemented a new organizational structure for the club's (200+ members) projects and process management for the betterment of productivity. Managed and led the largest department of over 54 members in the club, increasing the number of projects accomplished per year by 360%.
 - **Event Coordinator for NextJS Conference at Microsoft Innovations Club:** Proposed, organized and coordinated a successful NextJS event with over 140 participants. Boosted club membership by 20% and strengthened partnerships with local tech communities.
 - **Event Organizer and Technical Support for VITISH 2023 [Preliminary selection round for Smart India Hackathon 2023]:** Organized and provided technical support for the VIT Internal Selection Hackathon (VITISH) 2023, an intra-university event with over 750 participants, which served as the preliminary round for the Smart India Hackathon 2023.
 - **Volunteered for Organization of NCVPRIPG 2023 & 2024 [AI/ML Conference]:** Volunteered for organization of the 8th and 9th National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG) and the dataset for the Detection of Pond Fish challenge consecutively for the years 2023 and 2024.
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