# Arjay J.G

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## Education

**VIT Chennai** — Chennai, India
*B.Tech in Computer Science and Engineering - Grade : 90.2%* — *Sept 2022 – Jun 2026*

**Chettinad Vidyashram** — Chennai, India
*CBSE (12th STD) - Grade : 92.4 %* — *May 2021 – Jul 2022*

**The TVS School** — Madurai, India
*SSLC (10th STD) - Grade : 87 %* — *May 2019 – Jun 2020*

## Projects

**Recipe Suggestion Web App** | *React, Flask, AWS (Lambda, S3, DynamoDB, SageMaker, Amplify)* Aug 2024 – Nov 2024

- Built a full-stack web application that detects ingredients from user-uploaded images and suggests dishes with nutritional details and cooking steps
- Designed and deployed a serverless backend using AWS Lambda with DynamoDB for scalable recipe and user data storage, integrated with API Gateway for request handling
- Implemented custom ingredient recognition using YOLOv5 (PyTorch) trained and deployed on Amazon SageMaker with datasets stored in Amazon S3, with preprocessing pipelines automated via boto3
- Developed a responsive React.js frontend, hosted on AWS Amplify, featuring live webcam image capture, ingredient detection, and interactive recipe display

**Deep Learning Based Image Steganography Detection** | *Python, TensorFlow, Scikit-learn* Sep 2025 – Dec 2025

- **GitHub Link:** https://github.com/Arjay1311/Steganographic-Attack-Detection
- Built a noise resilient image steganalysis framework to detect hidden information under noisy and distorted embedding conditions
- Developed a Residual Attention Network (RAN) to extract pixel-level embedding-sensitive residual features and suppress irrelevant image content
- Implemented a Dual Adversarial Network (DAN) with classification and reconstruction branches to enforce feature consistency and improve generalization
- Integrated a Self-Supervised Consistency Distillation (SSCD) module to ensure consistent predictions across clean and perturbed inputs, reducing dependence on labeled data
- Evaluated the model on the BOSSBase dataset, achieving 77.90% test accuracy and 78.56% F1-score, with strong robustness under Gaussian and salt-and-pepper noise

**Disaster Information Aggregation Software** | *React, Next.js, Express.js, Python, MongoDB* Aug 2024 – Nov 2024

- **GitHub Link:** https://github.com/Arjay1311/SIH1687-Disaster-Information-Aggregation-Software
- Built a web app for the Ministry of Home Affairs (NDRF) to aggregate real-time disaster data from social media, newsletters, and open platforms
- Developed and maintained the backend using Flask, integrating web scraping (BeautifulSoup) to extract disaster-related data and MongoDB for structured storage and retrieval
- Integrated backend with frontend components for seamless data flow and visualization
- Created an interactive Leaflet.js map to display real-time disaster locations and severity levels, with automated updates for affected regions and algorithms for efficient evacuation strategy suggestions
- Implemented an SOS feature to alert NGOs and emergency responders for rapid response

**Automatic Inscription Converter** | *Python, Tensorflow, OCR, Streamlit* Nov 2023 – Feb 2024

- Developed a Tamil inscription converter for the Tamil virtual Academy that preprocesses, segments, and analyzes inscriptions using a machine learning model to generate readable Tamil text, aiding preservation of historical documents, which is deployed on Streamlit
- Applied image segmentation with Contour Detection to identify and separate overlapping characters for accurate recognition
- Prepared low-level design documentation and delivered a live demo to the academic review panel of Tamil Virtual Academy

## PUBLICATION

**Integrating Visual Language Models for Enhanced Geospatial Analysis in Remote Sensing** Aug 2025
*16th IEEE International Conference on Computing, Communication and Networking Technologies (ICCCNT)* *IIT Indore*

- Authors : Sankar Raja, Arjay J.G, Sheshwat, Dr. Krithiga R, and Dr. Shoba S
- Proposed a two-stage retrieval framework using CLIP-based dual encoders and an intermediate captioning step to improve alignment between visual and textual data
- Leveraged Vision Transformers (ViT) and multi-head attention to refine cross-modal embeddings for enhanced retrieval performance in remote sensing tasks

## Technical Skills

**Programming**: C, C++, Core Java, JavaScript, Python
**Technologies**: REST API, Machine Learning, Image Processing
**Cloud**: AWS
**Web**: Next.js, Express.js, React, Node.js, Tailwind CSS, HTML, CSS, XML, JSON
**Data Analysis**: Power BI, Tableau, GNU Octave, Matplotlib, Seaborn
**Databases**: MySQL, Microsoft SQL Server, MongoDB
**API Tools**: Postman
**CI/CD**: Git
**Libraries / Frameworks**: NumPy, Pandas, OpenCV, Leaflet.js, Scikit-learn, TensorFlow, Keras, Streamlit

## Certifications

**Java Full Stack - Imarticus** – Secured Grade: 92%
**Databases and SQL for Data Science with Python - IBM** – Secured Grade: 100%

## Awards

**1st Prize** – Scire Festo, School Science Expo
**Bronze Medal** – SOF National Science Olympiad (2019-20), School Level