Faerie Mattins

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Personal Profile

An Undergraduate student at Vellore Institute of Technology, enrolled in B. Tech Computer Science and Engineering. Passionate about coding and possess strong programming skills. One of my greatest assets is that I am extremely organized and punctual. I'm highly analytical, diligent, and a team player. Dedicated to the field of artificial intelligence, with a focus on Computer Vision, Natural Language Processing and Explainable AI.

Education

Vellore Institute of Technology
Chennai, India

Bachelor of Technology in Computer Science and Engineering
July 2019 - Present

- Consistent 9.08 CGPA
- Participated in multiple hackathons and workshops.

Chennai Public School
Chennai, India

High School
June 2017 - Apr 2019

- Scored 88% in 12th CBSE Board Exam
- Specialised in Physics, Chemistry, and Maths with Computer Science

Work Experience

University of Technology, Sydney
Sydney, Australia

Semester Abroad Program (Online)
Aug 2022 - Present

- Working on the project "Multimodel Sentiment Analysis in Tamil" where the concepts of image processing and natural language processing are fused in order to determine the sentiment of the user. Working under the guidance of Dr. Antonette Shibani and Dr. Ratnavel Rajalakshmi as a part of my final year project.
- Worked on the project "Towards explainable models for feedback design: Proof of concept using an argumentative writing example". Proposed a 2-phase model to predict the overall quality of the argument and performed analysis on the model's explainability in doing so.
- Worked on the project "Understanding the role of Emojis for emotion detection in Tamil" using TF-IDF and MuRIL. Analysed the effect of emoji and its various representation in detecting emotions in Tamil text. This work is accepted in MMLow workshop.

Dalhousie University
Halifax, Canada

Mitacs Research Intern
May 2022 - Aug 2022

- Worked on the project "Evaluating a deep learning model for detecting fish" under the guidance of Dr. Christopher Whidden.
- Performed object detection of fish using multiple object detection models like Yolov4, Yolov5 and YoloR and evaluated each models performance. This paperwork is published in DCSI'22
- This is a fully funded in-person research internship where I closely worked with my professor and his PhD students in his lab.

Vellore Institute of Technology
Chennai, India

University Research Experience (URE)
Aug 2021 - Oct 2022

- Competed in HASOC 2021 competition under the guidance of Dr.Ratnavel Rajalakshmi.
- Worked on two working notes, hate speech classification in Hindi and Marathi, and hate speech classification in code-mixed Hindi-English tweets.
- Used various BERT based Transformer models like MuRIL, IndicBERT, XML-RoBERTa.
- Worked on Hate and Offensive content identification in Tamil. This work is published is a reputable journal.
- Performed a detailed comparative analysis of Hate speech in Tamil YouTube comments using BERT-based Transformers models and proposed an Enhanced Stemming method.

Universiti Teknologi PETRONAS
Perak, Malaysia

Research Intern (Online)
June 2021 - July 2021

- Worked on the project "Object detection and classification of butterflies using deep learning" under the guidance of Dr. Azrina Binti Abd Aziz.
- Built an object detection model using YOLOv3 which can detect butterflies and identify their species.
- This work is under review in a reputable journal.

Publications

2022	**HOTTEST: Hate and offensive content identification in Tamil using transformers and enhanced STemming**, Computer Speech and Language	*Published*
2022	**Gait image classification using deep learning models for medical diagnosis**, Computers, Materials and Continua	*Accepted*
2022	**Understanding the role of Emojis for emotion detection in Tamil**, Workshop on Multimodal Machine Learning in Low-Resource Languages, ACL	*Accepted*
2022	**Evaluating multiple YOLO deep learning models for detecting fish**, Dalhousie Computer Science In-house Conference	*Published*
2022	**Medication Extender Drone using CoppeliaSim**, Computational Health Informatics Biomedical Applications	*Accepted*
2021	**Hate Speech and Offensive Content Identification in Hindi and Marathi Language Tweets using Ensemble Techniques**, Forum for Information Retrieval Evaluation, CEUR-WS	*Published*
2021	**Conversational Hate-Speech detection in Code-Mixed Hindi-English Tweets**, Forum for Information Retrieval Evaluation, CEUR-WS	*Published*

Projects

Gait image classification using deep learning models for medical diagnosis
Chennai, India

Vellore Institute of Technology
2022

- Proposed a Convolutional Neural Network (CNN) and a CNN Long Short-Term Memory Network (CNN-LSTM) model for classifying the gait silhouette images. Transfer learning models such as MobileNetV2, InceptionV3, VGG16, VGG19, ResNet9, and ResNet50, were used to compare the efficacy of the proposed models.

Medication Extender Drone using Coppeliasim
Chennai, India

Vellore Institute of Technology
2022

- Using Coppeliasm, created a simulation where an automated drone can deliver medication from the pharmacy to the patient's room in an hospital using the shortest path. Also, made an UI/UX of the mobile app for user and website to monitor the drone from control center using JustinMind.

DistracNot
Chennai, India

Vellore Institute of Technology
2021

- Real time auto question generation system during online class. Convert speech to text for a particular time frame. Summarize the text and generate MCQ questions for the students to attend.

Color Correction and Enhancement for Underwater Image using Fusion Techniques
Chennai, India

Vellore Institute of Technology
2022

- Proposed methodology for combining two images using Guided Image Fusion to enhance Underwater Images. Two images are generated from the original image with Gamma Correction and Image Sharpening after applying white balancing to the initial input image. Using guided filter fusion, the salient features are detected and the weight map is constructed. Further, the final fused output is produced.

Baby cry classification
Chennai, India

Vellore Institute of Technology
2021

- Built an efficient system to classify baby cry using a two level system. Compared three different models : CNN, LSTM and Attention model. Utilised the best resulting model.

Automated Lane detection system in Smart cars
Chennai, India

Vellore Institute of Technology
2021

- Built an automated Lane detection system using the UNet architecture for Smart cars.

Hydro Traffic Monitoring System
Chennai, India

Vellore Institute of Technology
2021

- Designed an Operating System from scratch that controls and monitors the water flow for irrigating crops. It is incorporated with an algorithm that provides the schedule for irrigating various crops in the field which may need varying amounts of water per day and distinct intervals in which they should be watered.

Course Registration Error Rectification
Chennai, India

Vellore Institute of Technology
2020

- The current course registration system in VIT had many loopholes and needed improvisation. Created an error rectification system using PHP and XAMP to solve real life problems and submitted to VIT.

Smart Travel Planner
Chennai, India

Vellore Institute of Technology
2020

- Used Travelling salesman based greedy algorithm to find the most optimal path between a given set of cities across the world. The website is built using Django. Bootstrap was used to enhance the UI/UX.

Skills

Programming	Python, Java, R, PHP, C/C++, HTML/CSS, JavaScript, Bootstrap, SQL, Matlab.
Miscellaneous	Linux, Shell (Bash), LaTeX(Overleaf)
Soft Skills	Teamwork, Problem-solving, Documentation, Creative Presentation, Time Management.

Achievements

2022	**Mitacs Globalink Research Award**, Mitacs	*India*
2022	**Third-place**, Sustain-a-thon - Conducted by VIT	*India*
2021	**Runner up**, TetraFlip Hackathon - Over 120 teams participated, conducted by OWASP	*India*
2021	**Runner up**, Make-n-code-a-thon - Conducted by VIT	*India*
2017	**School topper**, Times of India Quiz competition	*India*
2014	**3rd grade**, Trinity Piano	*India*

Online Certifications

Oct 2022	**Becoming a data scientist**, Linkedin Learning	*India*
Apr 2022	**Blockchain and Cryptocurrency Explained**, Coursera	*India*
July 2021	**Azure AI fundamentals**, Microsoft	*India*
Aug 2020	**Introduction to Packet Tracer**, Cisco	*India*
June 2020	**Data Science with Math**, Coursera	*India*
June 2019	**Programming for everybody (Getting started with python)**, Coursera	*India*

Extracurricular Activities

Code-Y-Gen Club	Member
Data Science Club	Analyst and Explorer
Private Tuition	Tutored underprivileged middle school students for the subjects English, Math and Science.
Volunteer	Worked in Community strategies lab for providing solutions to eradicate Unsanctioned street parties

Languages

English	Professional proficiency
Tamil	Native proficiency
Hindi	Intermediate