

Darrin Bright

Deep Learning | Generative AI | Software Engineering

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Education

Vellore Institute of Technology (VIT)

Integrated Master of Technology in Software Engineering

Chettinad Vidyashram, Chennai

AISSCE Class 12

CGPA: 8.83 Vellore, India

2022-2027

Grade: 90.6% Chennai, India

2020-2021

Research

Cross-Modal Feature Distillation for Food Portion Estimation

First Author | Advised by Dr. Kanchan Keisham | Target: CVIS 2025 | Manuscript in Preparation

- Developed a dual-encoder architecture combining **ViT-B** and **ResNet-18** for RGB feature extraction with **PointNet** for 3D understanding.
- Introduced an RGB-to-point cloud feature adapter using **knowledge distillation**, enabling cross-modal feature learning between 2D and 3D representations.
- Achieved **state-of-the-art** results on MetaFood3D with **26.87%** volume MAPE and **24.89%** energy MAPE, outperforming previous best methods by **65%** and strong cross-dataset generalization on SimpleFood45.

Explainable AI for Kidney Disease Classification from CT Scans

First Author | Advised by Dr. Praveen Kumar | Target: IEEE Access | Manuscript Near Completion

- Designed a dynamic weighted **ensemble** architecture combining **MobileNetV2**, **ResNet-50** and **EfficientNet-B1** for Multi class kidney disease classification on 12,446 CT images.
- Implemented explainability framework using **Grad-CAM** and **LIME** with medical-specific augmentations for clinical decision support.
- Achieved **99.14% test accuracy** across four diagnostic categories using focal loss with label smoothing.

Experience

Indian Institute of Technology, Jodhpur

Research Intern

Jodhpur, India

May 2025 - July 2025

- Developed a self-supervised learning framework for **3D medical image segmentation** using **Swin Transformers**, utilizing **BYOL** for pretraining on unlabeled volumetric CT scans.
- Incorporated **vector quantization** into the encoder for discrete **representation learning** and enhanced segmentation performance.

Astute

Project Manager and Technical Lead - Intern

Vellore, India

October 2024 - April 2025

- Developed an AI-powered SEO automation platform that integrates keyword research, content optimization and technical auditing using **Gemini LLM**, **SERP API** and **DataforSEO** for data extraction and analysis.
- Implemented website structure analysis with **BeautifulSoup** for HTML parsing and extracting elements, automating on-page and technical SEO tasks including site audits, metadata optimization, sitemap and robots.txt generation.

Generative AI & ML Engineer- Intern

July 2024 - October 2024

- Built a blog generator using **Gemini LLM** that analyzes market trends by extracting high-potential keywords from **Google Ads** and **Google Trends**, evaluating them based on search volume, interest over time, growth rate, CPC, and audience demographics.
- Developed Social Spark model, an automated system for **video advertisements** and **poster generation**, combining **Stable Diffusion** for poster design and Gemini for tagline creation with optimized tagline placement.

IEEE Robotics and Automation Society

Chairperson

Vellore, India

December 2024 - Present

- Managing a chapter of over **500** students, organizing **hackathons**, **workshops**, and **tech talks** to inspire learning in robotics and automation.
- Mentored a team of juniors by conducting sessions on **ML** and **Generative AI** frameworks like **LangChain** to enhance their skills and knowledge in the field of AI and automation.

Projects

Quest2Clip - Multimedia Content Generation <i>GitHub Link</i> <ul style="list-style-type: none">Developed an end-to-end multimedia content generation system by combining dynamically generated scripts and audio with relevant visual content.Integrated Google's Gemini 2.0 Flash for script generation and implemented a dual-source media acquisition system that pulls visuals from both Pexels API and YouTube using yt-dlp.Integrated a TTS pipeline using Hugging Face's SpeechT5 to synthesize speech.Developed a video production pipeline with MoviePy and FFmpeg that processes multiple video clips, adds dynamically generated captions, and synchronizes with generated speech output.	April 2025
Real-Time Human Activity Recognition with Transfer Learning <i>GitHub Link</i> <ul style="list-style-type: none">Developed a CNN-based action classifier using a custom-curated dataset of real-world images to differentiate between running and walking.Adopted transfer learning with VGG16 by integrating pre-trained convolutional layers to boost feature extraction and reduce training time.Implemented data augmentation and preprocessing techniques to improve overall model performance.Utilized Keras Tuner for hyperparameter optimization, achieving a best validation accuracy of 84.86% and a test accuracy of 86.92%.	October 2024
Hybrid Neural Network for Stock Prediction <i>GitHub Link</i> <ul style="list-style-type: none">Developed a hybrid stock prediction model combining Long Short-Term Memory networks for capturing temporal dependencies and Multi-Layer Perceptrons for non-linear feature extraction.Engineered a robust data preprocessing pipeline using MinMax normalization and a sliding window approach to convert raw stock prices into effective sequential inputs.Achieved a 55.66% reduction in Mean Squared Error and a 38.65% decrease in Mean Absolute Error by integrating MLP with LSTM, significantly enhancing forecasting accuracy.	October 2024

Skills

Languages	Python C++ C SQL HTML CSS JavaScript
Library & Framework	Langchain TensorFlow Keras PyTorch OpenCV NumPy Pandas Scikit-learn NLTK FAISS Matplotlib Seaborn
Database	MYSQL Vector Database
Certifications	Machine Learning A-Z, Udemy Convolutional Neural Networks in TensorFlow, Coursera Introduction to TensorFlow for AI, ML, and DL, Coursera

Honors and Awards

Second Runners up of HackWar Hackathon, Vellore Institute of Technology, 2025
Runners up of Startup Demo Day, Vellore Institute of Technology, 2025
Winners of Project 2039 Hackathon, Vellore Institute of Technology, 2024
Winners of Alphaforge Ideathon, Vellore Institute of Technology, 2024
Runners up of Biomimicry Innovation Challenge, Vellore Institute of Technology, 2024

Extra-Curricular

Volunteer National Service Scheme, NGO <i>Engaged with students at government schools and conducted sessions on career opportunities</i>
Volunteer Becoming I Foundation, NGO <i>Participated in outreach programs, visiting government schools to teach foundational science, math, and English</i>
Prefectorial Body Member V-Care Club <i>Participated in club activities such as growing plants, organizing newspaper recycling initiatives</i>