

NandhaKumar.P

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ABOUT ME

I'm an undergraduate Computer Science student with a strong interest in Machine Learning and Deep Learning. I have basic knowledge of HTML, CSS and JavaScript, and hands-on experience with TensorFlow for building and training models and OpenCV for image processing. I'm passionate about applying AI techniques to solve real-world problems and continuously exploring new technologies.

EDUCATION

Amrita School of Computing	2022 – 2026
B.Tech in Computer Science & Engineering	
Vivekam Matric Higher Secondary School	2022
SRMV Higher Secondary School	2020

TECHNICAL SKILLS

Languages: Python, C++, C

Technologies: Machine Learning, Deep Learning (TensorFlow, PyTorch), OpenCV, Google Cloud Platform

EXPERIENCE

Machine Learning Engineer / Researcher Jan 2026 – Present
Dataconquest Research Hub, Coimbatore

Working on real-world ML/DL applications involving data preprocessing, model training, and evaluation for computer vision and applied AI tasks. Built end-to-end pipelines using TensorFlow, PyTorch, and OpenCV including dataset preparation, augmentation, and experiment tracking. Performed hyperparameter tuning, model comparison, and metric-based evaluation such as Dice, IoU, Precision, Recall, F1, and AUC. Contributed to research exploration through literature review, reproducible experiments, and technical documentation.

PROJECTS

Graph with Trie-Based Indexing (Hybrid Data Structure) 2024
Designed a hybrid graph-trie data structure for efficient hierarchical data retrieval and auto-completion. Improves lookup speed for dictionary-like systems and optimizes URL routing for web applications.

FitVerse (Health & Fitness App) 2025
Developed using React Native, Firebase and deployed via Android Studio. Features step tracking, sleep and hydration reminders, running research-based stats, and a health chatbot integrated using Google Fit API.

Driver Drowsiness Detection 2024
Developed a driver drowsiness detection system using image processing techniques in OpenCV. Implemented a custom preprocessing pipeline and evaluated performance using precision, recall, and F1 metrics.

Solar Flare Classification using CNN 2025
Created a CNN in Keras to classify solar magnetogram images into flare vs. no-flare categories. Developed a deep learning pipeline for automatic classification of solar flare events using astrophysical imagery datasets.

Designed a Convolutional Neural Network combined with a multilayer perceptron to classify solar flares into standard intensity classes.

RESEARCH WORK

A Secure Deep Learning Framework for Image and Video Deepfake Detection with Immutable Result Storage Ongoing

Developing a secure deepfake detection framework combining multiple deep learning architectures and a tamper-resistant deployment pipeline. The system evaluates three models: a hybrid XceptionNet + Vision Transformer for combining local texture analysis with global attention, VGG16 enhanced with frequency-domain features to capture compression artifacts, and DenseNet to improve multi-scale feature sharing through dense connectivity. A custom dataset is generated using InsightFace-based face swapping, where source and target identities are merged to create synthetic deepfake samples that are then used for training and benchmarking. The project also implements a real-time secure web application using Streamlit with MongoDB storage to ensure immutable detection results and practical deployment. The framework performs systematic model comparison, integrates spatial and frequency features, and focuses on building a reliable, real-world deepfake detection system.

CERTIFICATIONS

Tata Group Data Analytics Job Simulation – Forage
Cloud Computing Foundations – Google Cloud
Deep Learning for Developers – Infosys Springboard