

Sathvik Meripe

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EDUCATION

Indian Institute of Technology Dharwad
Computer Science and Engineering - CGPA: 8.70

Dharwad, Karnataka
Dec 2022 – Apr 2026

PROJECTS

Multi-Objective Pruning of Vision Transformers

Deep Learning Research

- Explored **EvolutionViT**, an automated patch pruning framework for accelerating **Vision Transformers (ViT)** through **multi-objective optimization**.
- Studied existing **pruning methods** to balance cost and performance for resource-constrained edge devices.
- Proposed and implemented a novel **initialization heuristic** to guide the evolutionary search, enhancing the efficiency of the patch pruning optimization.
- Implemented all ViT pruning experiments in **PyTorch** for model acceleration and structured analysis.

Medical Image Segmentation with UKAN

Deep Learning

- Customized and enhanced the **UKAN (U-Net & Kolmogorov-Arnold Network)** architecture for high-precision medical image segmentation.
- Enhanced the UKAN model, achieving a **55.4% reduction in loss** on the ISIC dataset and a **17.6% IoU improvement** on the Fetus Head Segmentation dataset through architectural tuning.
- Trained and rigorously evaluated models on three diverse medical datasets: **ISIC (skin lesions)**, **Lumbar Spine**, and **Fetus Head**, establishing a robust training and validation pipeline.
- Used **PyTorch** for development and implemented logging/visualizing of **IoU and Dice Score**.

Recommendation System

Machine Learning

- Built a **Content-Based Filtering** module for a **Movie Recommender** to provide personalized suggestions.
- Engineered robust **NLP preprocessing pipelines** for unstructured text data, including **text normalization**, **stopword removal**, and **lemmatization** to clean and standardize movie metadata for content analysis.
- Leveraged **NLP techniques** like **Bag of Words**, **TF-IDF**, and **BM25** with **Scikit-learn** for document classification and content-based similarity, forming a personalized recommendation engine.
- Integrated ML model with **HTML**, **CSS**, **JavaScript** front-end for real-time personalized recommendations.

TECHNICAL SKILLS

Languages & Tools: Python, C++, C, SQL, Git, GitHub, L^AT_EX

AI/ML Libraries: PyTorch, Scikit-learn, Pandas, NumPy, Matplotlib

Web Technologies: HTML5, CSS, JavaScript, React, Tailwind CSS

ACHIEVEMENTS

- Awarded AP Grade**, in Advanced Topics in Deep Learning Course (CS707), IIT Dharwad.
- 4th place (out of 200 participants)**, in Summer Of Innovation by Coding Club, IIT Dharwad.

KEY COURSES

Computer Science: Data Structures and Algorithms, Software Systems, Computer Architecture, Operating Systems, Computer Networks, Database Management System, Deep Learning, Advanced Topics in Deep Learning

Mathematics: Linear Algebra, Calculus, Discrete Mathematics, Probability, Data Analysis, Theory of Computation

EXTRACURRICULARS

- Outreach Team Member**, PARSEC Annual Techfest, IIT Dharwad.
- Participant at Sleepless Coding Saga**, Hackathon on Devfolio.