

# Sathvik Meripe

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## EDUCATION

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### Indian Institute of Technology Dharwad

Computer Science and Engineering - CGPA: 8.70

Dharwad, Karnataka

Dec 2022 – Apr 2026

## PROJECTS

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### Evolutionary Vision Transformer Research

Deep Learning Research

- Explored **EvolutionViT**, a 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 advanced 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.
- 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.
- Implemented robust **preprocessing pipelines** including text normalization, stopword removal, and lemmatization to clean and standardize data.
- Applied algorithms such as **Bag of Words**, **TF-IDF**, and **BM25** using **scikit-learn** to analyze movie data and compute similarity scores.
- Assisted integrating the ML model with the front-end interface built using **HTML**, **CSS**, and **JavaScript**.

## TECHNICAL SKILLS

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**Programming Languages:** C, C++, Python

**Technologies:** HTML5, React, Tailwind CSS, SQL, NumPy, Pandas, L<sup>A</sup>T<sub>E</sub>X, Matplotlib

## ACHIEVEMENTS

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- **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

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**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

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