

Computer Vision

Mridul Choudhary

Roll. No.: 23B3933

Mentor: Suraj Prasad

1. End Goals:

Learning Object Detection and Recognition, Motion Analysis and 3D Vision. Reviewing Image Formation and Preprocessing, Generative Models and Visual Question Answering.

2. References:

- Computer Vision: Algorithm and Applications (Richard Szeliski)
- Concise Computer Vision: An Introduction into Theory and Algorithms (Reinhard Klette)
- Computer Vision: Principles, Algorithms, Applications, Learning (E.R. Davies)
- Deep Learning with PyTorch (Luca Antiga, Eli Stevens, and Thomas Viehmann)
- Deep Learning with TensorFlow 2 and Keras
- PyTorch101 YouTube Series (Abhishek Thakur)
- Other references as provided by the mentor.

3. Timeline:

- Week 1: Introduction to PyTorch and TensorFlow
- Week 2: Learning algorithms like Support Vector Machines (SVMs) and k-Nearest Neighbors (kNN) and intro to CNNs
- Week 3: Tinkering with present CNN models and designing my own.
- Week 4: Conclusion of Object Recognition and Detection part.
- Week 5: Intro to Motion Analysis (Optical Flow, Motion Vectors, etc.)
- Mid-term Report Submission ---- Everything till now.
- Week 6: Motion Analysis Techniques (Feature Tracking, GMM)
- Week 7: RNNs and OpenCV implementation
- Week 8: 3D Vision Techniques
- Week 9: Wrap Up
- End-term Video Submission