



# Bangladesh Army University of Science and Technology (BAUST), Saidpur

Department of Computer Science and Engineering (CSE)

Course Title: Machine Learning Sessional

Course Code: CSE 4140

**Project Title: Real Time Detect- A Smart Object Detection System**

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# Outline

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# Introduction

- Real-time object detection identifies multiple objects from video streams.
- Uses machine learning models such as YOLOv8 for fast and accurate detection.
- Commonly used in surveillance, automation, and smart systems.

# Problem Statement

- Detect multiple objects from real-time webcam feed.
- Achieve 53% mAP accuracy with acceptable speed.
- Classify objects based on COCO dataset.

# Objectives

- Implement real-time detection using YOLOv8/Faster R-CNN.
- Display bounding boxes, labels, and confidence scores.
- Optimize detection for smooth real-time performance.

# Methodology

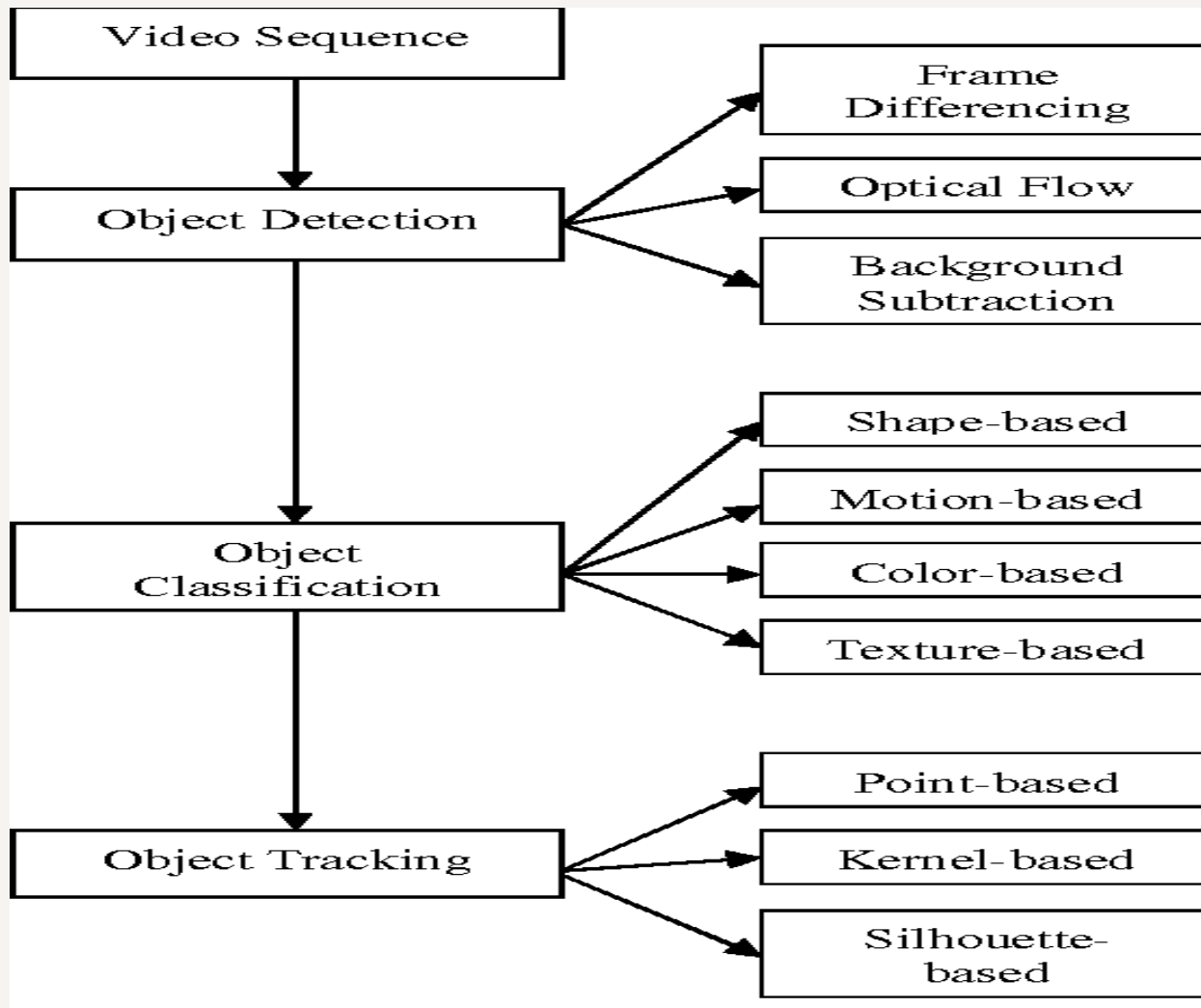


Figure-1: Object Detection System Methodology

# System Architecture

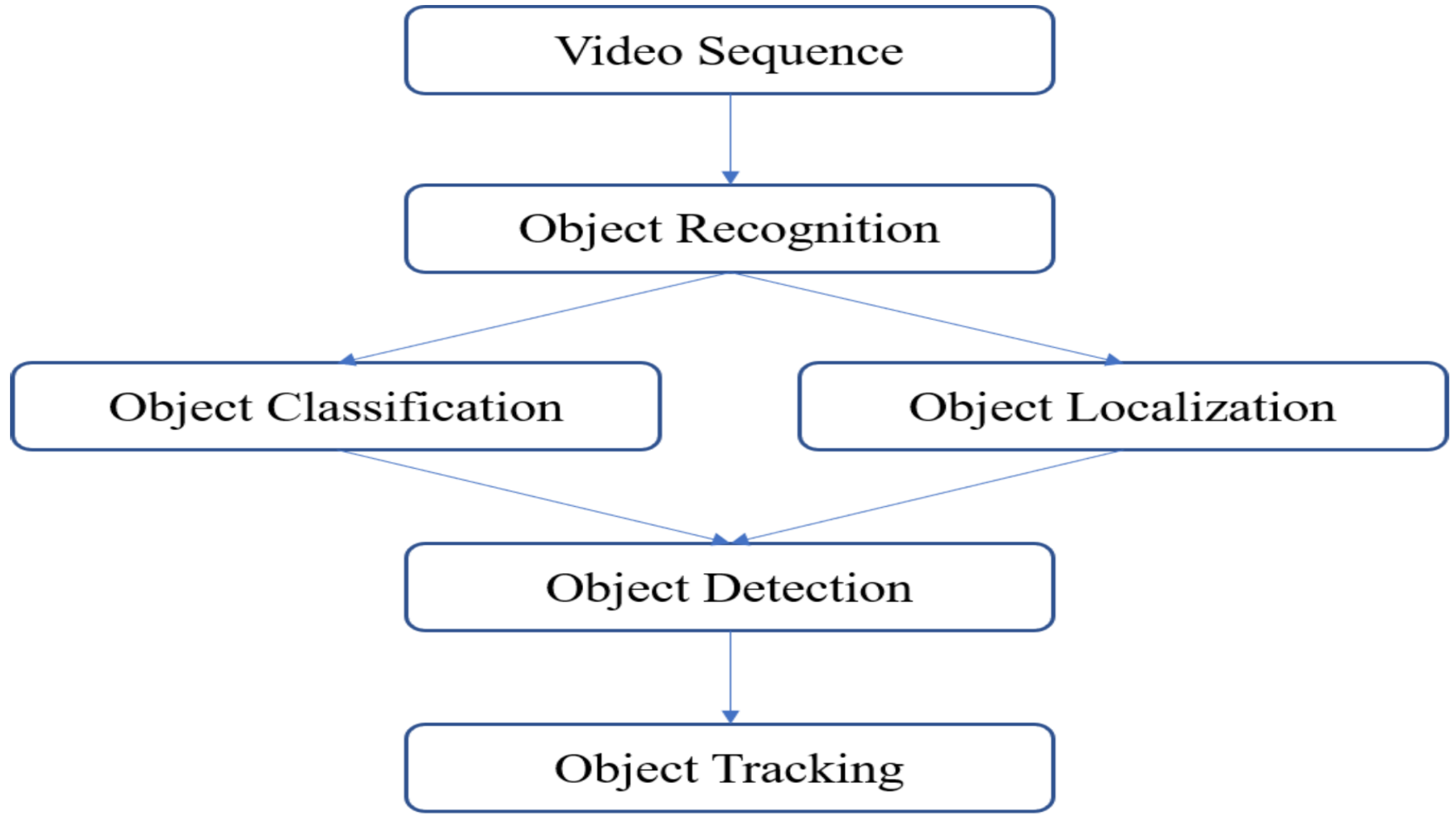


Figure-2: Object Detection System Architecture

# Experimental Setup

- Hardware: Standard laptop webcam.
- Python, OpenCV, Ultralytics, Visual Studio
- Dataset: COCO pre-trained model.



# Results

- Successfully detected multiple objects.
- Displayed bounding boxes in real-time.
- Achieved high accuracy on common COCO classes.



# Conclusion

- Implemented real-time object detection.
- Achieved fast and accurate output.
- Useful for surveillance and automation tasks.

# Future Work

- Improve detection in low-light conditions.
- Train with custom datasets.
- Deploy on embedded devices.

# References

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# Thank You