



National University

of Computer and Emerging Sciences
Chiniot-Faisalabad Campus



Department of Artificial Intelligence and Data Science

Course Code	AI4002
Course Title	Computer Vision – Lab
Lab Task	15
Due Date	09:00 pm - 14 December 2025
Instructions: <ul style="list-style-type: none">• Check the attached sheet for assigned model to implement.• Every student need to upload a zip file having .ipynb and .h5/.pt file.• Rename each file with your id_dataset_model i.e, 22F0000_MURA_YOLOv8s.• Submit task on Due Date. No Late Submission will be Tolerated.	

Implement Object Detection Models – Localization Task
Task Overview <p>Each student is assigned one pretrained Object Detection model (YOLO, SSD, Faster R-CNN, etc.) to implement on the FracAtlas Dataset for a Bone Fracture Localization task. This is an object detection problem, where the goal is to detect and draw bounding boxes around fractures.</p>
Dataset Assignment <p>All students (Section A & B) will use:</p> <ul style="list-style-type: none">• FracAtlas Annotated Dataset (https://figshare.com/articles/dataset/The_dataset/22363012) <p>You must download the dataset, review its annotation format, and prepare it for training.</p>
Dataset Split <p>Merge all data into a single folder</p> <ul style="list-style-type: none">• Combine train, valid, and test into one folder.• Then split manually or programmatically into:<ul style="list-style-type: none">◦ 70% Training◦ 10% Validation◦ 20% Testing <p>Ensure the annotation files follow the correct training format required by your assigned model (YOLO/COCO/VOC format).</p>
Training Requirements for Section A <ul style="list-style-type: none">• Epochs: 15• Batch Size: 16• Learning Rate: 0.0001• Optimizer: Adam• Image Size: 512×512

- Augmentations Required:
 - Random horizontal flip
 - Random brightness adjustment
 - Minor rotation (± 5 degrees)
 - Scale/zoom jitter

Training Requirements for Section B

- Epochs: 15
- Batch Size: 16
- Learning Rate: 0.0001
- Optimizer: SGD
- Image Size: 512×512
- Augmentations Required:
 - Random horizontal flip
 - Random brightness adjustment
 - Minor rotation (± 5 degrees)
 - Scale/zoom jitter

Evaluation Requirements

Every notebook must have:

- Precision, Recall, mAP50, mAP50-95
- Loss curves (training + validation)
- Predicted images with bounding boxes
- Inference time per image / FPS

Output Requirements (Submission Format)

Upload one ZIP file containing:

1. Your Notebook (.ipynb)
2. Saved Model (.h5 or .pt)

Rename exactly like this:

DatasetName_ModelName.h5

Example: FracAtlas_YOLOv11n.h5

Do NOT upload dataset in ZIP.