Individual Project Report Template (AI + Robotics Project)

Suggested Length: 10–20 pages

Title Page

- Project Title
- Student Name
- Course Name
- Instructor
- Date

Abstract / Executive Summary

A short (1–2 paragraphs) summary of:
- What the project is about
- What technology/model is used
- What the robot does
- Final results

Introduction

Explain:
- Background of the problem
- Why AI/Computer Vision is needed
- Project goals
- Challenges in detection/robot control
- Short overview of your approach

Dataset Collection & Labeling

Describe:
- How many images collected
- Classes and their descriptions
- Environments (lighting, angles, backgrounds)
- Labeling tools used (LabelImg / Roboflow)
- Train/Val/Test split
- Example images

Model Architecture & Training

- Which model (YOLOv8n, YOLOv9, MediaPipe, MobileNetV2, etc.)

Hyperparameters:

  - Image size
  - Epochs
  - Batch size
  - Optimizer
  - Augmentations

- Training screenshots (loss curves, mAP trends)

Evaluation & Results

Include:

- mAP score
- Precision / Recall
- Confusion matrix
- Qualitative examples (good/bad detection cases)
- Discussion on accuracy

Model Conversion & Deployment

Explain:

- How the model was exported (ONNX/TFLite)
- Validation of exported model
- Inference speed (FPS)
- Optimization steps

Testing & Real-World Scenarios

Explain:

- Test environment
- Edge cases
- Different lighting conditions
- Robot behavior consistency
- Video demo summary

Discussion

Reflect:

- What worked well
- What failed
- What they learned
- Limitations
- Future improvements

Conclusion

A short summary:
- What the robot can do
- Whether the goal was achieved
- Final performance

References

Cite:
- documentation
- Research papers
- Tutorials used
- Tools (Roboflow, LabelImg, PyTorch, etc.)

Appendix

- Source code (Training and Testing also the code deploy on the robot) (Link to Github)
- Extra screenshots
- Dataset Link