3D Object Detection in Indoor Scenes using SUN RGB-D

# 1. Introduction

This report presents the development and results of a 3D object detection project using the SUN RGB-D dataset. The objective is to detect objects in indoor environments using 3D bounding boxes.

# 2. Dataset Description

The SUN RGB-D dataset contains RGB images, depth maps, and 3D annotations of indoor scenes. It includes over 10,000 images with detailed object labeling.

# 3. Methodology

This section should describe the preprocessing steps, the model(s) used (e.g., VoteNet), training setup, and evaluation metrics (e.g., mAP@0.25, IoU 3D).

# 4. Results

Include tables and visuals comparing predictions vs. ground truth. Describe the model's performance across different object classes and scenes.

**#### ### Week 1 – Fundamentals + Dataset Exploration ✅**

**Phase 4: 3D Bounding Box Visualization ✅**

First sample and first object

A screenshot of a screen

AI-generated content may be incorrect.

All 3D Bounding Boxes in Sample  
A screenshot of a computer screen

AI-generated content may be incorrect.

# All 3D bounding boxes with class-based color

A screenshot of a computer

AI-generated content may be incorrect.

# 5. Conclusion

Summarize findings, challenges faced, and potential improvements.

# 6. References

- SUN RGB-D: http://rgbd.cs.princeton.edu/

- VoteNet: https://arxiv.org/abs/1904.09664