Aircraft Identification and Classification from Images

University of Limerick | MEng Computer Vision and AI

Key References

- 1. Zhang et al. (2013): Used HOG-SVM classifiers for high-precision aircraft recognition.
- 2. Tian et al. (2021): Applied transfer learning with VGG16 & MobileNet to classify military vs civilian aircraft.

Technical Contribution

- - Identify whether an image contains an aircraft
- - Classify aircraft by type or model
- - Evaluate failure modes: false positives/negatives
- - Experiment with traditional methods (HOG/SIFT) and deep learning (MobileNet, VGG16)

Project Timeline (12 Weeks)

- Week 1-2: Literature Survey
- Week 3-4: Data Collection and Preprocessing
- Week 5-6: Implement Traditional Methods (HOG, SIFT)
- Week 7-8: Deep Learning Model Setup (Transfer Learning)
- Week 9-10: Training, Validation and Failure Mode Analysis
- Week 11-13: Report Writing
- Week 14: Final Presentation and Submission

Summary

- This project will explore and benchmark traditional and deep learning methods for aircraft classification, with a key focus on robustness and failure analysis to improve real-world performance.