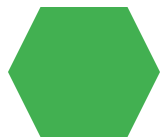


GIRIDHARAN M



DETECTION OF ROAD DAMAGE UTILIZING UAV IMAGERY



AGENDA



- Project Introduction
- Review of Existing Literature
- Deep Learning and YOLO Algorithm Overview
- Analysis of UAV Image Processing Techniques
- Examination of Available Datasets
- Implementation and Experimental Phase
- Evaluation of Performance and Analysis

PROBLEM STATEMENT

Gathering road damage data manually is both time-consuming and risky, making it challenging to maintain infrastructure effectively. To overcome these obstacles, an automated approach utilizing UAV imagery and deep learning is proposed to streamline detection accuracy and efficiency. The project aims to evaluate the performance of YOLOv4, YOLOv5, and YOLOv7 algorithms in pinpointing damage types and locations with high precision. Testing on the RDD2022 and Spanish datasets will assess the system's effectiveness across varied scenarios. Ultimately, this solution seeks to provide transportation authorities with a dependable method for prompt maintenance actions, ensuring the safety and longevity of transportation networks.



PROJECT OVERVIEW



- Integration of UAV Imagery and Deep Learning
- Addresses Challenges of Manual Inspection: Laborious and Unsafe
- Implementation of YOLOv4/5/7 Algorithms for Detection
- Utilization of Combined Chinese and Spanish Datasets
- Accuracy Assessment through Training/Testing (mAP)
- Improves Infrastructure Maintenance Efficiency
- Promotes Sustainability of Transportation Systems
- Ongoing Enhancements and Updates:
 - User Interface and Accessibility
 - Deployment and Scalability



WHO ARE THE END USERS?

- Target Audiences:
 - Transportation Authorities
 - Civil Engineers and Inspection Teams
 - Road Maintenance Personnel
 - Urban Planning Departments
 - Government Agencies

SOLUTION AND ITS VALUE PROPOSITION



AUTOMATED ROAD DAMAGE DETECTION:

Incorporates UAV imagery and deep learning algorithms for precise and effective detection.

VALUE PROPOSITION:

Elevates infrastructure maintenance by facilitating prompt identification and intervention for road damages.

Enhances road safety and mitigates accident risks by promptly addressing potential hazards.

Streamlines resource allocation and diminishes costs linked with manual inspections and reactive maintenance.

Furnishes actionable insights to transportation authorities and stakeholders, enabling informed decision-making and efficient prioritization of maintenance endeavors.

THE WOW IN YOUR SOLUTION

- Integration of cutting-edge UAV imagery and deep learning algorithms.
- Seamless identification and localization of road damages with precision.
- Dramatically reduces labor-intensive efforts and enhances safety for inspectors.
- Utilization of YOLOv4, YOLOv5, and YOLOv7 algorithms for heightened accuracy.
- Validation across diverse geographical contexts using RDD2022 and Spanish datasets.
- Sets a new standard for automated road infrastructure management.
- Represents the future of transportation maintenance and safety.



MODELLING

RESULTS

- Precision Detection at Scale
- Cross-Validation in Varied
Geographical Settings
- Elevated Efficiency and Precision
- Augmented Safety and Longevity
- Practical Real-world Utility
- Prospective Avenues for Further
Research