An Abstract
On

Insect Damage Detection in Household Surfaces Using AI-Based Image Processing

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Insect Damage Detection in Household Surfaces Using AI-Based Image Processing

ABSTRACT

This project presents an advanced AI-based Image Processing System designed to automatically detect and classify insect-induced damage on household wooden surfaces, walls, and surrounding soil areas. The work addresses the limitations of manual inspection, where early-stage insect activity often goes unnoticed, leading to severe deterioration of wooden furniture, structural components, and nearby building materials. The system focuses on identifying damage patterns such as surface holes, discoloration, powder formation, soil disturbances, wall cracks, and deep structural weakening caused by insects like termites and wood-boring beetles. By analyzing textures and patterns from images, the system provides accurate and early detection results that support preventive maintenance and enhance household safety.

To achieve this, the project employs digital image processing techniques, feature extraction, and machine-learning-based classification to determine both the severity and stage of insect activity. The system not only detects affected areas but also provides precautionary measures, treatment suggestions, and preventive guidelines to the user. Additionally, it sends detailed information about the identified insect type, possible risks, and recommended actions directly to the user's email for timely response. The outcomes show that automated inspection greatly improves accuracy, reduces human error, and enables early detection before major structural harm occurs, ultimately enhancing home safety, reducing maintenance costs, and supporting smart household monitoring.

PROJECT GUIDE

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