

ABSTRACT

Hazardous and Toxic Waste (B3) poses serious environmental and health threats if not properly managed. In household settings, waste such as used batteries, electronic waste, and chemical products is often mixed with regular waste, making it difficult to identify and separate manually. Previous studies have shown that B3 waste can contaminate soil and water sources, leading to negative impacts on ecosystems and public health.

An attempt to these challenges, a mobile application named TOXMAP was developed to assist in the initial identification of B3 waste through image-based classification. This application utilizes a Support Vector Machine (SVM) model integrated via a FastAPI-based backend and Firebase for user authentication and data storage. The system is designed to provide a practical tool for individuals to recognize B3 waste independently.

TOXMAP achieved a classification accuracy of 90% in testing. With its simple and functional user interface, the app serves not only as a technical support tool but also as an educational medium to raise public awareness about the importance of managing B3 waste at the household level.

Keywords: B3 Waste, Image classification, Mobile application, Support Vector Machine