

**DEEP LEARNING APPROACH FOR ELEPHANT INTRUSION DETECTION
SYSTEM FOR REDUCING HUMAN ELEPHANT CONFLICT**

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Due to the growth of the population, humans are extending to forest border areas and fulfill their needs. It has become a huge problem for wild animals. Human-Elephant Conflict (HEC) has been a major issue in forest border areas and properties, and human lives are destroyed by elephants. This makes HEC a major real-time environment-based research problem. Hence, large scale monitoring is required for real-time detection and warning of elephant intrusion into human habitats. The major aim of this research study is to identify elephant intrusion with a trained model of better accuracy. Deep learning has proved an effective way for elephant detection in recent days. Therefore, the study uses a methodology based on Convolutional Neural Networks (CNN). The method, that is robust to the diverse noise sources present in the field, is proposed for automated detection of elephant vocalizations. This method was evaluated on a dataset recorded under natural field conditions to simulate a real-world scenario. It is believed that the proposed method is able to detect elephants more accurately than existing methods. The dataset includes 15,000 images of elephants with various postures and 30,000 non-elephant images, respectively. The trained CNN-based model achieved the highest accuracy of 90%. Furthermore, this study can be useful for scientists in bioacoustics to investigate wildlife recordings. Findings of this research further prove that the use of the deep learning concept to easily categorize images with increased accuracy of the Elephant Intrusion Detection System.

Keywords: Convolutional neural networks, Forest border area, Human-elephant conflict