



# VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY

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## OIL SPILL DETECTION SYSTEM

### Abstract

This study explores the application of deep learning algorithms for classifying oil spills in ocean containers. With the increasing frequency of oil spills and their detrimental impact on marine ecosystems, the need for swift and precise detection methods is paramount. We propose a convolutional neural network (CNN) model capable of classifying oil spill events using aerial imagery with high accuracy. The model is trained on a dataset of ocean surface images labeled as 'oil spill' or 'no oil spill'. Results demonstrate the model's ability to effectively distinguish oil spills, aiding in timely response and environmental protection efforts.

Oil spill detection using deep learning leverages aerial imagery combined with advanced neural network architectures to automatically identify and classify oil spills. This approach utilizes Densenet convolutional neural networks (CNNs) for image classification and pixel-wise spill detection. Preprocessing techniques, including data augmentation and normalization, enhance the quality of input data, while transfer learning can boost model performance with limited datasets. The proposed system provides an efficient, accurate, and scalable solution for real-time oil spill monitoring, critical for environmental management and mitigation efforts.

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