VISVESVARAYA TECHNOLOGICAL UNIVERSITY,
BELAGAVI

A PROJECT REPORT ON

FORGERY IMAGE DETECTION USING ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING

Submitted in partial fulfilment of the award of degree in

BACHELOR OF ENGINEERING

IN

INFORMATION SCIENCE & ENGINEERING

By

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DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

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CERTIFICATE

This is to certify that the Project entitled **"FORGERY IMAGE DETECTION USING ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING"** has been successfully completed by

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the bonafide students of **Information Science & Engineering Department, Alva's Institute of Engineering and Technology, Moodbidire,** affiliated to **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI,** during the year 2023–2024. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The Project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

In today's digital landscape, the ubiquity of electronic devices and the proliferation of image capture technology have made photography an integral part of everyday life. From official documents requiring digital copies to the countless images shared on social media platforms, images serve as powerful mediums for communication and information exchange. However, alongside the benefits of digital imaging tools, there arises a concerning trend that is the manipulation of images for deceptive purposes. The availability of sophisticated editing software has enabled individuals to falsify images and propagate misinformation, posing a significant threat to the integrity of visual communication. Image forgery typically falls into two categories: image splicing, where parts of one image are inserted into another, and copy-move forgery, where portions of an image are duplicated and pasted within the same image. The project delves into methodologies for detecting copy-move attacks and double JPEG compression. Leveraging this knowledge, the project develops a robust forgery detection system, integrating traditional image processing techniques with CNN's. Through a synthesis of established principles and innovative approaches, this project presents a holistic framework for detecting various forms of image forgery, including splicing, retouching, and manipulation. Implementation involves the use of Compression Artifact Tracing Network (CAT-NET) for Detection of forged images which are pretrained on large-scale datasets to discern subtle artifacts indicative of tampering. The system's architecture includes end-to-end fully convolutional neural network including RGB and DCT streams, to learn forensic features of compression artifacts on RGB and DCT and a user-friendly interface. Evaluation on benchmark datasets and efficacy in accurately identifying manipulated images, contributing to efforts to combat misinformation and restore trust in digital media authenticity.