VISVESVARAYA TECHNOLOGICAL UNIVERSITY,

BELAGAVI

A PROJECT REPORT ON

"COUNTING ANIMALS IN A FOREST USING DEEP LEARNING MODEL"

Submitted in partial fulfillment for the award of Degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE & ENGINEERING

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CERTIFICATE

This is to certify that the project entitled **"COUNTING ANIMALS IN A FOREST USING DEEP LEARNING MODEL"** has been successfully completed by

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the bonafide students of **DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING, ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2023–24. It is certified that all corrections/suggestions indicated for Internal Assessment has 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.

15/5/24

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ABSTRACT

In the vast expanse of wildlife surveillance, the exponential surge in camera-trap data has catalysed an urgent demand for automated processing solutions, propelling a fervent exploration into the dynamic realm of deep learning methodologies. Yet, amidst this burgeoning landscape, the intricate tapestry of backgrounds inherent in wildlife imagery emerges as a formidable barrier, impeding the efficacy of prevailing models and precipitating a palpable decline in performance when confronted with the nuances of novel data streams. Enter YOLOv8, an epoch-making iteration within the deep learning paradigm, poised at the vanguard of innovation to confront and transcend these formidable challenges. Drawing upon the formidable potency of convolutional neural networks (CNNs), YOLOv8 heralds a paradigmatic shift by deftly harnessing the latent intricacies of image data to autonomously distill salient features, engendering a seamless and granular delineation of wildlife behaviors with unprecedented accuracy and precision. Yet, the transformative prowess of YOLOv8 extends beyond mere algorithmic sophistication; it embodies a holistic convergence of cutting-edge methodologies and advanced techniques meticulously woven together to forge a robust framework capable of withstanding the capricious ebbs and flows of environmental variability. Through the strategic fusion of data augmentation and transfer learning, YOLOv8 transcends the shackles imposed by ecological heterogeneity, affording it unparalleled adaptability across a kaleidoscope of environmental contexts. Its ascendance heralds not merely a technological triumph but a profound paradigm shift in the fabric of wildlife monitoring practices, promising to revolutionize the landscape of conservation efforts by not only enhancing operational efficiency but also fostering a more sustainable and ethically informed approach to wildlife conservation endeavors. As YOLOv8 emerges as the harbinger of a new era in wildlife surveillance, its indomitable spirit of innovation and resilience stands as a testament to the inexorable march of progress in the ceaseless pursuit of harmony between humanity and nature.