VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

A PROJECT REPORT ON

"BRAIN TUMOUR DETECTION USING DEEP LEARNING"

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 **"BRAIN TUMOUR DETECTION USING DEEP LEARNING"** 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 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 Projectwork prescribed for the Bachelor of Engineering Degree.

8/5/24

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ABSTRACT

Presenting an optimized approach for brain tumor detection in Magnetic Resonance Imaging (MRI) images, our framework addresses the challenge of distinguishing between malignant and benign tumors. We propose a hybrid model that combines Convolutional Neural Networks (CNN) and Support Vector Machines (SVM) for segmentation tasks. The CNN component extracts high-level features from MRI scans, while the SVM classifier refines segmentation boundaries, enhancing precision and accuracy. By leveraging the complementary strengths of CNN and SVM techniques, our framework aims to optimize brain tumor detection. Furthermore, our hybrid model incorporates advanced preprocessing techniques to enhance the quality of MRI images, mitigating common challenges such as noise and artifacts, thereby improving the overall robustness of tumor detection. The integration of CNN and SVM not only facilitates accurate segmentation but also enables the identification of subtle features indicative of tumor characteristics, enhancing the diagnostic capabilities of the framework. In addition to its diagnostic utility, our proposed methodology offers the potential for real-time application, making it feasible for use in clinical settings where rapid and accurate tumor detection is paramount for timely intervention. Moreover, validate the generalizability of the approach by testing it on a diverse range of patient demographics and imaging protocols, ensuring its reliability across varied clinical scenarios.