"AN EFFICIENT MODEL FOR POLYP DETECTION USING DEEP LEARNING APPROACH"

PROJECT REPORT

Submitted in partial fulfillment of the requirements for the award of

Bachelor of Engineering
in
Computer Science and Engineering
(18CSP83)
Submitted to

Visvesvaraya Technological University

Belagavi, Karnataka, 590 014

Submitted By

Mr. Akash K Halemani	**2KE20CS004**
Ms. Anusha V Ajagond	**2KE20CS011**
Mr. Arun S Hiremath	**2KE20CS013**
Mr. Kartik Pradeep Hegadi	**2KE20CS032**

Under the Guidance of

Mrs. Shanta S Kallur

Department of Computer Science and Engineering
(NBA Accredited)

K. L. E. SOCIETY'S

K. L. E. INSTITUTE OF TECHNOLOGY, HUBBALLI

2023-2024

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Department of Computer Science and Engineering

CERTIFICATE

Certified that the project work entitled on **"An Efficient model for polyp Detection using deep learning Approach"** is a bonafide work carried out by **Mr. Akash K Halemani (2KE20CS004), Ms. Anusha V Ajagond (2KE20CS011), Mr. Arun S Hiremath (USN 2KE20CS013)**, **Mr. Kartik Pradeep Hegadi (2KE20CS032)** in partial fulfillment for the award of degree of **Bachelor of Engineering** in **VIII Semester, Computer Science and Engineering** of **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 department library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the said degree.

Guide **HOD** **Principal**

Name of the Examiners **Signature with Date**

1.

2.

DECLARATION

We**,** Mr. Akash K Halemani (USN 2KE20CS004), Ms. Anusha V Ajagond (2KE20CS011), Mr. Arun S Hiremath (USN 2KE20CS013), Mr. Kartik Pradeep Hegadi (2KE20CS032) students of VIII Semester B.E., K.L.E. Institute of Technology, Hubballi, hereby declare that the project work has been carried out by us and submitted in partial fulfillment of the requirements for the VIII Semester degree of **Bachelor of Engineering in Computer Science and Engineering** of Visvesvaraya Technological University, Belagavi during academic year 2023-2024.

Date:

Place: Hubballi

Mr. Akash K Halemani

Ms. Anusha V Ajagond

Mr. Arun S Hiremath

Mr. Kartik Pradeep Hegadi

ACKNOWLEDGEMENT

The project report on **"An Efficient model for polyp Detection using Deep Learning Approach"** is the outcome of guidance, moral support and devotion bestowed on me throughout my work. For this I acknowledge and express my profound sense of gratitude and thanks to everybody who have been a source of inspiration during the project work. First and foremost, I offer my sincere phrases of thanks with innate humility to our **Principal Dr. Sharad Joshi** who has been a constant source of support and encouragement. I would like to thank our **Dean Academic Dr. Manu T. M.** for his constant support and guidance. I feel deeply indebted to our **H.O.D. Dr. Rajesh Yakkundimath.** for the right help provided from the time of inception till date. I would take this opportunity to acknowledge our **Guide Mrs. Shanta Kallur,** who not only stood by us as a source of inspiration, but also dedicated his/her time for me to enable me to present the project on time. I would be failing in endeavor, if I do not thank our **Coordinator Mr. Prasanna B.** who has helped me in every aspect of my project work. Last but not the least, I would like to thank my parents, friends & well-wishers who have helped me in this work.

Mr. Akash K Halemani

Ms. Anusha V Ajagond

Mr. Arun S Hiremath

Mr. Kartik Pradeep Hegadi

ABSTRACT

The primary focus of polyp segmentation and detection using deep learning approaches is to improve accuracy and efficiency in early diagnosis and intervention planning for gastrointestinal diseases. By leveraging advanced algorithms such as the U-Net model, which is particularly effective for biomedical image segmentation, this research analyzes diverse data inputs, including endoscopy images and patient history, to develop robust predictive models for efficient polyp identification. The U-Net architecture, with its ability to capture fine details and spatial hierarchies in images, is instrumental in accurately delineating polyp boundaries, significantly enhancing segmentation performance. Through interdisciplinary collaboration among computer scientists, medical professionals, and data scientists, scalable and objective tools for polyp detection are being created. The methodology involves collecting and preprocessing data, training models on large datasets, and evaluating performance through scenarios like image-based segmentation, feature extraction, and classification. Results show significant advancements in detection capabilities, promising to revolutionize gastrointestinal disease assessment and management. Future research will focus on refining algorithms, integrating multimodal data sources, and enhancing accessibility to improve the diagnosis and treatment of polyps. By standardizing and enhancing the accuracy of polyp detection, these advanced deep learning models, particularly those utilizing U-Net, have the potential to significantly reduce the incidence of missed polyps, ultimately improving patient outcomes and transforming the clinical approach to gastrointestinal health.

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