A REPORT
ON

AI ASSISTED TELE-MEDICINE KIOSK FOR RURAL INDIA

Submitted by,

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Under the guidance of,

Dr. AKSHATHA Y
Assistant Professor-Selection Grade

in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY
IN

COMPUTER SCIENCE AND ENGINEERING
(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

At

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY

BENGALURU

MAY 2025

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CERTIFICATE

This is to certify that the Project report **AI ASSISTED TELE-MEDICINE KIOSK FOR RURAL INDIA** being submitted by R KESHAV, RAKSHITHA K T, S SRINIVAS, PREM JE KALISTER bearing roll number 20211CAI0080, 20211CAI0087, 20211CAI0109, 20211CAI0187 in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering (Artificial Intelligence and Machine Learning) is a Bonafide work carried out under my supervision.

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DECLARATION

We hereby declare that the work, which is being presented in the report entitled **AI ASSISTED TELE-MEDICINE KIOSK FOR RURAL INDIA** in partial fulfillment for the award of Degree of **Bachelor of Technology** in **Computer Science and Engineering (Artificial Intelligence and Machine Learning)** , is a record of our own investigations carried under the guidance of **Dr. AKSHATHA Y, Assistant Professor, Presidency School of Computer Science and Engineering, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

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ABSTRACT

Healthcare accessibility in rural India remains a critical challenge, with limited availability of expert doctors and timely medical intervention. This project proposes an AI-assisted Telemedicine Robotic Kiosk, a self-sustained, automated healthcare unit that can be deployed across villages to bridge the gap between rural patients and specialized medical professionals. This Project aims to develop a medical chatbot tailored for Indian Healthcare context by fine-tuning open-source large language models (LLMs) on a synthetic dataset comprising of 300 commonly occurring diseases in India. The custom dataset was designed in ShareGPT- style format to align with conversational instruction tuning.

To make efficient use of these models with minimum computational cost, methods like Quantized Low- Rank Adaptation(QLoRA), Parameter Efficient Fine-Tuning(PEFT) using LoRA and instruction tuning. These methods allow fine-tuning on general purpose GPUs while also preserving contextual relevance and domain accuracy for medical purpose. The final model, fine-tuned Mistral 7B demonstrated best performance on evaluation metrics such as ROUGE and BERTScore, showcasing enhaced fluency, medical relevance and response coherence. The chat bot is integrated with speech-to-text technology via whisper for real-time deployment. In conclusion, the project presents a scalable, resource-efficient solution to improve digital healthcare accessibility in low-resource settings. It also holds potential for wide variety of applications including automating patient documentation and increasing patient-doctor face-time, thereby improving clinical workflow and user satisfaction.

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