Oxygen: A Distributed Health Care Framework for Patient Health Record Management and Pharmaceutical Diagnosis

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Abstract

With the COVID-19 pandemic, the world is confronting various healthcare issues, and healthcare automation is more crucial than ever. The pandemic has revealed the limitations of existing digital healthcare systems to manage public health emergencies. There is no registered population for many healthcare institutions in Sri Lanka, as a result, there is a communication gap. Electronic Health Record systems (EHRs) are becoming popular to share patient details but accessing scattered data across several EHRs while safeguarding patient privacy remains a challenge. Most of these medical records are in printed format and manually entering those into EHR systems is time-consuming and error prone. Not only that pharmaceutical error is a critical healthcare problem, but it is even riskier to visit doctors for pharmaceutical diagnosis during a pandemic. This research introduces a Blockchain-based patient health record system, an Optical Character Recognition (OCR) and Natural Language Processing (NLP) based Medical Document Scanner, a Drug Identifier based on Image Processing and a Medical Chatbot powered by NLP as four novel approaches to address these issues. Altogether with the results, this research aims at introducing a solution for the limitations in healthcare while providing a distributed healthcare framework for the healthcare community worldwide.

Keywords

Digital Healthcare, Machine Learning, Natural Language Processing, Blockchain, Image Processing, Optical Character Recognition, Healthcare Transformation.