



Contribution ID: 75

Type: **not specified**

Modernizing Healthcare Systems: An Open-Source Provider Portal with AI and FHIR Integration

Friday, December 27, 2024 4:30 PM (15 minutes)

This paper describes the design and implementation of an open-source healthcare portal created especially for healthcare providers. The portal is FHIR compliant, enabling seamless, consistent, and secure data exchange between healthcare systems. The system is built with a reliable and scalable architecture to meet the complex needs of modern healthcare environments and is developed using Spring Boot, Quasar, and Docker.

This portal is unique due to its integration/use of four different AI models, with each model trained on a specific dataset, such as encounters, medications, clinical notes, and procedures. These models give actionable insights derived from large sets of patient data and communicate clinically meaningful results to the physician. These insights will help provide better decision-making capabilities, optimize workflows, and improve overall efficiencies in patient care management.

The project is hosted on DigitalOcean. It allows us to tap into the security and scalability of their infrastructure to guarantee high availability while also letting us cope with variable workloads.

The solution not only supports clinical decisions but also promotes interoperability across diverse healthcare systems. On the other hand, this paper showcases methods of using open-source tools and standards to solve real-world problems and illustrates how open-source technology can transform health care. An useful tool to increase provider efficiency, cultivate collaboration, and allow providers to deliver high-quality patient care through a consistent and simple process.

Paper Language

English

Contribution Type

Virtual

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Session Classification: Session: Virtual (English Language)

Track Classification: General Track