Haske: An Open PACS Platform Integrating AI for Affordable Medical Image Archiving and Diagnosis in Resource-Constrained Settings

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Background/Problem Being Solved

Medical imaging workflows across Africa are hindered by the lack of accessible and affordable Picture Archiving and Communication System (PACS) platforms that adhere to Fast Healthcare Interoperability Resources (FHIR) standards. Existing commercial solutions are cost-prohibitive for many centers in resource-constrained environments. This gap restricts the development and deployment of AI solutions, further compounding the challenges of delivering timely and accurate diagnoses in underserved areas.

Intervention(s)

Haske (meaning 'Light') is an open, web-based PACS platform designed to enable cost-effective acquisition, sharing, analysis and archiving of medical images. Haske leverages the open-source Orthanc PACS functionalities and is hosted on Amazon World Services (AWS) for equitable access. Secure access was implemented using Google's Firebase, while the Mercure DICOM orchestrator (mecure-imaging.org) was integrated for seamless interoperability with AI analysis tools. Haske includes an embedded reporting module, making it a comprehensive ecosystem for medical imaging management (figure 1).

Barriers/Challenges

Implementation faced significant challenges from poor existing medical imaging infrastructure to unreliable internet connectivity. Cultural reliance on traditional practices like physical image storage, film printing and darkroom techniques is also a challenge. This is being resolved through iterative improvements and user feedback.

Outcome

Haske (figure 2) has been deployed in a pilot imaging centre in Lagos, Nigeria, where preliminary evaluation demonstrates improved efficiency in image management and accessibility. Early user feedback indicates an enhanced radiodiagnosis workflow process and potential for cost savings compared to existing commercial PACS systems. Detailed performance metrics, including image archival and retrieval times and AI accuracy rates, are under evaluation.

Conclusion/Statement of Impact/Lessons Learned

Haske's integration of FHIR-compliant PACS functionalities with AI-enabled diagnostics offers a transformative solution for medical imaging in resource-constrained environments. It facilitates seamless image management and supports faster, more accurate diagnoses thereby reducing barriers to access and affordability leading to better patient outcomes and addressing critical healthcare challenges in Africa and beyond.

Figure(s)

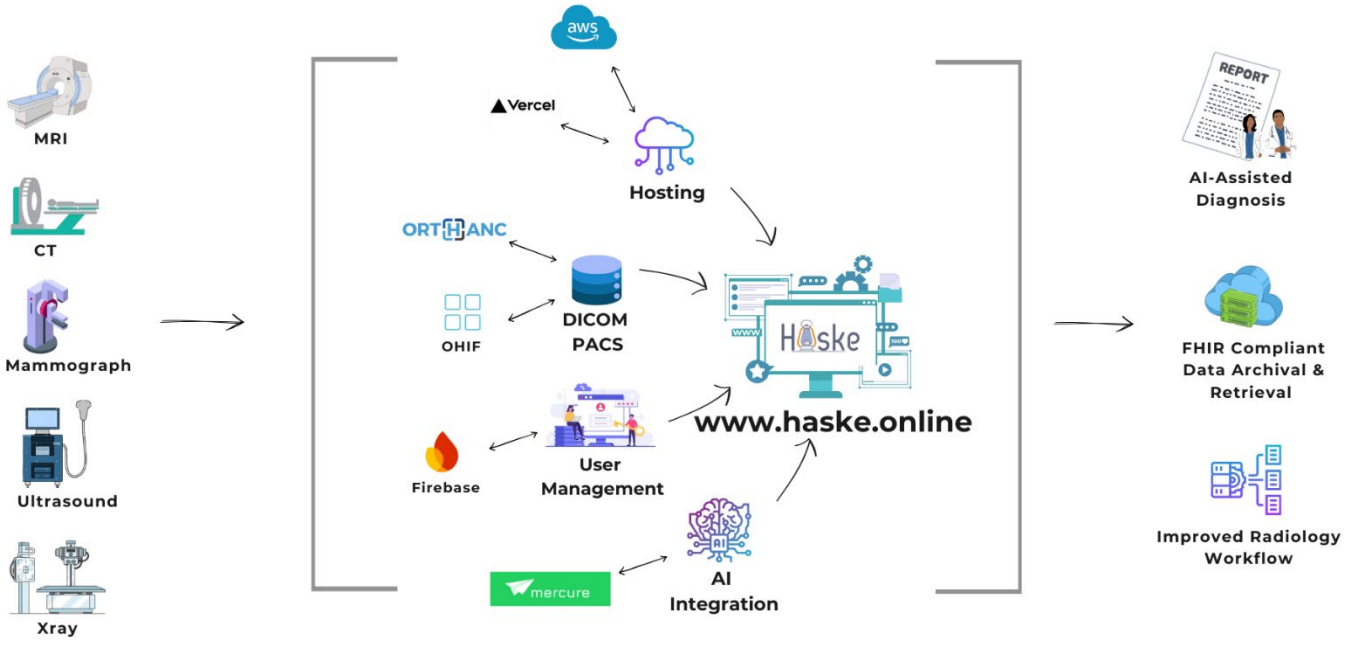

Figure 1. Haske architecture

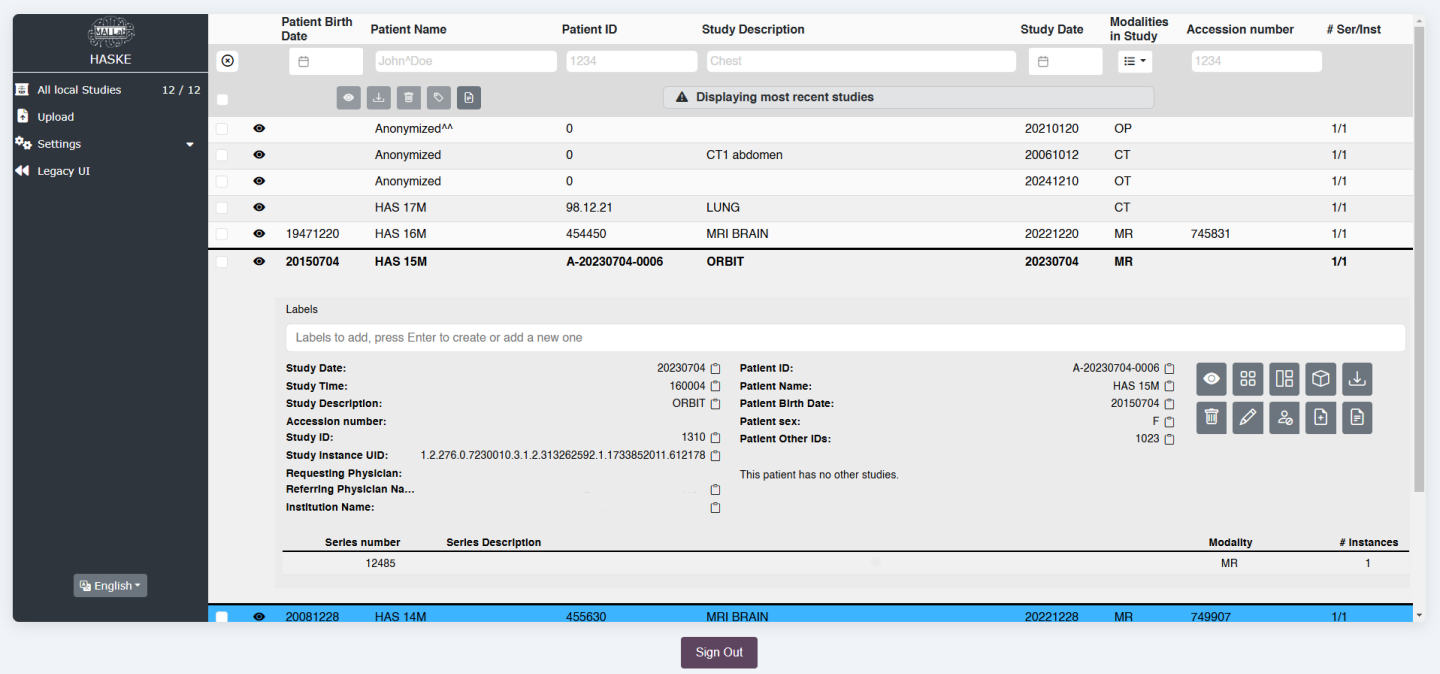

Figure 2. Haske Platform

Keywords

Artificial Intelligence/Machine Learning; Clinical Workflow & Productivity; Enterprise Imaging