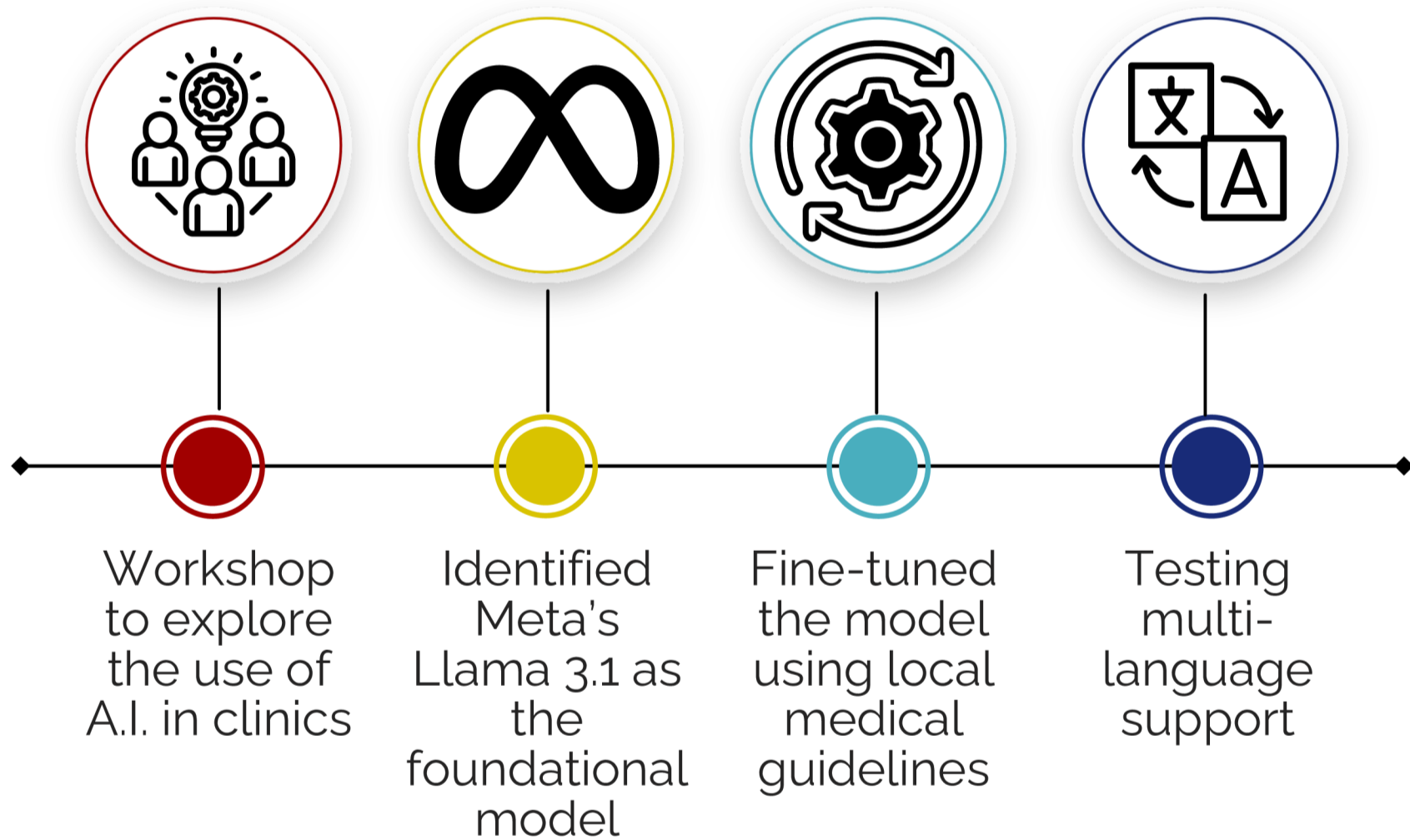


AI-POWERED HEALTH ASSISTANT FOR CONFLICT-AFFECTED REGIONS IN MYANMAR

Leveraging Offline Technology to Enhance Healthcare Delivery

Background

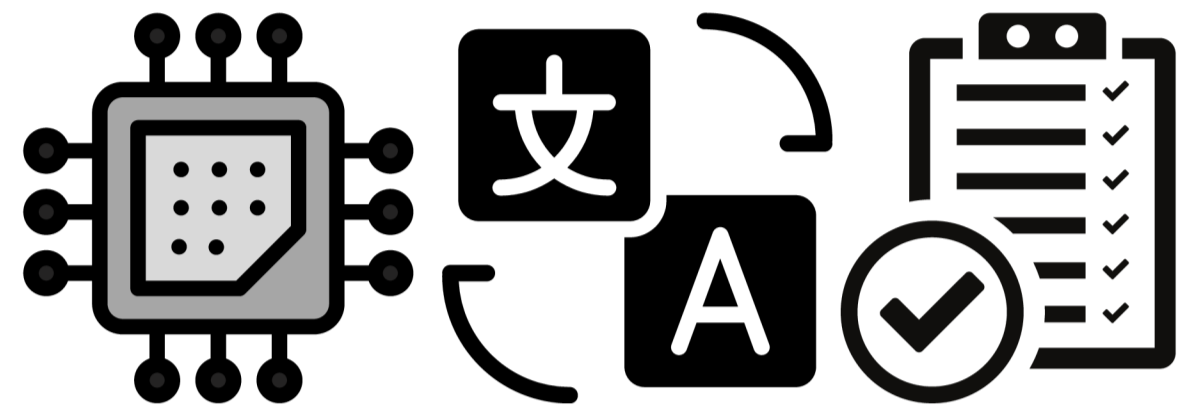
Healthcare access in Myanmar's conflict-affected regions is severely hampered by limited infrastructure and lack of internet connectivity, hindering the use of traditional online clinical decision support systems (CDSS). This gap significantly impacts the quality of care in remote areas. To address this, innovative solutions leveraging offline-capable technology are crucial. This project explores the potential of Large Language Models (LLMs) through a Retrieval-Augmented Generation (RAG) approach, utilizing Meta Llama 3.1, to provide accessible, evidence-based medical guidance. By enabling offline functionality on affordable hardware, we aim to empower healthcare workers and improve health outcomes in these underserved communities.



Methods

The study employed a phased approach to develop an offline RAG-based CDSS. First, Meta Llama 3.1 was selected for its offline capabilities and deployed on single-board computers. Local medical guidelines were curated to create a specialized knowledge base. The LLM was then fine-tuned using this data to ensure accurate clinical recommendations. A pilot test with an English interface was conducted in a remote Myanmar clinic to assess usability. Subsequently, Google Translate API was integrated for multi-language support, with refinements made in collaboration with native speakers to ensure accurate medical terminology in Burmese, Shan, and Karen.

RESULTS



- The system was successfully deployed and utilized in a remote clinic, providing clinical decision support without internet connectivity
- Integration of Google Translate API with ongoing refinement by native speakers significantly improved accessibility, resulting in positive feedback from healthcare workers
- Initial observations indicate a positive trend towards improved patient outcomes, although further quantitative analysis is required to establish statistical significance,

CONCLUSION

- A comprehensive offline system, featuring a Single Board Computer, AI accelerator for enhanced processing, a backup battery for uninterrupted functionality, and a solar panel for power independence, can be deployed for a total cost of less than **150 USD**.
- The successful pilot implementation in Myanmar highlights the significant potential of this technology to empower healthcare workers by providing readily accessible, evidence-based support, leading to improved quality of care.
- Future efforts will focus on larger-scale studies to gather robust quantitative data on patient outcomes. Further refinement and deployment of the fine-tuned Shan and Karen language models to ensure cultural relevance and linguistic accuracy,

