

# Enhancing Primary Care in Underserved Communities

## Harnessing Collective Intelligence and Expert Feedback to Transform Healthcare Delivery

### Utilizing Reinforcement Learning with Collective Expert Feedback to Advance the use of Generative AI for Primary Care

A new research initiative aims to enhance primary care in underserved communities worldwide using advanced AI methods. This project will use a collective intelligence-based Reinforcement Learning with Expert Feedback (RLEF) approach to refine AI-generated clinical outputs. By improving transparency, trust, and accuracy, this innovative method addresses data gaps and has the potential to revolutionize healthcare access and quality, significantly benefiting marginalized populations and laying the groundwork for future advancements in AI-driven medical advice.

#### Aim One

**Optimize the Digital Interface and Process for Curating Expert Clinical Feedback:** Enhance the digital interface and process used for gathering expert clinical feedback. This involves improving the quality of clinical case presentations and refining engagement strategies to ensure that feedback from medical experts is robust and actionable.

#### Aim Two

**Pilot the Evaluation of AI-Generated Clinical Vignettes through Collective Expert Intelligence:** Building on the improvements from Aim 1, this aim focuses on assessing the accuracy of these AI-created scenarios by gathering insights from medical experts. The evaluation will cover patient details, diagnoses, and treatment suggestions to ensure the AI's reliability.

#### Aim Three

**Access the Feasibility of using Reinforcement Learning with Expert Feedback (RLEF) in Fine-Tuning Language Models for Context-Specific Synthetic Clinical Vignettes:** Test a method called Reinforcement Learning with Expert Feedback (RLEF) to fine-tune large language AI models in the generation of synthetic clinical vignettes. Additionally, work with clinicians in Kenya to make sure the AI-generated scenarios are relevant and useful for healthcare in Nairobi.

#### Leadership

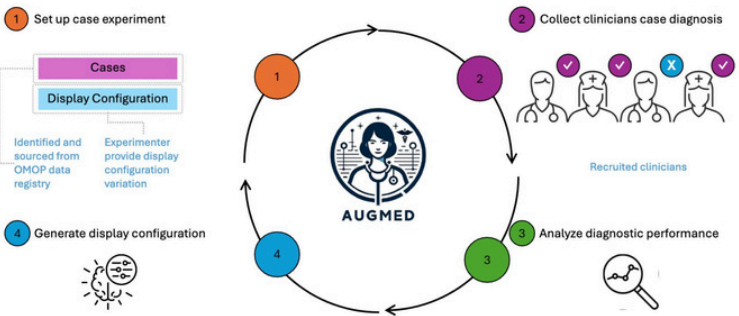


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#### Understanding Human + AI Collaborative Interactions

How it works



#### Goal

Enhance the effectiveness and accessibility of primary care in underserved communities worldwide by using advanced AI methods, specifically Reinforcement Learning with Expert Feedback approach, to refine and validate AI-generated clinical outputs.

#### Partners

UNC  
Department of  
Computer  
Science;  
UNC School of  
Medicine

#### Impact!

This approach could transform global medical advice access by addressing algorithm complexity and data quality issues. By incorporating expert feedback, it builds trust and ensures accurate, fair clinical algorithms. This scalable, self-improving solution enhances expert skills and provides a robust, validated tool for diverse healthcare applications.

#### Leveraging Expert Feedback in Generative AI for Improved Primary Care

