

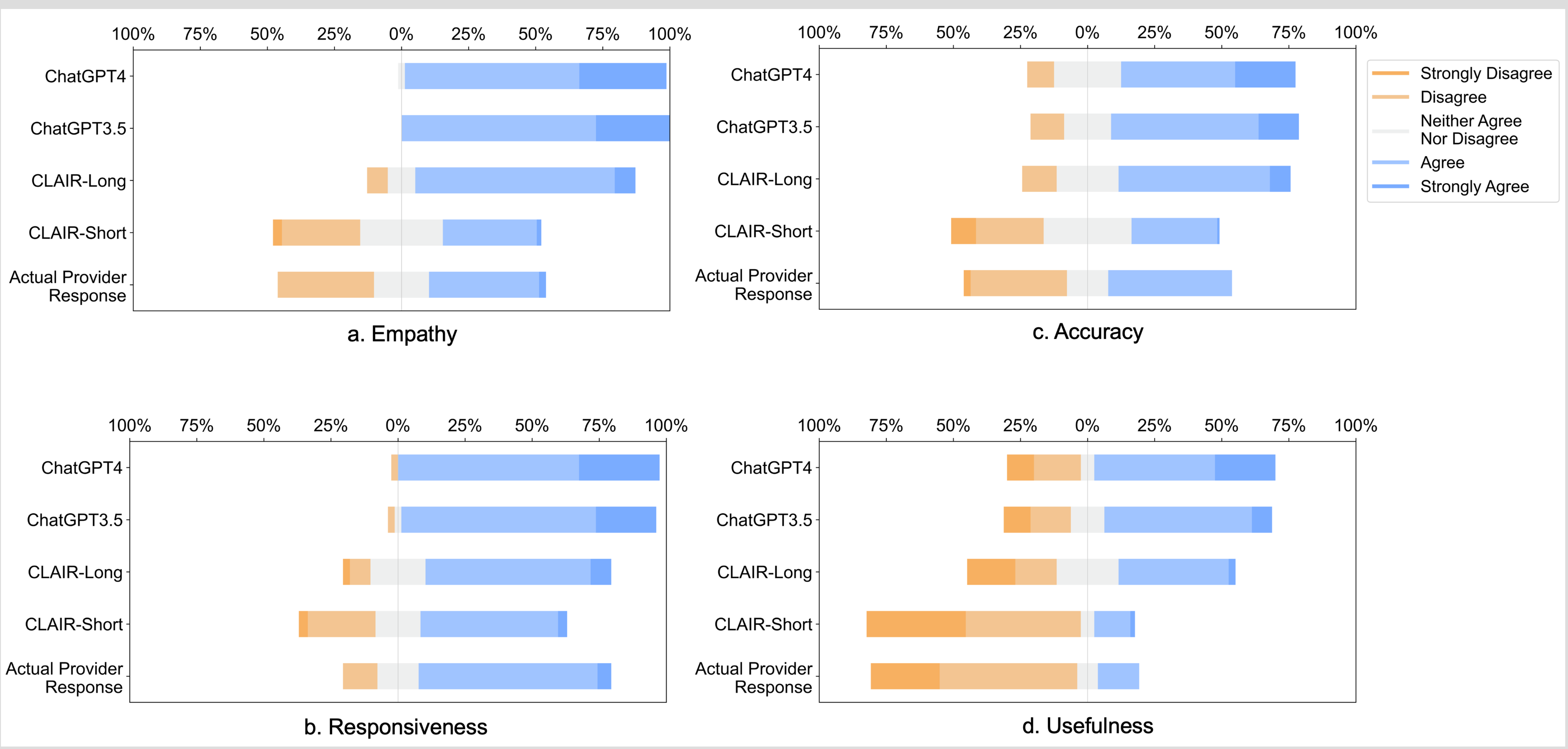
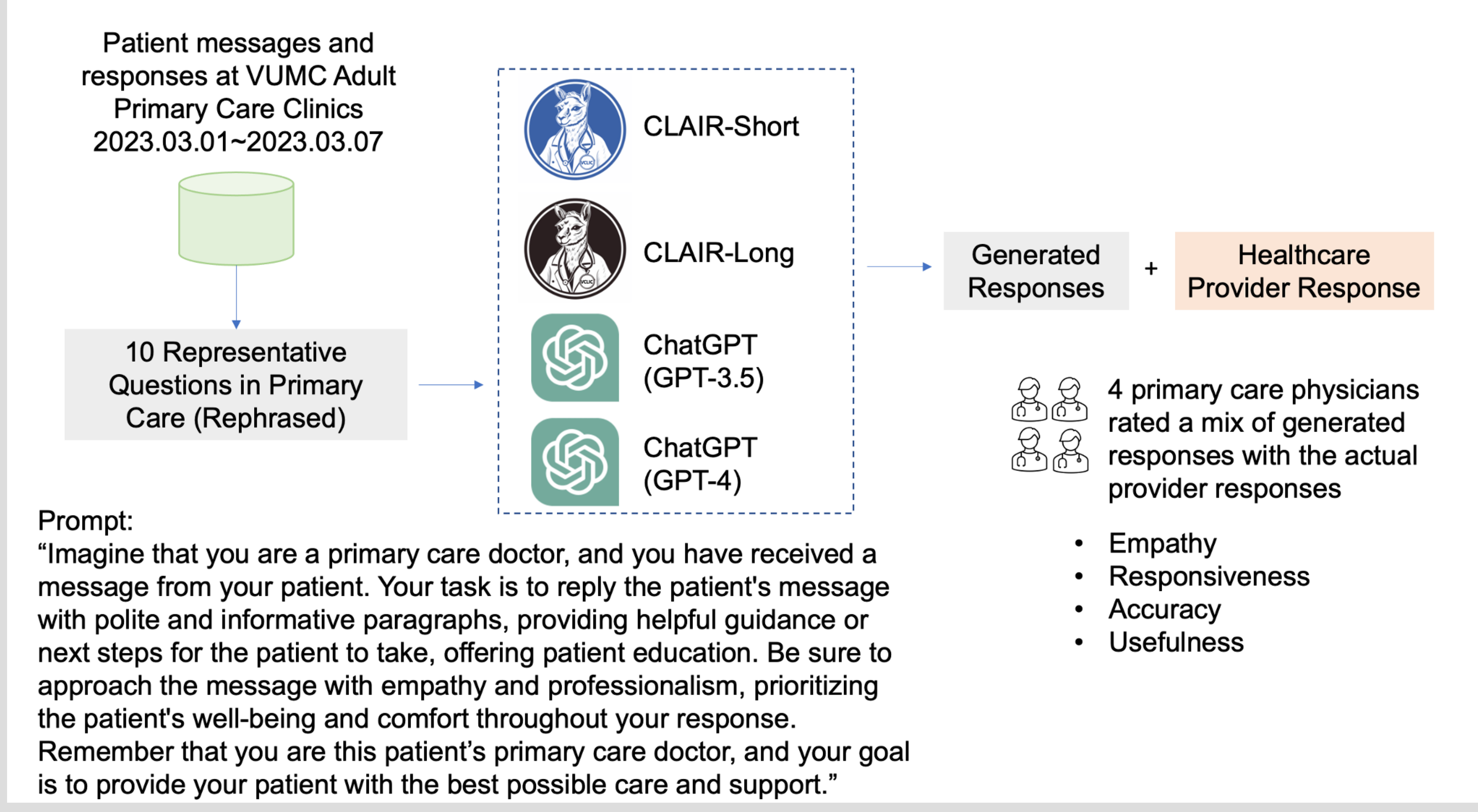
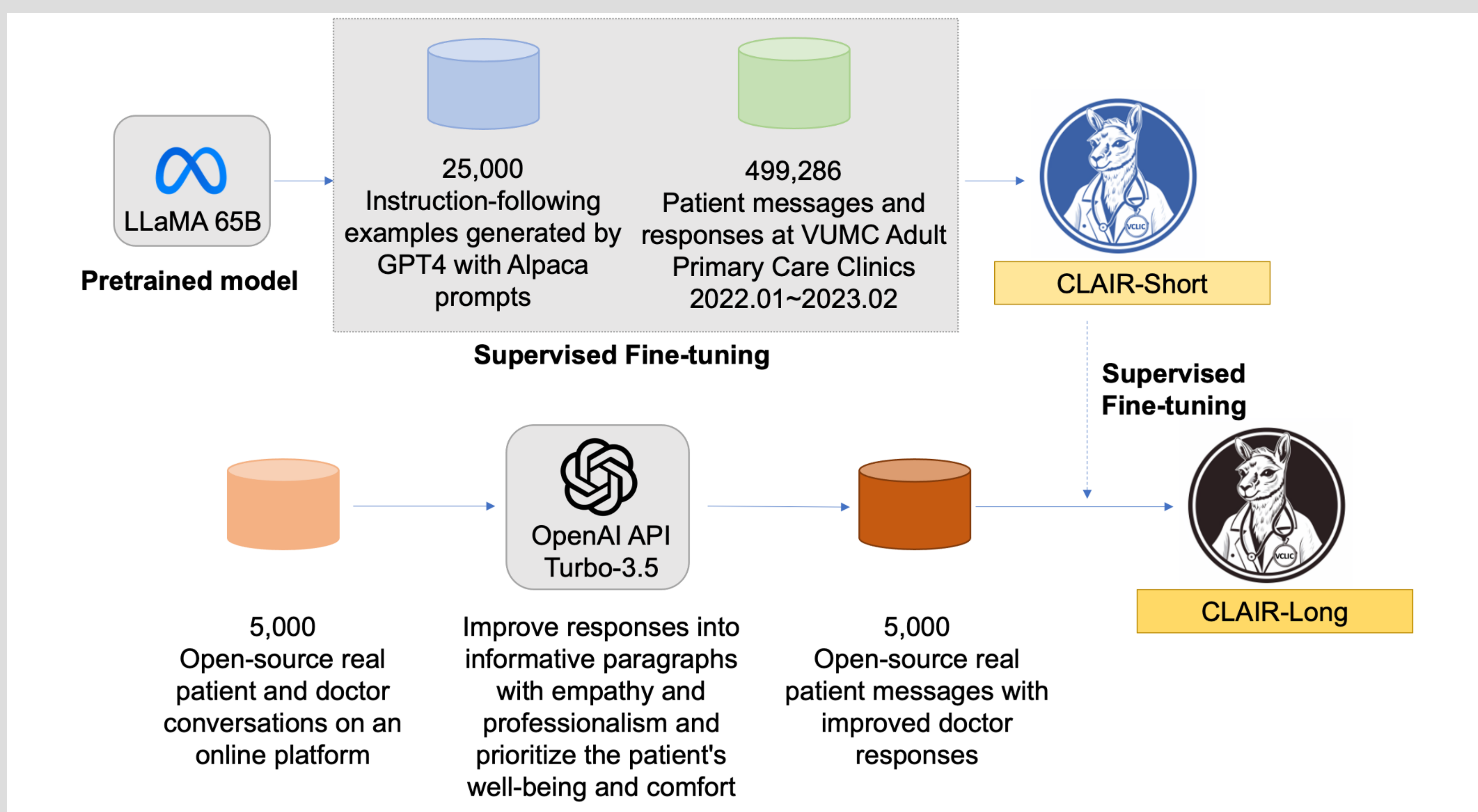
LEVERAGING LARGE LANGUAGE MODELS FOR GENERATING RESPONSES TO PATIENT MESSAGES

Siru Liu, PhD^{1,2}, Allison B. McCoy, PhD¹, Aileen P. Wright, MD, MS^{1,3}, Babatunde Carew, MD³, Julian Z. Genkins, MD³, Sean S. Huang, MD^{1,3}, Josh F. Peterson, MD, MPH^{1,3}, Bryan Steitz, PhD¹, Adam Wright, PhD¹

¹Department of Biomedical Informatics, Vanderbilt University Medical Center, Nashville, TN, USA; ²Department of Computer Science, Vanderbilt University, Nashville, TN, USA; ³Department of Medicine, Vanderbilt University Medical Center, Nashville, TN, USA

OBJECTIVE

This study aimed to develop and assess the performance of fine-tuned large language models for generating responses to patient messages sent via an electronic health record patient portal.



Medical Questions

To John Doe, MD

Dear Doctor [HCW](#), I had two weeks of a bad cold. Never had a fever, and I tested negative for covid, but my cough won't go away even a couple weeks later, and my energy level isn't great. I'm having to take an allergy pill every day just to go to sleep. Do I need a flu test, or an allergy test?

AI-generated Suggestions

Please provide detailed information before submitting your message to ensure a timely response from healthcare providers.

- Have you tried any over the counter cough medicines?
- Have you tried mucinex?
- Any shortness of breath or chest pain?
- Any dizziness or weakness?

CONCLUSION

Leveraging large language models to generate responses to patient messages demonstrates significant potential in facilitating communication between patients and primary care providers.