No. 2: Concerning the Use of AI in Medicine

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There is a widespread narrative in the medical community that AI will take over some physicians' jobs. This primarily stems from the lack of communication doctors have with the people developing medical AI technologies. This narrative is a dangerous one because it can lead to further division between the two fields and prevent innovation that can improve healthcare. There are two main uses for AI in medicine: medical imaging analysis and diagnostic assistance. Image analysis works by feeding images of X-rays, CAT scans, MRIs, etc., into a deep learning algorithm that analyzes hundreds or thousands of scans to detect irregularities in the results. This technology is particularly beneficial to radiologists and dermatologists who use scans to assist in their diagnosis. Medical imaging analysis tools are 92%, 96%, and 99% [1] accurate at detecting skin cancer, Parkinson's disease, and breast cancer, respectively, when using the best models research can produce. Diagnostic tools are much more complicated since they can use a combination of image and data analysis to formulate a probable diagnosis for patients, but they can benefit a wider range of medical professionals. The issue is that they are not as accurate since they have many more diseases to consider compared to image analysis tools, which specialize in certain diseases or injuries. Large Language Models, such as ChatGPT, are 72% accurate [2], while models that primarily use symptoms are 49% to 90% accurate at providing the most probable diagnosis [3]. When viewing these statistics, some people question the need for certain doctors, but the doctors have no need to worry about their jobs.

AI can only diagnose patients; it cannot do the most important thing: treat them. AI is a tool for doctors, not a replacement for them. These tools can significantly reduce the amount of unnecessary tests done to patients by supporting a doctor's preliminary diagnosis or presenting

probable diagnoses, allowing them to focus on the necessary tests to make a concrete final diagnosis. This can significantly shorten the diagnostic time in a medical visit and allot more time for a doctor to treat their patients. In turn, more resources are freed up for doctors to improve and scale their current medical infrastructure so that they can provide more personalized treatment to more people. In order to even make this a reality, the tech companies developing these tools need to work in tandem with medical professionals; after all, they are the ones who will use their technology the most. Developers need to understand the needs and wants of doctors and communicate with them to build a tool that doctors will actually use and that can effectively be implemented into their current workflow. These tools need to be appealing and accessible to doctors so that they can have a widespread impact on the healthcare system. Developers also need to be aware of the diversity and security of the data that is being sourced. They need to ensure that medical data is sourced in a manner that doesn't breach medical confidentiality. Also, the data needs to include a diverse population to limit the exposure of biases and ensure that the diagnoses are applicable to most people. The emergence of medical AI presents a unique opportunity for doctors to improve their standards of care, but the relationship that medical AI developers have with doctors is what will determine how impactful the technology will be.

[1] N. Ghaffar Nia, E. Kaplanoglu, and A. Nasab, "Evaluation of artificial intelligence techniques in disease diagnosis and prediction," Discover Artificial Intelligence, vol. 3, no. 1, Jan. 2023, doi: https://doi.org/10.1007/s44163-023-00049-5.

[2] A. Rao et al., "Assessing the Utility of ChatGPT Throughout the Entire Clinical Workflow: Development and Usability Study," Journal of Medical Internet Research, vol. 25, pp. e48659–e48659, Aug. 2023, doi: https://doi.org/10.2196/48659.

[3] W. Wallace et al., "The diagnostic and triage accuracy of digital and online symptom checker tools: a systematic review," npj Digital Medicine, vol. 5, no. 1, pp. 1–9, Aug. 2022, doi: https://doi.org/10.1038/s41746-022-00667-w.