

## In This Issue:

### AI and Big Data in the Health Sciences

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Artificial Intelligence, or AI, has surged in recent years, with commercially available consumer applications such as ChatGPT, Gemini, Copilot, and other platforms promising to make our lives easier in any number of ways.

Although AI has been around since the 1950s, the late 90s and early 2000s saw researchers move from trying to program intelligence to teaching computers how to learn. Deep Blue, IBM's supercomputer, defeated world chess champion Garry Kasparov in 1997, the explosion of the internet in the 90s provided massive amounts of data, and gaming chips provided complex calculations. Deep Learning proved that AI could "see" and categorize images, and now large language models (LLMs) like ChatGPT, Gemini, and Claude have allowed AI to become capable of writing, coding, and creating works of art. (Full disclosure: we asked Gemini to give us a summary of the history of AI to write this paragraph.)

We are now seeing the shift in healthcare to using AI. AI diagnostic tools appear to have important use cases in areas such as radiology, cancer care, and cardiovascular diseases. AI programs have automated the analysis of genetic data, and might lead the way to making personalized medicine and increasing the efficacy of screening for genetic diseases. And wearable tech has evolved to clinical-grade monitors that alert healthcare providers to subtle health changes in real-time.

Patients may benefit more, in terms of looking up background information before a visit. On the other hand, an experienced physician (and those they treat) likely still offer greater diagnostic and therapeutic acumen by fitting the history and physical into a context of social background, disease epidemiology, and family dynamics. How does this shape patient perceptions, treatment outcomes, access and health policy?<sup>1</sup> All interesting questions. In the real-world interface of medicine and patient care, the benefits are emerging but not perfectly clear: an ideal opportunity for this DJPH theme issue.

Our guest editors for this issue are Weisong Shi, PhD, Alumni Distinguished Professor, IEEE Fellow, Leader of the Connected and Autonomous Research (CAR) Laboratory, and Chair, Department of Computer and Information Sciences, and Yixiang Deng, PhD, Assistant Professor, Department of Computer & Information Science, both at the University of Delaware. They have curated an excellent survey of how AI and Big Data are being used in the health sciences in Delaware, and what we may look forward to in the future.

## References

1. Matheny, M. E., Goldsack, J. C., Saria, S., Shah, N. H., Gerhart, J., Cohen, I. G., . . . Horvitz, E. (2025, February). Artificial intelligence in health and health care: Priorities for action. *Health Affairs*, 44(2), 163–170. <https://doi.org/10.1377/hlthaff.2024.01003> PubMed

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