

Ethics, Medicine, and Artificial Intelligence

Defense Health Board

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“More and more the tendency is towards the use of mechanical aids to diagnosis; nevertheless, the five senses of the doctor do still, and must always, play the preponderating part in the examination of the sick patient. Careful observation can never be replaced by the tests of the laboratory. The good physician now or in the future will never be a diagnostic robot.”

Scottish surgeon Sir William Arbuthnot-Lane (Lane, 1936)

The Story So Far

- Bias
- Safety
- Transparency
- Explainability
- Accountability
- Responsibility
- Governance

The Hard Problem

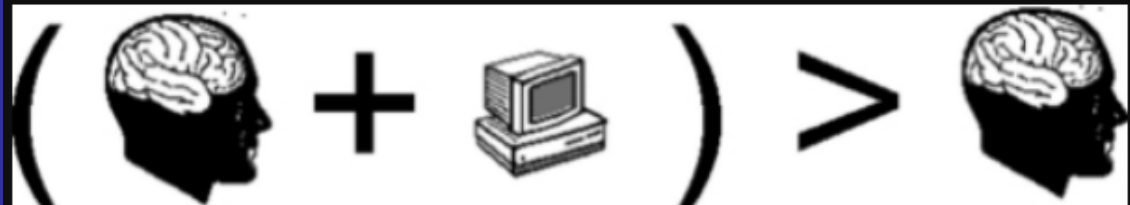
- The Parfait System: no bias, no confabulation, explainable to the satisfaction of all, designed by committed and responsible coders, manufactured by corporations dedicated to the common good ...
- Affordable, reliable, easy to use
- Consistently more accurate than human experts

Hurray ... or uh-oh?

- The data and information scraped from electronic health records, registries, etc. and used to train the Parfait System thus guides practice – and eventually replaces the data and information used to train future systems
- Future systems are thus trained on data and information derived from practice shaped or guided by computers
- Which data and information is used to train new systems
- Progress, or the systematic replacement of a store of human-acquired knowledge by machine intelligence?

In the Meantime...

- “Better than humans” is usually a good thing. Humans + tools are better than humans without tools,
- ...which tend to be imperfect (sometimes because of humans).
- The more we look the more we find uncertainty if not error.
- This analysis and its findings will continue for the foreseeable future.



Source: Charles Friedman

We're Used to Error, Inaccuracy

- His prognosis is poo.
- Mr X was seen by himself in the hospital room today.
- I saw but didn't see the order placed. Thank you.
- I asked that her house Mr. H doing prior to come to the hospital.
- His current PPS 505% is more related to ...
- Seen by Neurology, unable to do MRI due to penile metal prosthesis. Still minimally arousable.
- He initially presented by EMS, who report they found him on the side of the road stating he wished to diet.
- ... is an 82 y.o. male admitted on 1/2/3 with a primary diagnosis of No primary diagnosis.

To Do

- Comparative outcomes and safety analysis research
- Consider health-ethics-and-informatics swat teams (HEISTs).
- Manage intellectual property issues.
- Manage privacy issues.
- Ensure – indeed, require – sharing.

Additional DOD Issues

- Familiar adoption issues
- Failure to adopt as potentially blameworthy
- Implementation as research
- EHR capacity, vendors, oversight
- Education

Standards

- Value-driven standards support ethically optimized products, processes, and actions
- They are public, transparent, and driven by transparent processes
- See <https://www.hl7.org/>,
<https://www.iso.org/standards.html>,
<https://www.ieee.org/standards/#>

<https://pubmed.ncbi.nlm.nih.gov/?term=kenneth+W+goodman>

- AI and Big Data Resources, <https://bioethics.miami.edu/informatics/computing-triage/ai-and-big-data-resources/index.html>
- WHO, Ethics and governance of artificial intelligence for health: Guidance on large multi-modal models, Geneva 2023, <https://www.who.int/publications/i/item/9789240084759>
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Thank you.