From code to clinic: theory and practice for artificial intelligence prediction algorithms

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STELLINGEN

behorende bij het proefschrift getiteld

From code to clinic: Theory and practice for artificial intelligence prediction algorithms

1. Clinicians should be made aware of the quality assessment steps that are required to implement a prediction algorithm in their healthcare practice. *(this thesis)*
2. High discriminatory ability of a prediction algorithm is not sufficient to claim clinical impact. *(this thesis)*
3. When permissible, inherently interpretable algorithms should be preferred over black-box algorithms in a domain where the demand for transparency and trustworthiness is high. *(this thesis)*
4. Algorithms focused on causality that yield high explanatory power do not automatically produce good predictions and vice versa. *(this thesis)*
5. Learned processes do not produce definite results. If they did, then they cannot be unlearned. *(Alan Turing, 1950)*
6. People's behavior is incongruent with their understanding of probability. *(Nassim Nicholas Taleb, 2001)*
7. Focusing too much on overly broad notions of generalizability for healthcare prediction algorithms may ignore situations where algorithms can provide clinical benefits. *(Joseph Futoma et al., 2020)*
8. A prediction model can never truly be validated due to the expected differences across settings and time. *(Ben van Calster et al., 2023 and Matthew Sperrin et al., 2022)*
9. Artificial intelligence may appear magical. As such, we can look towards the wizarding world for advice: "Never trust anything that can think for itself if you can't see where it keeps its brain." *(J.K. Rowling, 1998)*
10. Lady Lovelace's take on the novelty of computing systems still holds true 180 years later: "In considering any new subject, there is frequently a tendency, first, to overrate what we find to be already interesting or remarkable; and, secondly, by a sort of natural reaction, to undervalue the true state of the case, when we discover that our notions have surpassed those that were really tenable." *(Ada Lovelace, 1843)*