

Propositions belonging to Interwoven Waves

*Enhancing the Scalability and Robustness of
Wi-Fi Channel State Information for Human Activity Recognition*

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Thesis Propositions

1. Despite the drawbacks of *parasitic sensing*, it is the most viable approach in informal healthcare scenarios, especially when no communication is needed (Part I).
2. Due to the sensitivity of radio wave-based sensing, it is important to implement protocols and ethical considerations for this type of data, particularly before widescale testing and adoption (Chapter 5).
3. Accuracy alone is no longer the main performance indicator for evaluating AI in healthcare; instead, the focus should also be on scalability, resource optimization, and explainability to prevent *Petri-dish AI* (Chapter 7).
4. The most scalable, robust, and sustainable approach to monitor and support informal healthcare with radio wave-based sensing solutions in the future is the consensus-based approach (Chapter 9).

Academic Propositions

5. The current usage of AI is unsustainable; AI should be designed in a more modular manner, similar to a screwdriver with interchangeable components, to enhance flexibility, maintainability, and adaptability.
6. Research should focus more on explainable AI, as it is essential for building the trust between AI, patients, and (informal) caregivers needed to adopt AI-based solutions in real life.
7. The way forward for informal healthcare is to combine wearable technologies with radio wave-based sensing solutions, as both serve complementary rather than competing features.
8. The future of data-driven research lies in open access data with verified ground truth, ensuring that research datasets are freely available to all, thus accelerating scientific progress and innovation.

General Propositions

9. "*All that is gold does not glitter*" (J.R.R. Tolkien) also applies to the academic world.
10. True learning comes from picking yourself up after a stumble.

These propositions have been deemed defensible by prof.dr.ir. G.J. Heijenk and dr. Ö. Durmaz.