Universität Bayreuth
Professuren Wirtschaftsinformatik
Prof. Dr. Eymann,
Prof. Dr. Röglinger,
Prof. Dr. Strüker

Ansprechpartner
Lehrkoordination WI

Telefon

E-Mail
wi-lehrkoordination@uni-bayreuth.de

Bachelor's Thesis

Human-AI-interaction in medical decision making

The rise of artificial intelligence (AI) applications drives innovation in many areas of today's society revolutionizing the way we work, behave, and make decisions. Particularly, the medical domain is said to significantly benefit from AI technology creating a true hype around AI-enabled applications. Prominent use cases can be found in medical decision making including medical diagnosis and treatment. AI applications can support physicians in the assessment of patients and augment the discovery of diseases by analyzing data from medical examinations such as medical images or medical examinations. However, their deployment in real-world settings is challenging. The AI application's integration into the medical process faces several issues. For instance, powerful AI applications for decision support may lead to over-reliance on the AI's decision (i.e., diagnosis) by the doctor and a reduced commitment in the own examination activity. At worst, doctors potentially oversee conspicuous positive cases harming patients' life. To mitigate the issues arising from human-AI interaction in medical decision making, it is important to understand the optimal implementation design of AI-enabled decision support systems within the medical process.

The thesis' subject will be the systematic analysis of AI-enabled decision support systems with respect to the human-AI-interaction. Besides analyzing the role of (human) bias, this thesis should focus on evaluating which factors influence the decision making of human-AI applications in medical decision processes.

Recommended literature:

- Amershi S, Inkpen K, Teevan J, Kikin-Gil R, Horvitz E, Weld D, Vorvoreanu M, Fourney A, Nushi B, Collisson P, Suh J, Iqbal S, Bennett PN (2019) Guidelines for Human-AI Interaction. In: Brewster S, Fitzpatrick G, Cox A, Kostakos V (eds) Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems - CHI '19. ACM Press, New York, New York, USA, pp 1–13
- Blumenthal-Barby J, Krieger H (2015) Cognitive biases and heuristics in medical decision making: a critical review using a systematic search strategy. Medical Decision Making 35:539–557. https://doi.org/10.1177/0272989X14547740
- Elston DM (2020) Confirmation bias in medical decision-making. J Am Acad Dermatol 82:572. https://doi.org/10.1016/j.jaad.2019.06.1286
- Roselli D, Matthews J, Talagala N (2019) Managing bias in AI. In: Companion Proceedings of The 2019 World Wide Web Conference, pp 539-544

Supervisor: Luis Lämmermann, M. Sc.

The thesis can be written either in **English** or **German** language.