

Master Research Proposal

Topic Using engagement data of digital health applications to predict health outcomes

Background:

Digital health applications have been on the rise in recent years, particularly in the management of chronic disease, as these patient-centric applications can extend care into patients' homes and provide self-management assistance crucial to improving patient outcomes [1]. While there are countless remote care solutions that improve access for patients, even the best tools are worthless if they go unused.

This master thesis will be conducted together with a startup, Veta Health. This is a digital health company that delivers remote care solutions that help patients with chronic conditions achieve better health outcomes from the comfort of their homes. Veta Health maximizes patient engagement and participation in its programs through the delivery of a personalized experience. In addition to the software solution (Prosper), Veta Health deploys care teams to connect with the patient directly when an intervention is required.

Higher engagement leads to increased adherence, which directly affects patients' health outcomes. Veta Health seeks to better understand how engagement patterns with its health application, Prosper, can potentially predict patients' health outcomes.

Research Questions (to be further defined and refined):

- How can current methods in ML and AI be used to classify and predict health outcomes based on engagement data

The proposed work consists of the following parts:

- Literature research: identify relevant work resulting in a comprehensive overview about existing studies on user engagement and health outcomes prediction with digital health applications
- Development of different ML or AI models to identify the relationship between engagement data and health outcomes
- Evaluation of the implemented models regarding their accuracy on a real-world dataset
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The thesis must contain a detailed description of all developed and used algorithms, as well as a profound result evaluation and discussion. The implemented code has to be documented and provided. An extended research on literature, existing patents, and related work in the corresponding areas has to be performed.

Supervisors:

Anastasiya Zakreuskaya (anastasiya.zakreuskaya@fau.de)

References:

[1] Grady PA, Gough LL. Self-management: A comprehensive approach to management of chronic conditions. Am J Public Health. 2014 Aug;104(8):e25–e31. doi: 10.2105/ajph.2014.302041.

Supervisors:

Anastasiya Zakreuskaya (anastasiya.zakreuskaya@fau.de)