

Exploring Data-Driven Approaches to Support Depression Therapy

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ABSTRACT

Depression is a prevalent problem in today's society and one of the world's most common mental health illnesses. We envision that data-driven approaches can support patients and therapists. There is a huge potential for generating a high-level understanding of the user's state of mind by continuously tracking the user via mobile sensing. While this can accelerate the therapy, constant user tracking raises a number of ethical and privacy concerns. Thus, consolidating the benefits and risk is important to ensure that the benefits of user tracking will outweigh the risks for patients.

1 MOTIVATION

Our research evolves around technology to support mental health with a focus on supporting users suffering from or prone to depression. This involves enabling technical support to self-manage depressive symptoms. We investigate the potential of mobile sensing as a method to leverage patient data on user behavior and context information [4, 8]. Such systems use context-aware approaches for wellbeing, e.g., Bosems and van Sinderen [1], predict depression or severity based on mobile sensing data [3, 5, 7], or providing context-sensitive intervention supporting depressive symptoms [2, 9]. As a next step, we are working towards a more holistic context and symptom-aware system for depression. We propose novel data-driven approaches to support therapists in delivering more effective treatment using tracking data and mobile sensing.

2 OUR VISION

We envision that mobile sensing can be leveraged to provide a context and symptom-aware system for depression in the future to reliably offer personalized support to the individual user and their mental condition in depression treatment. Recent publications already present promising results to connect mobile sensing data to depression-related symptoms and aim to use such data for recovery on an individual level to support users. However, to the best of our knowledge, no study has been conducted to use patient tracking data in a therapeutic context, to support the therapists in treatment. As the crucial information in depression therapy relies on the patient's mental state, the use of mobile sensing data alone is not enough to support or predict depression. It is important to note that the aim is to support therapists but not to replace them as talking to a therapist is an essential pillar in the process [6]. Therefore we focus on supporting depression therapy with technology.

Incorporating patient tracking data into therapy can support monitoring symptoms, recognizing early warning signs of depression, identifying possible triggers, learning about unhelpful user behavior patterns, and supporting helpful routines that can positively contribute to an improvement of user wellbeing.

3 CURRENT INVESTIGATION

We propose to incorporate patient tracking data into therapy as a data-driven approach to provide therapists with additional and objective patient information for treatment. As a first step, we talked to therapists as experts in the field, to understand the illness and information requirements for therapy to identify relevant data and how to visualize them to design a system specifically for therapy purposes. As a consequence of using personal mobile sensing data of patients in therapy, the data needs to be shared with a therapist. This is why we not only investigate how this data can be used by patients and therapists but also investigate privacy concerns about how to share such personal data.

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