

Mental State, Mood, and Emotion (Part 2)

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The April–June 2022 Special Issue on Mental State, Mood, and Emotion presented a collection of articles that discussed novel approaches, opportunities, and challenges for developing effective, ethical, and trustworthy pervasive computing technology for mental health and emotion. Due to the very high number of submissions to the special issue, we present here a second selection of accepted articles which consider both the technical and contextual factors that will impact the deployment of pervasive technologies in mental healthcare.

The scale and significance of the challenge of providing mental healthcare at a population level has prompted many researchers in pervasive computing to consider how they might contribute to addressing this problem. However, we must recognize that we are at the beginning of this journey, and much work is required before the potential benefits of these systems are realized.

The need for a multidisciplinary and multifaceted approach is illustrated by the range of contribution types in this special issue, ranging from evaluations of deep learning algorithms for recognizing mood states (April–June issue), to qualitative studies on the opportunities for the use of pervasive technology for mental health (this issue).

Broadly, the additional articles in this issue explore the context of mental health for the deployment of pervasive technologies, envisioning future applications, and issues surrounding deployment.

In [A1], Liu et al. examine the feasibility of a novel system that uses multimodal image, speech, and natural language processing algorithms in order to support the conduct of self-administered mental status examinations.

In [A2], Bowman et al. discuss fundamental research directions for context-aware and conversation-based interventions involving clinicians. A particular focus is

on planning future intervention and conversations with patients.

Finally, in [A3], Doherty et al. discuss different dimensions and principles of the design of digital or digital behavior intervention through the analysis of a mobile health technology platform to support the practice of mental healthcare in Danish primary care.

While it can be argued that pervasive technologies have the potential to contribute to increasing access to care in low- and middle-income countries, where many people lack access to effective treatment, the bulk of the research literature concerns development and deployment in high-income countries. In [A4], Gutierrez et al. present an interview-based study with mental health professionals in Mexico, and discusses the challenges and opportunities facing deployment of pervasive technologies in this context.

Across the special issue as a whole, we get a sense of the scale of the work required to realize the potential of technology in this context, focusing not only on the development and improvement of sensing approaches, but in their use to address genuine clinical needs and contribute to evidence-based treatment, the interaction design of engaging and usable systems, and the many obstacles to successful real-world deployment. At every step of this process, we must also consider ethical issues, and particularly the potential abuse of mental health-related sensing technologies. Developing safe and effective pervasive mental health systems will require input from technologists, human–computer interaction researchers, clinical researchers, mental health professionals, and, most importantly, end users.

APPENDIX RELATED ARTICLES

[A1] Y. Liu et al., “aiMSE: Toward an AI-based online mental status examination,” *IEEE Pervasive Comput.*, vol. 21, no. 4, pp. 46–54, Oct.–Dec. 2022, doi: [10.1109/MPRV.2022.3172419](https://doi.org/10.1109/MPRV.2022.3172419).

- [A2] R. Bowman et al., "Pervasive therapy: Designing conversation-based interfaces for ecological momentary intervention," *IEEE Pervasive Comput.*, vol. 21, no. 4, pp. 55–63, Oct.–Dec. 2022, doi: [10.1109/MPRV.2022.3209068](https://doi.org/10.1109/MPRV.2022.3209068).
- [A3] K. Doherty, P. Bækgaard, M. H. Nielsen, A. B. R. Jønsson, S. Reventlow, and J. E. Bardram, "Unboxing the clinical health technology deployment," *IEEE Pervasive Comput.*, vol. 21, no. 4, pp. 64–73, Oct.–Dec. 2022, doi: [10.1109/MPRV.2022.3197330](https://doi.org/10.1109/MPRV.2022.3197330).
- [A4] L. J. Gutierrez, L. A. Castro, and O. Banos, "Integrating pervasive technologies into mental health services: A qualitative study in Mexico," *IEEE Pervasive Comput.*, vol. 21, no. 4, pp. 74–82, Oct.–Dec. 2022, doi: [10.1109/MPRV.2022.3172123](https://doi.org/10.1109/MPRV.2022.3172123).

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