

Special Issue on
Probabilistic Models for Mental Health Applications

CALL FOR PAPERS

Mental illness has emerged as an alarming and increasing trend in our society. There are more than 200 classified forms of mental illness. Some of the more common disorders include clinical depression, bipolar disorder, dementia, schizophrenia, and anxiety disorders. Mental illness transcends generations and may develop at any stage of life, thus posing a big problem for societies and affecting quality of life for patients and their immediate families alike. Patient monitoring is an expensive but critical requirement for effective mental health care.

The automatic diagnosis of human behaviors based on generalizable and explainable probabilistic methods, such as explainable artificial intelligence (AI) and interpretable deep learning, is an area gaining traction in many fields of engineering. These methods play a crucial role in allowing health care providers to learn new phenotypes of mental conditions, understand the causes and triggers of mental illnesses, and create new therapies for treatment. In addition, focusing on methods which are generalizable could lead to the robust processing of data from voice, gesture, and physiological features, as well as enabling deep learning representations that are robust in unseen and noisy real-world environmental conditions. These factors are important steps forward for AI-based mental illness diagnosis. Ultimately, automatic probabilistic tools, including correlational analysis, feature importance, and feature learning, can reveal insights into human behavior and mental illness that have not previously been observed, help quantify the behavioral phenotyping of mental conditions in a mathematically rigorous way, and lead to the more accurate diagnosis of mental illnesses.

This Special Issue aims to publish original research in the area of generalizable and explainable probabilistic tools for mental health monitoring. Contributions which establish rigorous automatic procedures that use automatically computed behavior characteristics are particularly welcome. Such methods and procedures involve the statistical analysis and diagnosis of different mental health conditions, the robust modeling of such models in novel and unseen environments, and the computational analysis of human behaviors which relate to mental health. Review articles which summarize the state of the art and recent advances in these topics are also welcome.

Potential topics include but are not limited to the following:

- ▶ Statistical and computational analysis and understanding of multiple modalities such as speech, gesture and physiological behaviors, and their relation to mental illnesses
- ▶ Mental health diagnostic procedures based on standardized automatic behavior measurements
- ▶ Explainable deep learning behavioral representations which can be used to analyze mental illnesses using complex behavioral relations
- ▶ Computational procedures which evaluate the interpretability of massively automated biomarkers from a mental illness perspective
- ▶ Robust models based on biomarkers for previously unseen conditions and environments
- ▶ Standards in mathematically and rigorously defining complex human behaviors using automatic methods
- ▶ Standardized procedures for the automatic computation of behavioral cues which can predict mental illnesses
- ▶ Probabilistic tools to evaluate mental illnesses based on behavioral cues on a massive scale

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/jhe/cmmhe/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Guest Editor

Andreas Tsiartas, SRI International,
Menlo Park, USA
andreas.tsiartas@sri.com

Guest Editors

Panayiotis Georgiou, Apple Inc.,
Cupertino, USA
georgiou@apple.com

Dimitra Vergyri, SRI International,
Menlo Park, USA
dverg@speech.sri.com

Nassos Katsamanis, ATHENA R.C.,
Athens, Greece
nkatsam@ilsp.gr

Theodora Chaspari, Texas A&M
University, College Station, USA
chaspari@tamu.edu

Adam D. Brown, New York University
School of Medicine, New York, USA
adam.brown@nyumc.org

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