

Title:

From Predictive Models to agent-based Systems – Progress, Perils and Perspectives

Abstract:

This presentation provides an overview of the research, infrastructure, and translational activities at the Institute of Machine Learning in Medicine (focus area psychiatry) at the University of Münster. It highlights current projects spanning classical machine learning, large language models (LLMs), expert systems, and emerging agent-based AI systems in medicine. Examples include medical image analysis, digital twins, automated clinical documentation, pharmaceutical expert systems, and AI-supported interaction with patient records and medical guidelines. In addition, the talk presents the institute's work on AI software infrastructure, model optimization, evaluation, and quality assurance, with a particular focus on generalization, safety, bias, and clinical applicability. The presentation further discusses the opportunities and challenges associated with deploying advanced AI systems in healthcare, including hallucinations, uncertainty estimation, security, and governance. Overall, the talk aims to provide a broad overview of how the institute combines methodological AI research with real-world clinical translation and responsible AI deployment in medicine and psychiatry.