HEALTH INFORMATICS SEMINAR SERIES

"Designing the MDScan Framework for Mental Health Screening"

Presented by:

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Abstract: Mental health disorders, such as depression, anxiety, and bipolar disorder, affect approximately one billion people worldwide, costing the global economy trillions of dollars in disability payments and lost productivity. A significant proportion of individuals with mental disorders do not receive treatment or the quality of care they need, often due to resource shortages. One psychiatrist needs to take care of around 100,000 people in many countries. Shortage of mental health professionals resulting in long wait times, social stigma, and fragmental service delivery. Mental healthcare professionals need more innovative tools to help screen potential patients in a short time and effective way. This study attempts to address this growing mental health problem by using a computational design science paradigm to develop a new explainable AI (XAI) framework (as an artifact) for helping to diagnose, monitor, and treat mental disorders. With designing the Psikometrist.com platform, we collect psychological data with the SCL-90-R instrument, we built an explainable AI framework that can help experts diagnose and monitor ten different mental disorders. A field experiment with N observations shows that our approach outperformed traditional approaches with low interpretability but high predictive accuracy, while simultaneously identifying mental disorder-related features that are not available from those models.

About the Speaker: Dr. Salih Tutun is a faculty member of Olin Business School at Washington University in St Louis. He focused on data-driven business decision-making and digital technologies for understanding how human behaviors and interactions affect critical decisions in business. His research interests lie broadly at the intersection of information systems, network science, machine learning, and explainable AI, driven by applications in mental healthcare, defense, agriculture, energy, and marketing. His research in Networked Pattern Recognition is ranked by National News Hits and has over 9 million clicks in two months. This research is mentioned by more than 40 global news organizations, published on the front cover of Industrial and Systems Engineering at Work magazine, and recognized as a finalist at the Institute of Industrial and Systems Engineering Cup competitions in 2020 and 2021. Dr. Tutun has also received the Reid Teaching Awards in 2021 and 2022 from Olin Business School.

Tuesday, December 6   12:00 pm – 1:00 pm (CST)

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