Contribution ID: **104** Type: **Poster**

UNCOVERING THE LATENT DYNAMICS OF SOCIAL MEDIA ADDICTION USING A HYBRID HMM-RBM FRAMEWORK

Social media addiction is an escalating public health concern, yet its temporal dynamics remain poorly understood. This study proposes a novel hybrid machine learning framework combining **Hidden Markov Models** (HMMs) and **Restricted Boltzmann Machines** (RBMs) to elucidate the latent behavioral patterns underlying social media addiction. The HMM models the temporal evolution of user states—ranging from casual to habitual use to addiction—by analyzing observable behaviors such as posting frequency and interaction patterns. Concurrently, the RBM extracts latent features from complex, high-dimensional social media data, identifying critical patterns such as emotional content or temporal posting trends that signal addiction risk. By integrating RBM-derived features into the HMM, the framework enhances the accuracy of state predictions, capturing nuanced transitions in user behaviour. This hybrid approach not only reveals the dynamic pathways of social media addiction but also enables early identification of at-risk individuals, facilitating targeted interventions for healthier digital engagement.

Keywords: Social media addiction, Hidden Markov Model, Restricted Boltzmann Machine, Machine learning, Behavioural dynamics

Authors: Mr THOTA, Pavan Kumar (Department of Data Analytics and Mathematical Sciences, JAIN (Deemed--to-be) University); Mr T, Janakiraman (Department of Data Analytics and Mathematical Sciences, JAIN (Deemed--to-be) University); Dr M A, Ghouse Basha (Department of Data Analytics and Mathematical Sciences)

Presenter: Mr T, Janakiraman (Department of Data Analytics and Mathematical Sciences, JAIN (Deemed--to-be) University)

Track Classification: Mathematical & Data Sciences