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Beyond Workload: Unveiling Factors Affecting IT Professionals' Mental Health through Machine Learning

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Mental health concerns plague the IT industry, yet early detection remains challenging, especially in densely populated regions like South Asia (Mahroof et al., 2020). Frontline workers in this sector grapple with the challenges of the COVID-19 pandemic and the constant pace of technological change, potentially leading to a significant burden on mental health (Cheng et al., 2022). While traditional diagnostic methods focus on self-reporting, clinical evaluations, and peer observations, these do not provide the accuracy and consistency needed for timely interventions (Miah et al., 2017). While past literature utilized various datasets and methodologies, including the Open Source Mental Illness (OSMI) dataset, a comprehensive analysis encompassing a decade of survey data remains lacking (Islam et al., 2019).

This study leverages a comprehensive, decade-long dataset from the OSMI survey (2014-2023) data. We explore potential factors, including help-seeking behaviors, organizational support structures, neuroticism levels, and social media usage patterns. Self-Determination Theory (SDT) by Ryan and Deci (2000) offers a valuable lens for understanding the factors influencing mental health in IT professionals. Steps such as data pre-processing, imbalanced learning, and outlier analysis are completed. Further, we will employ machine learning models like logistic regression, random forest, and support vector machines (SVM) to analyze the impact of help-seeking behaviors, organizational support, neuroticism levels, and social media usage patterns on mental health outcomes. We also plan to deploy deep learning algorithms for early risk identification, facilitating timely intervention strategies. This research will offer novel contributions and findings to inform targeted interventions and organizational policies to promote mental well-being within IT, potentially including promoting help-seeking behavior, fostering work-life balance, and managing workload effectively. By bridging the early detection gap, this research can significantly improve mental health outcomes for IT professionals.

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