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A Machine Learning Approach for the Early Detection of Mental Health Conditions

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Abstract: *Mental health disorders pose a significant global challenge, affecting individuals across all demographics and placing substantial burdens on healthcare systems. Timely identification and intervention are crucial for effective treatment and improved patient outcomes. This study explores the application of supervised machine learning techniques for the early prediction of mental health conditions, with particular emphasis on detecting early signs of depression. A diverse dataset encompassing various age groups, occupations, and genders was utilized, incorporating demographic details, clinical backgrounds, and behavioral attributes. Algorithms including Gradient Boosting, Random Forest, and model stacking were employed to analyze the data. The proposed models demonstrated predictive accuracies exceeding 90%, highlighting their potential as valuable tools for early risk assessment and targeted mental health interventions.*

Keywords: Mental Health, Machine Learning, Depression Prediction ,Supervised Learning,Gradient Boosting Random Forest, Model Stacking, Behavioral Analysis, Clinical Data, Demographics, Risk Assessment, Predictive Modeling

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