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Diagnosis of Mental Health Issues in Social Forums Using Semantic Biomarkers, Markovian Models and Artificial Intelligence

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ABSTRACT

Our emotional and social well-being is largely governed by our mental health condition. As per a National Institute of Health 2016 statistic, one in five Americans suffer some form of mental health problem. While different branches of medicine and psychology have conducted numerous studies, the approach in this work is unique in that it uses semantic markers deduced from behavioral traits in a person's social interaction. Two classes of traits, one "Behavioral" and the other "Associative" are automatically inferred to construct a Markov model of mental state unique to the particular individual. Inspired by celestial markers in the field of Astronomy, where certain objects (such as the "Pole Star") have been used as accurate navigational guides as well as by GPS, a technique of computing distance between semantic behavioral descriptors and reference words called "Anchors" has been introduced. Subsequently, the most likely sequence of behavioral evolution over time for a hypothetical "Normal" and "Abnormal" state is computed using dynamic programming techniques. Comparing appropriate metrics of these two sequences

not only allows the accurate deduction of mental health but also the affliction severity! Results demonstrate the efficiency of the developed techniques thereby uncovering a rich set of topics for future study.

Keywords: Mental Health, Social Interaction