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Fuzzy Logic System for Determining Emotional and Mental States in R

One in four people worldwide will experience a mental disorder at some point in their lives, primarily related to anxiety, sleep disorders, or depression. In this work a fuzzy algorithm has been developed in R to determine the emotional and mental state of patients. In particular, we focus on measuring manic symptoms. For this task, a total of 11 fuzzy variables are defined according to the Young scale: hyperactivity, euphoria, sexual impulse, sleep, irritability, verbal expression, thought process disorder, formal thought disorders, aggressiveness, appearance, and awareness of illness. First, we choose the real variable (measurable by sensors) that is associated with each fuzzy variable. For example, the fuzzy variable 'hyperactivity'can be associated with the real variable number of steps measured by an accelerometer. The fuzzy variable 'sleep'can be associated with the real variables produced by sound and motion sensors. For each fuzzy set, category of the variable, there is an associated membership function for its elements, which indicates to what extent the element is part of that fuzzy set. The most typical forms of membership functions trapezoidal, linear and curved are used. The results obtained show that the use of fuzzy classification systems improves the understanding of the patient compared to traditional classification methods that use Boolean systems.

¿Presentas la comunicación a premio?

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