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AN INVESTIGATION OF DECISION ANALYTIC METHODOLOGIES FOR STRESS IDENTIFICATION

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Abstract- In modern society, more and more people are suffering from some type of stress. Monitoring and timely detecting of stress level will be very valuable for the person to take counter measures. In this paper, we investigate the use of decision analytics methodologies to detect stress. We present a new feature selection method based on the principal component analysis (PCA), compare three feature selection methods, and evaluate five information fusion methods for stress detection. A driving stress data set created by the MIT Media lab is used to evaluate the relative performance of these methods. Our study show that the PCA can not only reduce the needed number of features from 22 to five, but also the number of sensors used from five to two and it only uses one type of sensor, thus increasing the application usability. The selected features can be used to quickly detect stress level with good accuracy (78.94%), if support vector machine fusion method is used.

Index terms: Stress detection, physiological sensors, feature selection, information fusion, classification.