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ML-TUTORIAL

## **Detecting stress anxiety depression from voice tone and text responses**

Summary on research papers

### **Prediction of Depression, Anxiety and Stress Levels Using DASS-42**

**Authors:** Srinath K S et al.

This research investigates the application of machine learning (ML) models to predict the levels of depression, anxiety, and stress using data collected from the DASS-42 questionnaire. The dataset consists of 39,776 responses that include 42 questions—14 each on depression, anxiety, and stress—along with demographic data. The paper implements two classification models: Support Vector Machine (SVM) and Logistic Regression (LR). SVM is configured with a Radial Basis Function (RBF) kernel and adapted for multi-class classification, while LR uses a multinomial approach. Following extensive training and testing, Logistic Regression demonstrated slightly better accuracy, achieving 98.15% for depression, 98.05% for anxiety, and 97.45% for stress. The study highlights that mental health issues are prevalent yet underdiagnosed, and that early detection using computational methods can lead to more timely intervention. The models rely on psychometric scores and aim to classify the severity level (normal, mild, moderate, severe, and extremely severe) for each mental health category. It was found that ML models significantly reduce the need for manual scoring and interpretation. Moreover, the study identifies that external factors such as environment and lifestyle could influence mental states, adding a real-world complexity to data modeling. The authors note that while the current dataset is large and effective for initial modeling, further work is needed to incorporate more diverse data from different populations to improve model generalizability. The study concludes by advocating for machine learning as a powerful tool in psychological diagnostics and preventive healthcare systems.