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| **Sr No.**  **LITERATURE SURVEY OF STRESS DETECTION MACHINE USING ML** | **Title of paper** | **Name of Authors** | **Published Year** | **Remarks** |
| 1. | Automatic Stress Detection Using Wearable Sensors and Machine Learning | Shruti Gedam  Sanchita Paul | 2020 | 1. Using low-cost sensors and self-made devices. 2. All the developed system first extracted the features using Heart rate, Heart rate variability and skin conductance. 3. Algorithm: Support vector machine, Random forest and K-Nearest Neighbor. 4. Limitations: uses of multiple features correlated with each other which increases computation time some of them used costly commercial devices where low-cost sensors can be used. |
| 2. | A Decision Tree Optimised SVM Model for Stress Detecting Using Biosignals | Alana Paul Cruz, Aravind Pradeep, Kavali Riya Shivasankar and Krishnaveni K.S. | 2020 | 1. The paper discussed SVM model to detect stress using ECG as the biosignals and EDR(ECG Derived Respiration), QT Interval and RR(Respiration Rate). 2. For training of our model we used Physionet’s “drivedb” database. 3. Algorithm: Support Vector Machine using decision trees. 4. For training and validation, the Classification Learner App was used which was from MATLAB’s Machine Statistics and Machine Learning Toolbox, used to find the best SVM model and the conclusion drawn was that Cubic SVM has higher accuracy than Linear and Quadratic SVM. 5. Then kernel function returns Gaussian kernel which shows higher accuracy through confusion matrix .So Cubic SVM model with Gaussian Kernel surpassed the other SVM model in accuracy. |
| 3. | Stress Detection with Machine Learning and Deep Learning using Multimodal Physiological Data | Pramod Bobade and Vani M. | 2020 | 1. This paper proposes different machine learning and deep learning techniques for stress detection on individuals using multimodal dataset recorded from wearable physiological and motion sensors. 2. Data of sensor modalities like three- axis acceleration(ACC), electrocardiogram(ECG), blood volume pulse(BVP), body temperature(TEMP), respiration(RESP), electromyogram(EMG) and electrodermal activity(EDA) are for three physiological conditions- amusement, neutral and stress states, are taken from WESAD dataset. 3. Algorithm: K-Nearest Neighbor, Linear Discriminant Analysis, Random Forest, Decision Tree, AdaBoost and Kernel Support Vector Machine. During the study, by using machine learning techniques, accuracies of upto 81.65% and 93.20% are achieved for three-class and binary classification respectively and by deep learning it’s accuracy upto 84.32% and 95.21% respectively. Leave-One-Subject-Out(LOSO) cross-validation procedure was used for evaluation of all the models. 4. Methodology: The RespiBan measured ACC, RESP, ECG, EDA, EMG, and TEMP. All signals were sampled at 700Hz. The E4 measured TEMP, EDA, ACC, and BVP sampled at 4Hz, 32Hz, and 64Hz respectively. The Dataset is organized so that each subject has a folder(SX, where X is subject ID),Ex:  * SX\_readme.txt * SX\_quest.csv * SX\_respiban.txt * SX\_E4\_Data.zip * SX.pkl. |
| 4. | Machine Learning and IoT for Prediction and Detection of Stress | Mr. Purnendu Shekhar Pandey | 2017 | 1. To detect the stress beforehand we have used heart beat rate as one of the parameters. IoT and Machine Learning is used to alarm the situation when the person is in risk. 2. According to National Institute of Health, infants have 100 beats per minute, and childrens have 60-100 beats per minute. Heart rate is directly proportional to fitness. Average individual have heart rate fluctuate between 60-80bpm. 3. A person can have a maximum heart rate of 220-his/her age, if heart rate is less than this then he needs to exercise harder. 4. Components used: Node MCU, Pulse Sensor, Server and Program Flow. 5. Algorithms: Logistic Regression and Support Vector Machine. Confusion matrix also known as error matrix is used for visualizing the performance of an algorithm then we get the train and test accuracy as 100%, 97% and 66%, 68% for Logistic Regression and SVM . |
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**OUTPUT OF STRESS DETECTION MACHINE USING MACHINE LEARNING AND PYTHON**

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