

Sr. No	Title of paper	Name of Authors	Published year	Remarks
1.	Stress detection using deep neural networks	Russell Li and Zhandong Liu	2020	<p>The need for manually created features is a drawback of conventional machine learning techniques. If features are incorrectly identified, accuracy declines. To address this deficiency, we developed two deep neural networks</p> <p>1-dimensional (1D) convolutional neural network (chest worn sensor), it achieved 99.80% and 99.55% accuracy and multilayer perceptron neural network(wrist worn sensor), it achieved 99.65% and 98.38% accuracy.</p>
2.	Machine Learning and IoT for Prediction and Detection of Stress.	Mr.Purnendu Shekhar Pandey BML	2017	<p>Algorithms: Logistic Regression. Support Vector Machine (SVM). VF - 15 algorithm. Naive Bayes. VF - 15 with weights to features.</p> <p>The created prototype uses a person's heart rate variability to determine whether they are under stress.</p>
3.	Stress Detection with Machine Learning and Deep Learning using Multimodal Physiological Data	Pramod Bobade and Vani M.	2020	<p>Algorithms like K-Nearest Neighbour, Linear Discriminant Analysis, Random Forest, Decision Tree, AdaBoost and Kernel Support Vector Machine are used to compare the binary classifications and accuracies for three-class. The used dataset is WESAD dataset contains data from</p>

				multiple physiological modalities like three-axis acceleration (ACC), respiration (RESP), electrodermal activity (EDA), electrocardiogram (ECG), body temperature (TEMP), electromyogram (EMG) and blood volume pulse (BVP) which is not available in other datasets, which makes this work suitable for the detection of stress in human being. This model has achieved the accuracy of 84.32% and 95.21% on a three-class and a binary classification problems
4.	A Decision Tree Optimised SVM Model for Stress Detection using Biosignals	Alana Paul Cruz, Aravind Pradeep, Kavali Riya Sivasankar and Krishnaveni K.S	2020	<p>Test study was directed and substantiated for stress detection using database “drivedb” [Stress Recognition in Automobile Drivers] which was taken from the website Physionet.</p> <p>Initially, the model was trained using Cubic SVM with Gaussian Kernel. For a better model, here we have used Tree Optimised SVM which is a combination of Decision Tree and SVM algorithms. The classification is done using various QRS detection algorithms and other functions in MATLAB.</p>
5.	Automatic Stress Detection Using Wearable Sensors and Machine Learning	Shruti Gedam and Sanchita Paul	2020	In this various methods of stress detection is explained.

				<p>1. It is done by using wearable sensors and IOT devices.</p> <p>2.Stress Detection through Physiological Signals</p> <p>3.Stress Detection Using Microblogs</p> <p>4.Stress Detection Using Videos</p> <p>5.Stress Detection in Various Environments using Wearable Sensors</p> <p>Support vector machine, Random forest and K-Nearest Neighbour are the most effective classification algorithms.</p> <p>The drawback of this study is the extensive usage of several features that were associated with one another by the researchers, which lengthened computation times. Additionally, some of them collected physiological signals using expensive commercial equipment when it was possible to use inexpensive sensors.</p>
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```
In [1]: import numpy as np
import pandas as pd

In [2]: df=pd.read_csv("C:/Users/jetti/OneDrive/Desktop/stress.csv",encoding="latin-1")
df.head()

Out[2]:
```

	subreddit	post_id	sentence_range	text	id	label	confidence	social_timestamp	social_karma	syntax_ari	...	lex_dal_min_pleasantness	lex_dal_max_pleasantness
0	ptsd	8601tu	(15, 20)	He said he had not felt that way before, though.	33181	1	0.8	1521614353	5	1.806818	...	1.000	1.000
1	assistance	8lbrd9	(0, 5)	Hey there I assistance. Not sure if this is th.	2906	0	1.0	1527009817	4	8.428737	...	1.125	1.125
2	ptsd	9ch1zh	(15, 20)	My mom then hit me with the newspaper and it s.	38816	1	0.8	1535935605	2	7.769821	...	1.000	1.000
3	relationships	7r0rpp	[5, 10]	until i met my new boyfriend, he is amazing. h.	239	1	0.8	1516429555	0	2.667768	...	1.000	1.000
4	survivorsabuse	9p2gbc	[0, 5]	October is Domestic Violence Awareness Month a...	1421	1	0.8	1539809005	24	7.564238	...	1.000	1.000

5 rows x 16 columns

24°C Haze

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```
In [3]: df.describe()

Out[3]:
```

	id	label	confidence	social_timestamp	social_karma	syntax_ari	lex_iwvc_WC	lex_iwvc_Analytic	lex_iwvc_Clout	lex_iwvc_Authentic
count	2838.000000	2838.000000	2838.000000	2.838000e+03	2838.000000	2838.000000	2838.000000	2838.000000	2838.000000	2838.000000
mean	13751.999295	0.524313	0.808972	1.518107e+09	18.262156	4.684272	85.996124	35.240941	40.948231	67.044249
std	17340.161897	0.499497	0.177038	1.552209e+07	79.419166	3.316435	32.334887	26.486189	31.587117	32.880544
min	4.000000	0.000000	0.428571	1.483274e+09	0.000000	-6.620000	5.000000	1.000000	1.000000	1.000000
25%	926.250000	0.000000	0.600000	1.509698e+09	2.000000	2.484243	65.000000	12.410000	12.135000	41.070000
50%	1891.500000	1.000000	0.800000	1.517096e+09	5.000000	4.321886	81.000000	29.420000	33.520000	80.710000
75%	25473.750000	1.000000	1.000000	1.530898e+09	10.000000	6.505657	101.000000	55.057500	69.320000	96.180000
max	55757.000000	1.000000	1.542582e+09	1435.000000	24.074231	310.000000	99.000000	99.000000	99.000000	99.000000

8 rows x 112 columns

```
In [4]: df.isnull()

Out[4]:
```

	subreddit	post_id	sentence_range	text	id	label	confidence	social_timestamp	social_karma	syntax_ari	...	lex_dal_min_pleasantness	lex_dal_max_pleasantness
0	False	False	False	False	False	False	False	False	False	False	...	False	False
1	False	False	False	False	False	False	False	False	False	False	...	False	False
2	False	False	False	False	False	False	False	False	False	False	...	False	False
3	False	False	False	False	False	False	False	False	False	False	...	False	False
4	False	False	False	False	False	False	False	False	False	False	...	False	False
...
2833	False	False	False	False	False	False	False	False	False	False	...	False	False
2834	False	False	False	False	False	False	False	False	False	False	...	False	False

24°C Haze


```

Jupyter Untitled Last Checkpoint: an hour ago (autosaved)
Python 3 (ipykernel)

In [7]: from sklearn.feature_extraction.text import CountVectorizer
        from sklearn.model_selection import train_test_split

        x = np.array(df["text"])
        y = np.array(df["label"])

        cv = CountVectorizer()
        X = cv.fit_transform(x)
        print(X)
        xtrain, xtest, ytrain, ytest = train_test_split(X, y, test_size=0.30, random_state=42)

(0, 7517) 1
(0, 3321) 1
(0, 9603) 1
(0, 872) 1
(0, 8486) 1
(0, 3802) 1
(0, 7323) 1
(0, 9054) 1
(0, 303) 1
(0, 9912) 1
(0, 4366) 1
(0, 5109) 1
(0, 5408) 1
(0, 2221) 1
(0, 5196) 1
(0, 3308) 1
(0, 2630) 3
(0, 4249) 1
(0, 5399) 1
(0, 3748) 1
(0, 8466) 1
(0, 6968) 1
(0, 4211) 1
(0, 5253) 1
(0, 1858) 1

```

```

Jupyter Untitled Last Checkpoint: an hour ago (autosaved)
Python 3 (ipykernel)

In [8]: from sklearn.naive_bayes import BernoulliNB
        model = BernoulliNB()
        model.fit(xtrain, ytrain)

Out[8]: BernoulliNB()

In [9]: user = input("Enter the text")
        data = cv.transform([user]).toarray()
        output = model.predict(data)
        print(output)

Enter the textarvind is worry
[1]

In [ ]:
In [ ]:
In [ ]:
In [ ]:
In [ ]:

```

```

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ult","execution_count":2,"data":{"text/plain":"          subreddit post_id
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assistance 8lbrx9          (0, 5)  \n2          ptsd 9chlzh
(15, 20)  \n3          relationships 7rorpp          [5, 10]  \n4

```

```

survivorsofabuse 9p2gbc [0, 5] \n\n
text id label \\n0 He said he had not felt that way before,
sugge... 33181 1 \n1 Hey there r/assistance, Not sure if this is
th... 2606 0 \n2 My mom then hit me with the newspaper and it
s... 38816 1 \n3 until i met my new boyfriend, he is amazing, h...
239 1 \n4 October is Domestic Violence Awareness Month a... 1421
1 \n\n confidence social_timestamp social_karma syntax_ari ...
\\n0 0.8 1521614353 5 1.806818 ... \n1
1.0 1527009817 4 9.429737 ... \n2 0.8
1535935605 2 7.769821 ... \n3 0.6
1516429555 0 2.667798 ... \n4 0.8
1539809005 24 7.554238 ... \n\n lex_dal_min_pleasantness
lex_dal_min_activation lex_dal_min_imagery \\n0
1.000 1.1250 1.0 \n1
1.125 1.0000 1.0 \n2
1.000 1.1429 1.0 \n3
1.000 1.1250 1.0 \n4
1.000 1.1250 1.0 \n\n
lex_dal_avg_activation lex_dal_avg_imagery lex_dal_avg_pleasantness
\\n0 1.77000 1.52211
1.89556 \n1 1.69586 1.62045
1.88919 \n2 1.83088 1.58108
1.85828 \n3 1.75356 1.52114
1.98848 \n4 1.77644 1.64872
1.81456 \n\n social_upvote_ratio social_num_comments syntax_fk_grade
sentiment \n0 0.86 1 3.253573
-0.002742 \n1 0.65 2 8.828316
0.292857 \n2 0.67 0 7.841667
0.011894 \n3 0.50 5 4.104027
0.141671 \n4 1.00 1 7.910952 -
0.204167 \n\n[5 rows x 116 columns]","text/html":
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lex_dal_min_activation\n lex_dal_min_imagery\n
lex_dal_avg_activation\n lex_dal_avg_imagery\n
lex_dal_avg_pleasantness\n social_upvote_ratio\n
social_num_comments\n syntax_fk_grade\n sentiment\n \n \n \n
\n 0\n ptsd\n 8601tu\n (15, 20)\n He said he had
not felt that way before, sugge...\n 33181\n 1\n 0.8\n
1521614353\n 5\n 1.806818\n ... \n 1.000\n 1.1250\n
1.0\n 1.77000\n 1.52211\n 1.89556\n 0.86\n 1\n
3.253573\n -0.002742\n \n \n 1\n assistance\n
8lbrx9\n (0, 5)\n Hey there r/assistance, Not sure if this is
th...\n 2606\n 0\n 1.0\n 1527009817\n 4\n
9.429737\n ... \n 1.125\n 1.0000\n 1.0\n 1.69586\n
1.62045\n 1.88919\n 0.65\n 2\n 8.828316\n
0.292857\n \n \n 2\n ptsd\n 9chlzh\n (15, 20)\n
My mom then hit me with the newspaper and it s...\n 38816\n 1\n
0.8\n 1535935605\n 2\n 7.769821\n ... \n 1.000\n
1.1429\n 1.0\n 1.83088\n 1.58108\n 1.85828\n
0.67\n 0\n 7.841667\n 0.011894\n \n \n 3\n
relationships\n 7rorpp\n [5, 10]\n until i met my new
boyfriend, he is amazing, h...\n 239\n 1\n 0.6\n
1516429555\n 0\n 2.667798\n ... \n 1.000\n 1.1250\n
1.0\n 1.75356\n 1.52114\n 1.98848\n 0.50\n 5\n
4.104027\n 0.141671\n \n \n 4\n survivorsofabuse\n
9p2gbc\n [0, 5]\n October is Domestic Violence Awareness Month
a...\n 1421\n 1\n 0.8\n 1539809005\n 24\n
7.554238\n ... \n 1.000\n 1.1250\n 1.0\n 1.77644\n

```

```
1.64872\n      1.81456\n      1.00\n      1\n      7.910952\n      -
0.204167\n      \n \n\n
```

5 rows × 116 columns

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\nstd 17340.161897 0.499497 0.177038 1.552209e+07
79.419166 \nmin 4.000000 0.000000 0.428571
1.483274e+09 0.000000 \n25% 926.250000 0.000000
0.600000 1.509698e+09 2.000000 \n50% 1891.500000
1.000000 0.800000 1.517066e+09 5.000000 \n75%
25473.750000 1.000000 1.000000 1.530898e+09 10.000000
\nmax 55757.000000 1.000000 1.000000 1.542592e+09
1435.000000 \n\n syntax_ari lex_liwc_WC lex_liwc_Analytic
lex_liwc_Clout \\\ncount 2838.000000 2838.000000 2838.000000
2838.000000 \nmean 4.684272 85.996124 35.240941
40.948231 \nstd 3.316435 32.334887 26.486189
31.587117 \nmin -6.620000 5.000000 1.000000
1.000000 \n25% 2.464243 65.000000 12.410000
12.135000 \n50% 4.321886 81.000000 29.420000
33.520000 \n75% 6.505657 101.000000 55.057500
69.320000 \nmax 24.074231 310.000000 99.000000
99.000000 \n\n lex_liwc_Authentic ... lex_dal_min_pleasantness
\\\ncount 2838.000000 ... 2838.000000 \nmean
67.044249 ... 1.088001 \nstd 32.880644 ...
0.117159 \nmin 1.000000 ... 1.000000
\n25% 41.070000 ... 1.000000 \n50%
80.710000 ... 1.000000 \n75% 96.180000 ...
1.142900 \nmax 99.000000 ... 1.900000
\n\n lex_dal_min_activation lex_dal_min_imagery
lex_dal_avg_activation \\\ncount 2838.000000
2838.000000 \nmean 1.120099
1.000211 1.722759 \nstd 0.085227
0.006500 0.047835 \nmin 1.000000
1.000000 1.485400 \n25% 1.000000
1.000000 1.691430 \n50% 1.142900
1.000000 1.721430 \n75% 1.142900
1.000000 1.751760 \nmax 1.500000
1.200000 2.007400 \n\n lex_dal_avg_imagery
lex_dal_avg_pleasantness social_upvote_ratio \\\ncount
2838.000000 2838.000000 2838.000000 \nmean
1.536400 1.879385 0.843517 \nstd
0.102971 0.058932 0.174794 \nmin
1.200000 1.561150 0.140000 \n25%
1.469745 1.841782 0.750000 \n50%
1.530295 1.878250 0.890000 \n75%
1.596030 1.916243 1.000000 \nmax
2.066670 2.158490 1.000000 \n\n
social_num_comments syntax_fk_grade sentiment \ncount
2838.000000 2838.000000 2838.000000 \nmean 9.948555
5.448836 0.040740 \nstd 21.798032 2.535829
0.195490 \nmin 0.000000 -1.918000 -1.000000 \n25%
2.000000 3.729973 -0.072222 \n50% 5.000000
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```



```

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lex_dal_min_imagery\n lex_dal_avg_activation\n
lex_dal_avg_imagery\n lex_dal_avg_pleasantness\n
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2838.000000\n ...\n 2838.000000\n 2838.000000\n
2838.000000\n 2838.000000\n 2838.000000\n 2838.000000\n
2838.000000\n 2838.000000\n 2838.000000\n 2838.000000\n
\n \n mean\n 13751.999295\n 0.524313\n 0.808972\n
1.518107e+09\n 18.262156\n 4.684272\n 85.996124\n
35.240941\n 40.948231\n 67.044249\n ...\n 1.088001\n
1.120099\n 1.000211\n 1.722759\n 1.536400\n 1.879385\n
0.843517\n 9.948555\n 5.448836\n 0.040740\n \n \n
std\n 17340.161897\n 0.499497\n 0.177038\n
1.552209e+07\n 79.419166\n 3.316435\n 32.334887\n
26.486189\n 31.587117\n 32.880644\n ...\n 0.117159\n
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min\n 4.000000\n 0.000000\n 0.428571\n 1.483274e+09\n
0.000000\n -6.620000\n 5.000000\n 1.000000\n 1.000000\n
1.000000\n ...\n 1.000000\n 1.000000\n 1.000000\n
1.485400\n 1.200000\n 1.561150\n 0.140000\n 0.000000\n
-1.918000\n -1.000000\n \n \n 25%\n 926.250000\n
0.000000\n 0.600000\n 1.509698e+09\n 2.000000\n
2.464243\n 65.000000\n 12.410000\n 12.135000\n
41.070000\n ...\n 1.000000\n 1.000000\n 1.000000\n
1.691430\n 1.469745\n 1.841782\n 0.750000\n 2.000000\n
3.729973\n -0.072222\n \n \n 50%\n 1891.500000\n
1.000000\n 0.800000\n 1.517066e+09\n 5.000000\n
4.321886\n 81.000000\n 29.420000\n 33.520000\n
80.710000\n ...\n 1.000000\n 1.142900\n 1.000000\n
1.721430\n 1.530295\n 1.878250\n 0.890000\n 5.000000\n
5.210000\n 0.044821\n \n \n 75%\n 25473.750000\n
1.000000\n 1.000000\n 1.530898e+09\n 10.000000\n
6.505657\n 101.000000\n 55.057500\n 69.320000\n
96.180000\n ...\n 1.142900\n 1.142900\n 1.000000\n
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6.855217\n 0.166667\n \n \n max\n 55757.000000\n
1.000000\n 1.000000\n 1.542592e+09\n 1435.000000\n
24.074231\n 310.000000\n 99.000000\n 99.000000\n
99.000000\n ...\n 1.900000\n 1.500000\n 1.200000\n
2.007400\n 2.066670\n 2.158490\n 1.000000\n
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8 rows × 112 columns

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False False False False False \n2 False
False False False False False \n3 False

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```

False          False False False False          False \n4          False
False          False False False False          False \n...        ...
...            ...    ...    ...    ...          ... \n2833        False
False          False False False False          False \n2834        False
False          False False False False          False \n2835        False
False          False False False False          False \n2836        False
False          False False False False          False \n2837        False
False          False False False False          False \n\n
social_timestamp social_karma syntax_ari ... \\n0          False
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... \n2          False          False          False          False \n3
False          False          False ... \n4          False
False          False ... \n...          ...          ...
... \n2833          False          False          False ... \n2834
False          False          False ... \n2835          False
False          False ... \n2836          False          False          False
... \n2837          False          False          False ... \n\n
lex_dal_min_pleasantness lex_dal_min_activation lex_dal_min_imagery
\\n0          False          False
False \n1          False          False
False \n2          False          False
False \n3          False          False
False \n4          False          False
False \n...        ...          ...
... \n2833          False          False
False \n2834          False          False
False \n2835          False          False
False \n2836          False          False
False \n2837          False          False
False \n\n          lex_dal_avg_activation lex_dal_avg_imagery
lex_dal_avg_pleasantness \\n0          False
False          False \n1          False
False          False \n2          False
False          False \n3          False
False          False \n4          False
False          False \n...        ...
...            ... \n2833          False
False          False \n2834          False
False          False \n2835          False
False          False \n2836          False
False          False \n2837          False
False          False \n\n          social_upvote_ratio
social_num_comments syntax_fk_grade sentiment \n0
False          False          False          False \n1
False          False          False          False \n2
False          False          False          False \n3
False          False          False          False \n4
False          False          False          False \n...
...            ...          ... \n2833
False          False          False          False \n2834
False          False          False          False \n2835
False          False          False          False \n2836
False          False          False          False \n2837
False          False          False          False \n\n[2838 rows x
116 columns]","text/html":
\n\n \n \n \n subreddit\n post_id\n sentence_range\n
text\n id\n label\n confidence\n social_timestamp\n
social_karma\n syntax_ari\n ... \n lex_dal_min_pleasantness\n
lex_dal_min_activation\n lex_dal_min_imagery\n
lex_dal_avg_activation\n lex_dal_avg_imagery\n
lex_dal_avg_pleasantness\n social_upvote_ratio\n

```

social_num_comments\n			syntax_fk_grade\n		sentiment\n	\n	\n	\n
\n	0\n	False\n	False\n	False\n	False\n			
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2838 rows × 116 columns

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```

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re.sub('https?:\\/\\S+\\/www\\. \\S+', '\\',text)\n    text = re.sub('+',' ',  
,text)\n    text = re.sub(' [%s]' %re.escape(string.punctuation), '  
,text)\n    text = re.sub(' \\n',' ',text)\n    text = re.sub('  
\\w*\\d\\w*' , ' ',text)\n    text = [word for word in text.split(' ') if  
word not in stopwords]\n    text = \" \".join(text)\n    text =  
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CountVectorizer()\n\\nx = cv.fit_transform(x)\n\\nprint(X)\n\\nxtrain, xtest,  
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