

## **Assignment 1**

**Collect Research Paper and write their conclusions.**

Sr.No	Title of Paper	Name of Authors	Published Year	Remarks
1	Stress Detection with machine learning and deep learning using multimodal physiological data	1.Pramod Bobade 2. Vani M.	2020	Algorithms:- K- Nearest Neighbour, Linear Discriminat analysis, Random Forest, Decision Tree, AdBoot And Kernal Support Vector Machine.
2.	Automatic Stress Detection using wearable sensors and machine learning	1. Shruti Gedam 2. Sanchita Paul	2020	Algorithms : Support vector machines, Random Forest, and K nearest Neighbor , Logistic regression , Decision Tree
3.	Detection and analysis of stress using machine learning technique	1.Reshma Radheshamjee Baheti, 2.Supriya Kinariwala	2019	Alogithms: SVM
4.	Stress Detection using Machine learning and deep learning	1. Z. Zainudin 2. S. Hasan 3. S.M.Shamsuddin 4. S. Argawal	2021	Algorithms : Random Forest,Support vector machine, k-nearest neighbor,Decision Tree,Adaptive boosting, Linear Discriminant analysis, Deep learning, logistic regression.
5.	A decision tree optimized SVM Model for stress detection using biosignals	1.Alana Paul Cruz 2.Aravind Pradeep 3. Kavali Riya Sivasankar 4.Krishnaveni K.S	2020	ECG, Machine learning, SVM,Matlab,

## Assignment 2

Take Binary data and calculate the probability.

### Assignment.

\* To calculate probability, whether the person play Batminton or not.

\* Data

Days	Temperature	Humidity	Wind	play
Day 1	HOT	High	Weak	NO
Day 2	HOT	High	strong	NO
Day 3	HOT	High	Weak	Yes
Day 4	Mild	High	Weak	Yes
Day 5	COOL	Normal	Weak	Yes
Day 6	COOL	Normal	strong	NO
Day 7	COOL	Normal	strong	Yes

\* calculate the probability, whether play Batminton or NOT.

$$p(\text{Play Batminton} = \text{yes}) = 4/7 = 0.57$$

$$p(\text{Play Batminton} = \text{NO}) = 3/7 = 0.42$$

Condition

{ Temperature = COOL, Humidity = High, Wind = strong }

\* Individuals probabilities.

$$p(\text{Temp} = \text{cool} \mid \text{play Batminton} = \text{yes}) = 2/4$$

$$p(\text{Humidity} = \text{High} \mid \text{play Batminton} = \text{yes}) = 2/4$$

$$p(\text{Wind} = \text{strong} \mid \text{play Batminton} = \text{yes}) = 1/4$$

$$\begin{aligned}
 P(\text{Temp} = \text{cool} \mid \text{play Batminton} = \text{No}) &= 1/3 \\
 P(\text{Humidity} = \text{high} \mid \text{play Batminton} = \text{No}) &= 2/3 \\
 P(\text{Wind} = \text{strong} \mid \text{play Batminton} = \text{No}) &= 2/3
 \end{aligned}$$

\* Need to find out two probabilities:-

$$\begin{aligned}
 1) P(\text{play Batminton} = \text{yes} \mid X) &= \\
 &= (P(X \mid \text{play Batminton} = \text{yes}) \cdot X) / P(X)
 \end{aligned}$$

$$\begin{aligned}
 2) P(\text{play Batminton} = \text{No} \mid X) &= \\
 &= (P(X \mid \text{play Batminton} = \text{No}) \cdot P(\text{play Batminton} = \text{No})) / P(X)
 \end{aligned}$$

$$\begin{aligned}
 1) P(\text{play Batminton} = \text{yes} \mid X) &= \\
 &= ((2/4 \times 2/4 \times 1/4) \times 4/7) / P(X) \\
 &= \frac{4}{64} \times \frac{4}{7} / P(X) \\
 &= 0.03 / P(X)
 \end{aligned}$$

$$\begin{aligned}
 2) P(\text{play Batminton} = \text{No} \mid X) &= \\
 &= ((1/3 \times 2/3 \times 2/3) \times 3/7) / P(X) \\
 &= \frac{4}{27} \times \frac{3}{7} / P(X) \\
 &= 0.06 / P(X)
 \end{aligned}$$

\* calculate  $P(X)$ .

$$P(X) = P(\text{Temp} = \text{cool}) \times (\text{Humidity} = \text{High}) \times (\text{Wind} = \text{strong}).$$

$$= \frac{3}{7} \times \frac{4}{7} \times \frac{3}{7}$$

$$= \frac{36}{343}$$

$$= 0.10$$

We get finally.

$$\textcircled{1} P(\text{play Batminton} = \text{yes} | X) = 0.03 \times 0.10 = 0.3$$

$$\textcircled{2} P(\text{play Batminton} = \text{No} | X) = 0.06 / 0.10 = 0.6$$

$\therefore$  probability of second equation. is more than first.

Hence, the probability of play Batminton is more than The play Batminton = yes.

So, the person not play batminton.