

DETECTING SLEEPING DISORDER IN MEN UNDER THE AGE CATEGORY BETWEEN 20 TO 50

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ABSTRACT:This study is about **DETECTING SLEEPING DISORDER IN MEN UNDER THE AGE CATEGORY BETWEEN 20 TO 50** using two algorithms that is **GORTI'S** and **CHARMICAL** algorithm. The fitness tracker data for human activity recognition are playing an important role which helps to detect the **AHI** (Apnea hyponea index) which is used to detect the condition of sleeping disorder. The main purpose of this study is to analyze the sleeping disorder in men under the age category of 20 to 50.

Keywords: AHI(Apnea hyponea index), sleep apnea, security algorithm, Gorti's and Carmichael algorithm.

I.INTRODUCTION

The main purpose of the project is to detect sleeping disorder in men under the age category between 20 to 50. Sleep apnea is an involuntary action that occurs when they are sleeping. It is a sleep disease that occurs during sleep that lasts for a second or a minute. Sleep apnea is a disorder in which it affects all the age group of people , but it affects men more than women. **AHI**(Apnea hyponea index) is used to detect the level of sleeping disorder that is starting from 1 to 15 it is considered as mild , from 15 to 30 it is considered as medium and from above 30 it is considered to be high. **NETBEANS JAVA** is a tool that is used in this project. In this security algorithm which is built-in, in java In this paper two security algorithm is used for the purpose of security because the dataset is imported from hospital sleep tracker device. By using these two algorithm that is **GORTI'S** and **CARMICAL** algorithm encryption and decryption process is taken place for security purpose because the data from hospital dataset can be misused.

II. OBJECTIVE

To predict and analyze the causes for which men are affected by sleeping hypnea under the age category of 50.The main purpose of this project is to detect the sleep hypnea that is respiratory problem while sleeping. Sleep Apnea is an involuntary action that action occurs when the person is sleeping. It is a sleep disease that occurs during sleep that can last seconds or minutes.

The attributes that contains in the dataset are Id, hours of sleep, age, weight, height (feet), gender,Total hypopnea events,Total Apnea events,and calories. The apnea hypopnea index (AHI), is a count of the number of apneas and hypopneas per hour of sleep. AHI is used to identify the range that is low, medium, high. The sleep apnea affects all age group of people that is child, teenage, female, and male and above 50.This objective is used to predict the rate of AHI level in middle aged male.

III. RELATED WORKS

Sleep is very important for good health. It has a significant impact on the health of people. Sleep Apnea is an involuntary action that occurs when we the person is sleeping There are three types of sleep apnea they are obstructive, central and mixed and called as OSA [5]. The Apnea Hypopnea Index (AHI) is considered to be the foremost relevant metric to diagnose the existence of the disorder. This indicates the number of apnea events per hour of sleep. The widespread of this disorder is approximately 200 million people around the globe [9].

Sex differences exist in sleep quality, duration, latency, and architecture within the general population [6]. Sleep latency is defined the number of minutes it takes to sleep and is longer in women compared with men. Further, discordance exists between versus objective measures of sleep quality between men and women; women complain of poor sleep quality than men [10]. Women have increased slow wave sleep (SWS) as compared to men. SWS decreases with age in men but not in the women [8].

Four percent of adult men and two percent of adult women are victims of this disorder making it more common in men than in women. However, among the apnea patients, 93% of middle-aged women and 82% of middle-aged men [11]. ECG-derived heart rates are commonly used to detect sleep disordered breathing, including apnea, and hypopnea events [1].

Respiratory sounds during inhalation and exhalation could also be noisy when the upper airway space is compromised. Breathing intervals and patterns during sleep also are disturbed. Irregular breathing sounds will be detected when partial or complete breathing cessations occur due to apnea. Breath holding, breathing interruptions may also be detected [3].

The Apnea-ECG Database (AED) is one of the most commonly used databases for ECG analysis. A total of 70 nighttime ECG recordings, with one-minute annotations, were provided by Philipps University, Germany and are freely available on the PhysioNet site [7].

The ECG rate was 512 Hz and a high pass filter of 0.15 Hz was used on the signal. The authors had chosen 545 subjects including 364 normal subjects and 181 severe obstructive sleep apnea (OSA) subjects. Multiple pressure changes occurred during the breathing process and were measured by a cannula transducer [4].

To detect the sleep apnea some of the common approaches for the analysis of sleep sound are physical measurements of the sound strength such as frequency spectrum, weighted sound intensity, and root mean square value of a signal. Till this end, we performed a two-stage filtering process to remove various unwanted noises and purify the sleep breathing sounds [2].

IV. METHODOLOGY

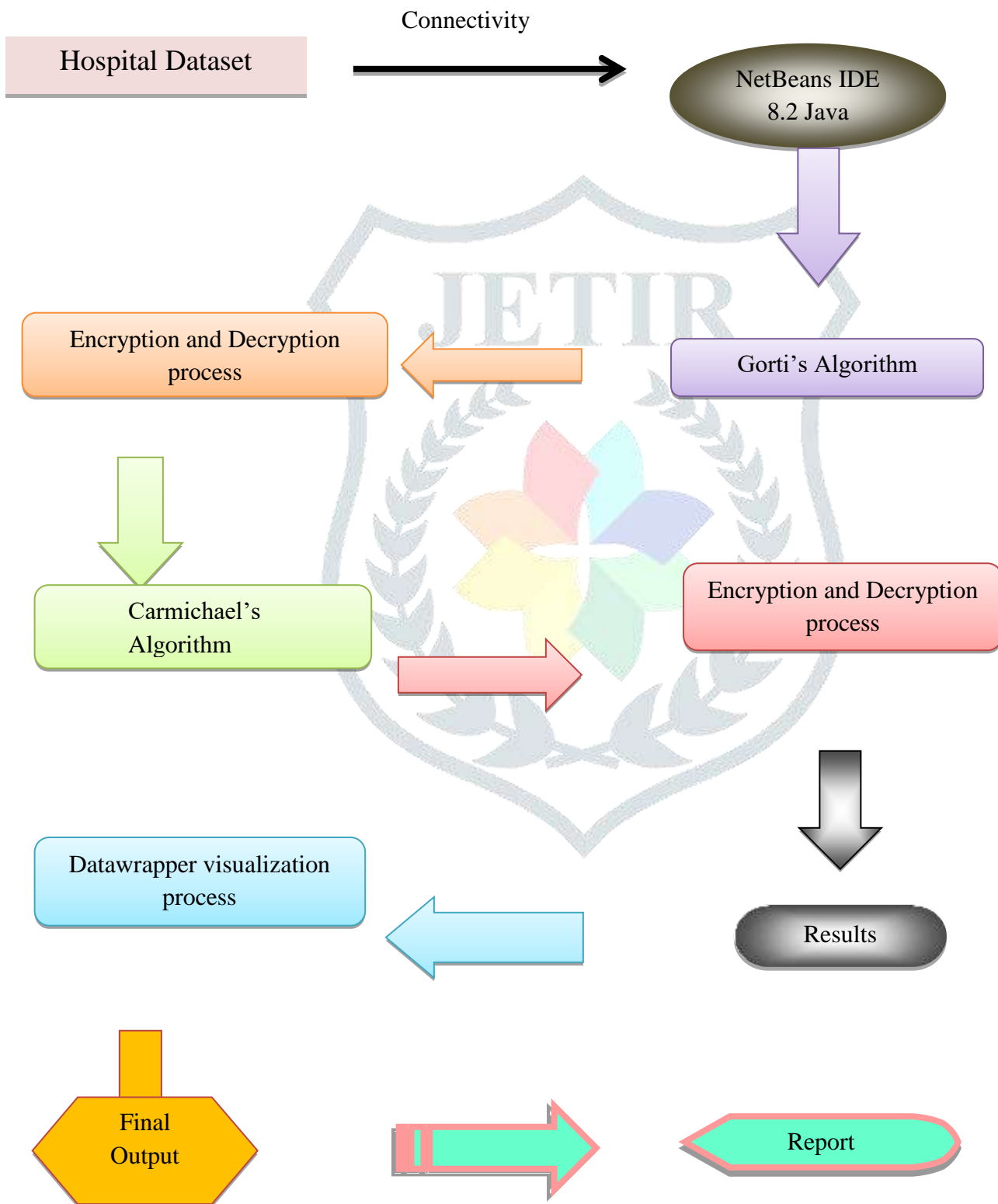
The figure mentioned below is the flow chart which explains the whole process of the project. The first process of the project is to import the dataset. The dataset is imported from hospital sleep tracker device in which it records the full details. This device records each and every movements while the person is in sleep and it also records the breathing patterns. Using this the sleep tracker device tracks every thing like movements while the person is in sleep, hours of sleep, whether the person is snoring or not like this it records all the activity in sleeping time that is in night. The second process is to connect the data's which was imported from the dataset.

The dataset is connected to **NEATBEANS** java. In java there are many types of algorithm for the purpose of analyzing the data. There are many types of security algorithm is built-in , in java for security purpose. In this paper two types of security algorithm is used that is **GORTI'S** and **CARMICHAL** algorithm. Security algorithm is used in this paper because for the purpose of safety because the dataset is imported from hospital sleep tracker device. The data which is collected from the hospital can be misused by anyone. So to avoid the risk of leakage of data security algorithm is used. Gorti's and Carmichael is the two type of algorithm used here.

Since it is a security algorithm, the information about these algorithm cannot be identified in any online website. In gorti algorithm the is encrypted that is it changes the data into code word or it changes the value in numbers and strings that is alphabets. After encryption the data is decrypted that is it is the process of converting the encoded data to normal form. The same process is used in Carmichael algorithm also that is the data is encrypted and after that the data is converted into normal form. The next process is to visualize the data. To visualize the data, datawrapper tool is used for visualization process. A after visualization the result is derived from the chart. It is a an open source online tool which can be used or perform the work or

preparing chart can be done in online. It contains different types of chart, graph, bar charts, pie chart and it contains maps also. It creates chart in a faster manner and helps to visualize the output easily.

FLOWCHART



V.RESULT

ID	GENDER	Hours_of_Sleep	Total_Apnea_Events	Age	RESULT	EFFECT
1	0	8	60	30	25 Medium	Stroke
2	0	8	100	30	30 High	Stroke, myocardial congestion
3	0	8	50	30	25 High	Stroke
4	1	8	2	35	40 High	Heart failure

FIG: 1

The above mentioned table shows gorti's algorithm. There are different attributes like gender, hours of sleep, total apnea events, age, results and effects. This is a faster algorithm which helps to predict and analyze the required solution in a faster way. This is one of the security algorithm that is used for the purpose of safety. This is the result of the respected algorithm.

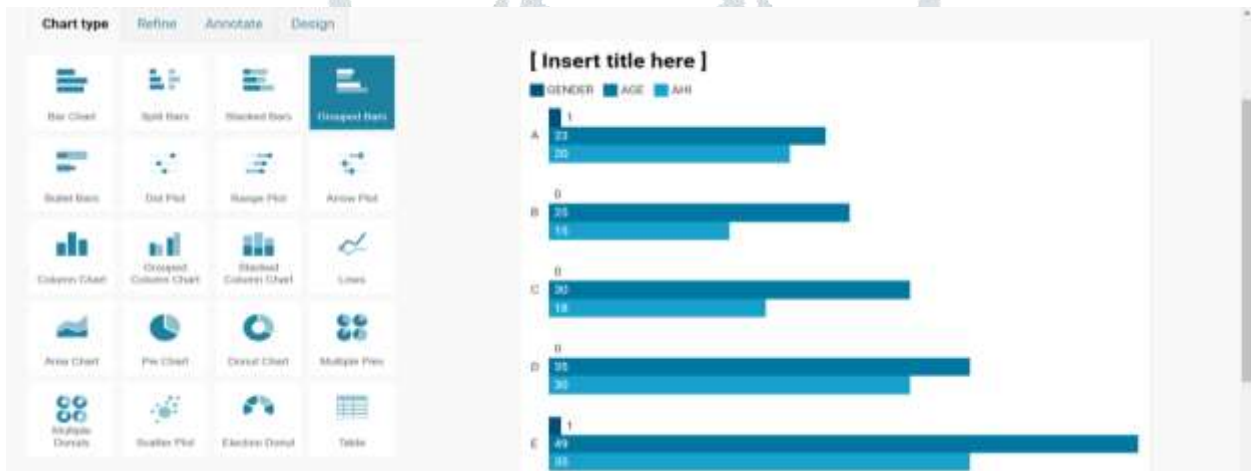


FIG: 2

The above mentioned figure is visualized using datavrapper and it is grouped bar chart. A grouped bar chart is a cluster of different multiple chart. It helps to compare two or more values or categories. It helps to predict and analyze the result very easily because it represents the chart in an understandable manner. In the above chart 1 represents male. In this the attributes that are taken for visualization are age, gender and ahi (apnea hyponea index) level.

CHARMICHAL

ID	GENDER	Hours_of_Sleep	Total_Apnea	AHI	Age	RESULT	EFFECTS
1	1	5	5	6	25	Mid	chronic nasal congestion
2	0	8	80	50	13	Mid	chronic nasal congestion
3	0	5	150	20	34	High	Heart failure
4	0	4	30	100	37	High	Heart failure
5	1	5	2	2	46	Mid	chronic nasal congestion

FIG: 3

The above mentioned table shows Carmichael algorithm and the attributes are gender, hours of sleep, total apnea event, ahi level, age, result and effects. In this algorithm time taken to complete the process is little more than gortialgorithm. This algorithm is slower than gorti’s algorithm. This algorithm takes little more time than gorti’s algorithm.



FIG: 4

The attributes that are taken visualization are gender, age, hours of sleep. This chart is a split bar chart. This chart shows more than one value. Instead of making or creating five different chart, by creating split bar chart the value can be ascertained easily. In the above chart 1 represents male. The sleeping hour differs to each age group of people. Sleep plays an important role in our healthy life style. Hours of sleep differs according to the age factor that is the younger age group of people sleep more than the elder one.

VI. CONCLUSION AND FURTHER WORK

In this paper Neatbeans java is used for analyzing the status of sleep apnea in men. The main purpose of this paper is to identify the sleeping disorder. Men are actually in more trouble and stress so due to this reason they get easily affected to sleeping disorder. Sleep apnea affects all age group of people and mainly it affects men who are under the age category between 20 to 50 because their stress level and work tension and pressure are high. In both the algorithm gorti algorithm is the best and faster algorithm. The effects and causes are snoring, night sweat, swelling, daytime sleepiness. Snoring can be a mild disorder it is the sign of a medical condition. The disorder in men can be identified easily. When they are in sleep if they snore the disorder can be identified and can reduce the rate of death by treating this disorder.

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