

NOVEL APPROACH ON STRESS MANAGEMENT AMONG FACULTIES IN EDUCATIONAL INSTITUTIONS USING DATA MINING TECHNIQUES

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ABSTRACT

Now a day's college Professor faces lot of stress problems in their job. They have been fit prepared for every day work. Professor are affected by various stress factors like age, increased workloads, need to hit deadlines, long working hour, increase in temporary contracts, lone working, travelling time, lack of regular breaks and monthly income are dependent to the level of stress. The present study was conducted to clarify the Professor observation towards job-related stress using well-known questions and data that are collected from different colleges. To evaluate the opinion and find out the level of stress which the faculties are highly affected among the three levels of stress types like acute stress, episodic stress, and chronic stress using data mining techniques.

Keywords: Stress, lecturer, Stressors.

INTRODUCTION

Stress happen to an important part of Professor Job. The claim of Professor Job has better the level of stress among Professor in Tamil Nadu College. A possible level of stress can be a organization of positive motivation to be success. Still, a lot stress can cause physical and psychological health problem. The generally hit embarked by the educational organization Union of University which lasted for over five month is partly caused by stress related demands by the university lecturers termed "earned allowance" which includes over load allowance. Stress is the condition that results when person/environment communication guide the individual to observe a difference, whether real or imagined between the claim of a situation and the resource of the person's genetic and social system. Stress as a condition in which an individual experiences challenges to physical or exciting well-being that overpower their coping capacity.

Stress is a part of the normal fabrics of human life. Every individual regardless of race or educational surroundings, social and job-related status and even children experience stress in many ways (Oyerinde, 2004). It is an expected part of challenge that prompts mastery of new skills and behaviour pattern. However, when stress becomes excessive, difficulties occur and the sufferer experiences disrupted emotional, cognitive and physiological functioning. Stress may be acute or chronic in life (Akinboye et al., 2002). Chronic stress is associated with the development of physical illness including such leading causes of death. The cost of stress in conditions of human being distress, social and occupational impairment and mental illness is enormous (Crider, Goethal, Kavanaugh and Solomon, 2003).

Stress is a common experience. People may feel stress when they are very busy, have important deadlines to meet, or have too little time to finish all of their tasks. Often some people may be particularly vulnerable to stress in situations involving the threat of failure or personal humiliation. Khan (2005) observed that others have extreme fears of objects or things associated with physical threats such as snakes, illness, storms, or flying in an airplane and become stressed when they meet or believe about these supposed threats. Most important life dealings, such as the death of a loved one, can cause severe stress. There are physical stresses such as extreme cold, heat, the attack

of micro-organisms, physical injuries etc. Certain environmental social conditions on the other hand can also be damaging these are called Psycho-social stresses e.g. loss of job, death of a loved one. Stress depends not only on extreme condition but also on susceptibility of the individual and the adequacy of his/her system of defences. Examples of worldwide stresses include war, imprisonment, natural disaster such as fire burst, terror earth quack, disabling injuries and terminal illness. People react to the same stressor in diverse ways, in some who appear comparatively undisturbed and act an effective manner in spite of difficult situation. In difference, others become disorganized, dazed, panicky and generally displaying the signs of severe emotional disturbances.

Stress can have both positive and negative things. Stress is a usual, adaptive feedback to threat. It signals hazard and prepares students to take defensive action. Fear of things that pose realistic threats motivates workers to deal with them or avoid them. Stress also motivates staff to attain and fuel creativity.

STRESS

Professors are affecting or physical tension. It is caused by any event or thought that makes one feel frustrated, angry or nervous. Common stress reactions include tension, irritability, inability to concentrate, and a variety of physical symptoms that include headache and a fast heartbeat.

Type of Stress 1. Acute Stress 2. Episodic Acute Stress 3. Chronic Stress

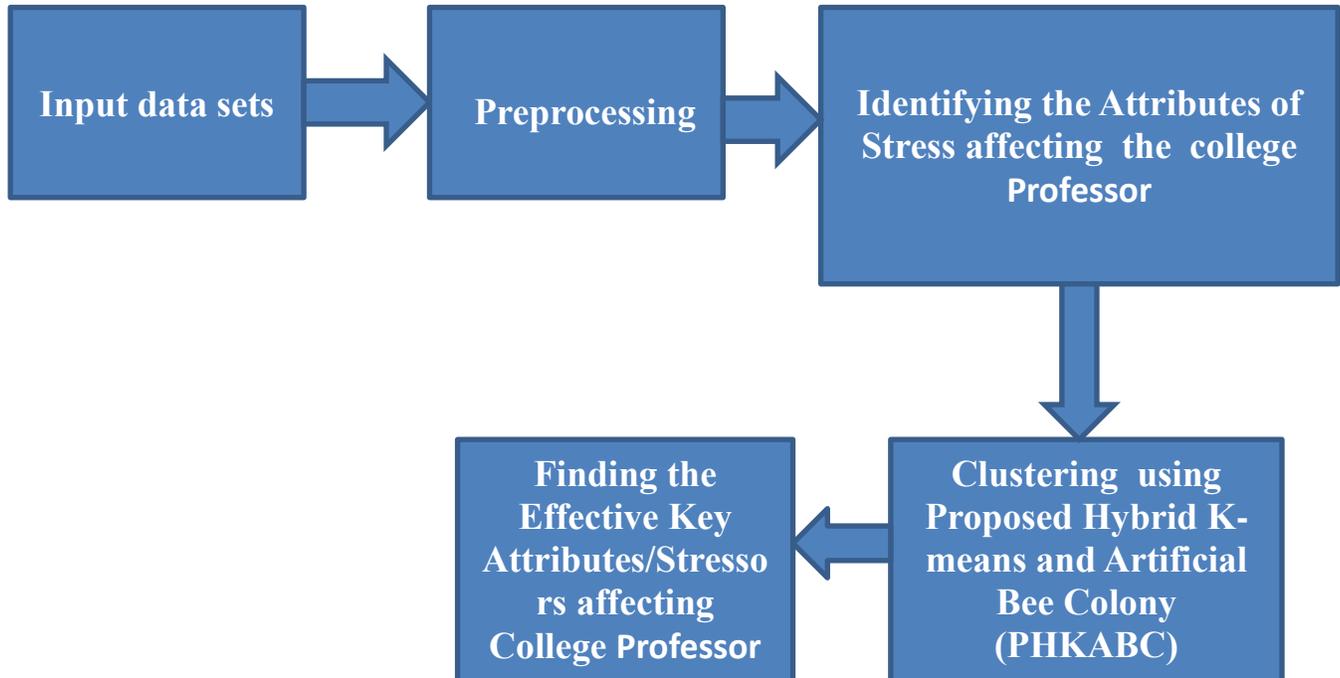
Acute Stress: It is a short-term stress called “fight or flight” response. Symptoms- Sleep problems, Fear, Negative Emotions Episodic Acute Stress.

Episodic stress: lasts longer than acute stress, but most people are able to manage it without major problems. Symptoms- over Motivation, Headache, Hypertension, Chest pains

Chronic Stress: Chronic Stress for continues over a long period of time. Symptoms- Poverty, Unhappy Marriage Life, Stroke

RESEARCH METHODOLOGY

The proposed strategy is k means and delegate show based bunching is utilized here. The principle objective is to identify which system is best to anticipate the worry in workplace or territory. The information is given to the framework is informational collection, the accumulation of information in view of representative looked on the issue in the workplace.



INPUT DATA SET

Sample Data set from Prof Employees related to stress problems are collected as primary data through Google online survey and offline Questionnaire .Secondary data set are collect from websites, and conferences. Identification of Attribute from factor PROFESSOR age, increased workloads, need to hit deadlines, long working hour, increase in temporary contracts, lone working, travelling time, lack of regular breaks and monthly income are dependent to the level of stress. The collected data are preprocessed using WEKA Tool.

PREPROCESSING

Improving the raw data that can be efficient and ease for mining process. It is concerned with the removal of articles, connectors, prepositions and pronouns.

This step is to weed out the unwanted terms, so as to make the clustering process effective.

- ❖ Stemming
- ❖ Stop Word Removal
- ❖ Term Weighting

CLUSTERING THE DATA USING HYBRID K-MEANS AND ARTIFICIAL BEECOLONY (PHKABC) ALGORITHM

A combination of Artificial Bee Colony (ABC) and K-Means Algorithm is proposed for clustering the web texts. ABC colony algorithm is an efficient population based optimization algorithm and it imitates the behavior of real bees. The K-Means Algorithm is efficient and faster, and used to find the initial cluster point. This work proposes to locate the initial cluster point with the help of bees and these clusters are refined by the K-Means Algorithm. Both ABC and K-Means Algorithm are combined to inherit the merits of both the algorithms. ABC is efficient but consumes more time for convergence. The K-Means Algorithm is also known for its faster convergence but struggles in locating the initial cluster point.

The algorithm is presented for improving the efficiency and reducing the execution time.

1. Initialize the algorithm parameters
2. Randomly assign the population of food sources

3. Determine the fitness of the population by (Step 6)
4. Do Step-6 thru Step-16 while (termination condition not met)
5. For each employed bee
6. Produce new food source
7. Calculate fitness of the food source
8. Employ k-means and greedy selection
9. Calculate the probability of food source by (8)
10. For each onlooker bee
11. Choose the food source w.r.t step 11
12. Produce new food source and compute its fitness by (6)
13. Apply k-means and greedy selection
14. Compare and swap the solutions if new source is better
15. Save the best food source

ACCURACY PREDICTION USING CONFUSION MATRIX

Prediction		Stress	
		+	-
Test	+	True Positive (TP)	False Positive (FP)
		False Negative (FN)	True Negative (TN)
	-		

RESULT ANALYSIS ACCURACY PREDICTION

In this approach, the content grouping exactness rates for the datasets were measured. For instance, in the

grouping issue with two-classes, positive and negative, a solitary forecast has four potential outcomes.

$$Accuracy = \frac{TP + TN}{TP + FP + FN + TN}$$

The True Positive rate (TP) and True Negative rate (TN) are right groups. A False Positive (FP) happens when the result is inaccurately anticipated as positive when it is really negative. A False Negative (FN) happens when the result is inaccurately anticipated as negative when it is really positive.

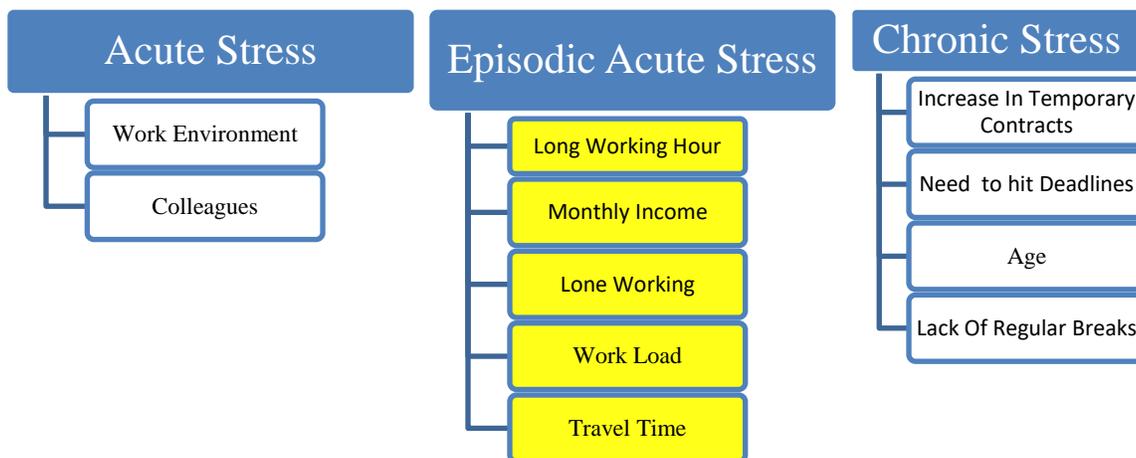
1. Precision - It alludes to the aggregate number of records that are accurately bunched by the content group.
2. True Positive Rate (TP): It relates to the quantity of positive illustrations that have been effectively anticipated by the bunching model.
3. False Positive Rate (FP): It relates to the quantity of negative illustrations that have been wrongly anticipated by the grouping model.
4. Kappa Statistics - A measure of the level of nonrandom understanding between onlookers or estimations of the same absolute variable.
5. Precision - is the part of recovered occurrences that are pertinent.

$$Precision = \frac{TP}{TP + FP}$$

7. Recall is the part of applicable cases that are p[recovered.

$$Recall = \frac{TP}{TP + FN}$$

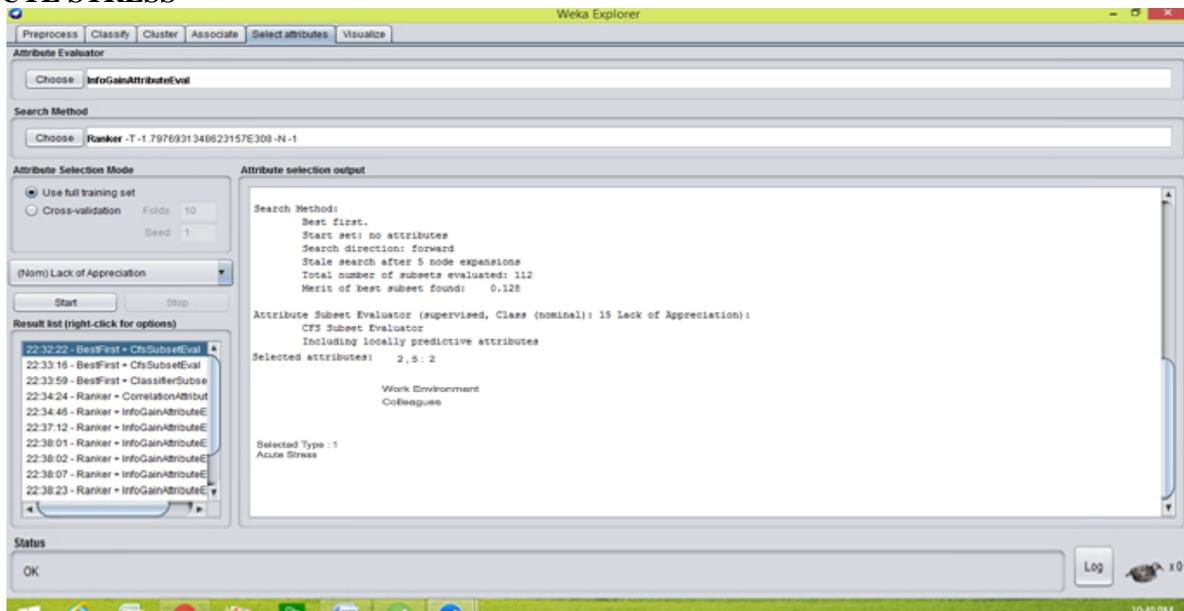
CATEGORIZED STRESS ATTRIBUTES USING PHKABC ALGORITHM



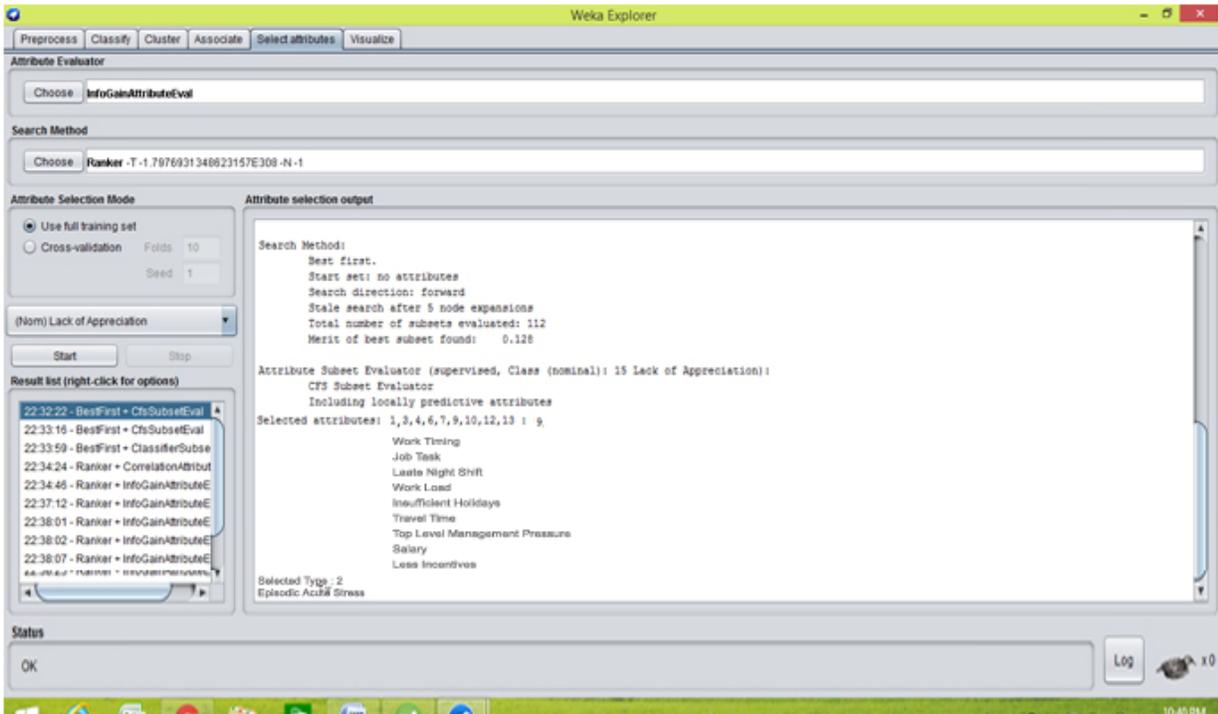
COMPARISON BETWEEN K-MEANS TEXT CLUSTERING ALGORITHM AND PROPOSED HYBRID K-MEANS AND ARTIFICIAL BEE COLONY ALGORITHM

Parameters	K-Means Text Clustering Algorithm	Proposed Hybrid K-means and Artificial Bee Colony Algorithm
Accuracy (%)	78.21	80.21
True Positive Rate	0.407	0.206
False Positive Rate	0.320	0.105
Error Rate (%)	43.34	20.52
ExecutionTime (Sec)	0.07	0.02

**IMPLEMENTATION
 IMPLEMENTATION PHKABC ALGORITHM USING WEKA TOOL
 ACUTE STRESS**

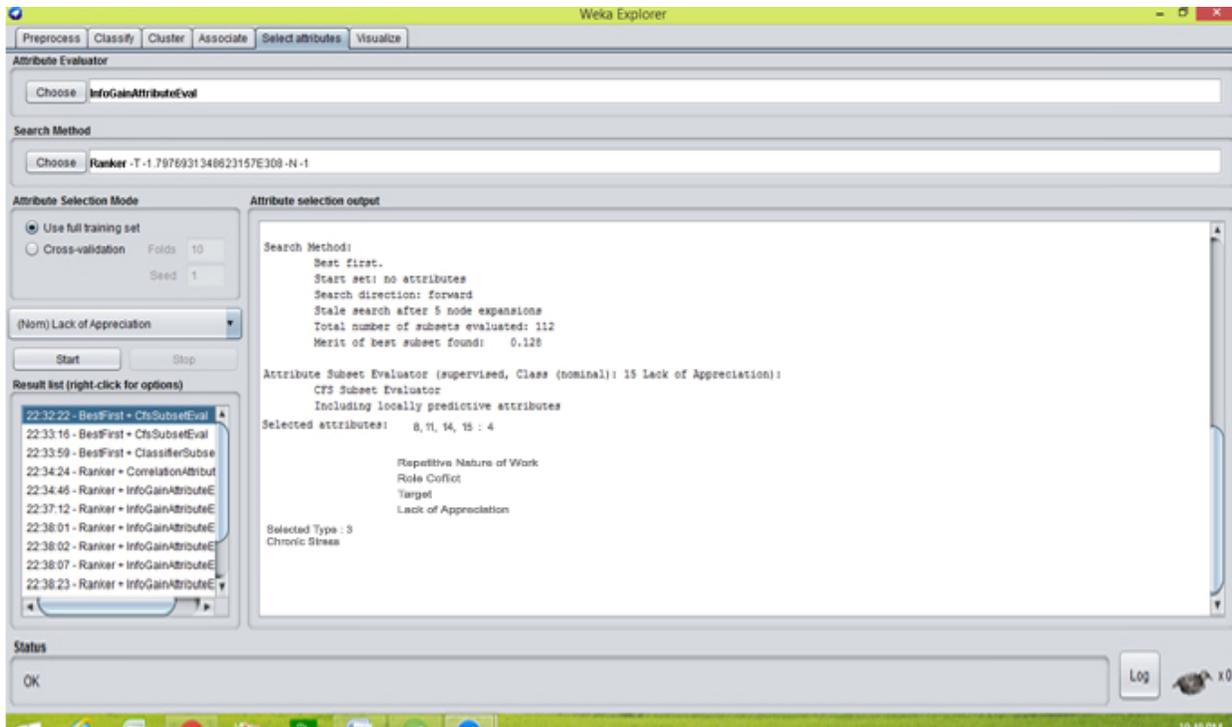


EPISODIC ACUTE STRESS



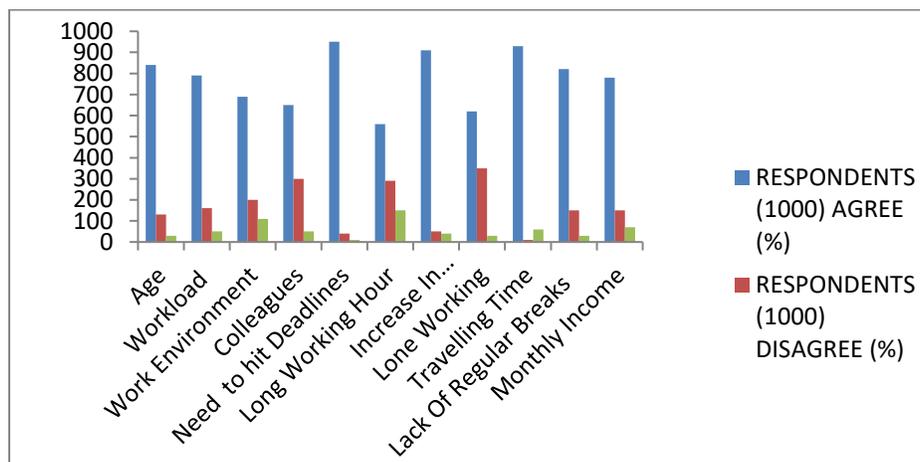
CHRONIC STRESS

RESULTS OBTAINED USING PHKABC ALGORITHM



RESPONDENTS (1000) AGREE (%)

ISSUE FACTORS	RESPONDENTS (1000)		
	AGREE (%)	DISAGREE (%)	NEUTRAL (%)
Age	840	130	30
Workload	790	160	50
Work Environment	690	200	110
Colleagues	650	300	50
Need to hit Deadlines	950	40	10
Long Working Hour	560	290	150
Increase In Temporary Contracts	910	50	40
Lone Working	620	350	30
Travelling Time	930	10	60
Lack Of Regular Breaks	820	150	30
Monthly Income	780	150	70

RESULTS OBTAINED USING PHKABC ALGORITHM**CONCLUSION**

Work pressure can be dignified by several pointers. As a result, some can be used to find out the pressure. It is been concluded that as the competitive situation, technical advancements, Stress can be predicted in Professor which is faced by employee. This research is mainly concerned with the data mining and data clustering algorithm,

to predict the issues in PROFESSOR . This research is concerned with the study and analysis of Clustering algorithms, analyzing the existing methods for predicting Issue in the Professor. Then the issue analysis are evaluated and compared with K Mean clustering algorithm. The results achieved by the proposed Hybrid K – Means and Artificial Bee Colony Algorithm are Age, Workload, Need to hit Deadlines, Long Working Hour, Increase In Temporary Contracts, Lone Working, Travelling Time, Lack Of Regular Breaks, Monthly Income, Work Environment, Colleagues . According to the result obtained from PHKABC Algorithm the Stressors achieved belong to Episodic Stress. It is found that maximum of the Professor employees are affected by Episodic Acute Stress. Episodic Acute Stress is corrected by practicing accurate Stress Management Measure. PHKABC Algorithm has less execution time and higher efficiency in comparison with K Mean Clustering Algorithm. Accuracy rate is increase.

FUTURE WORK

Requires new fitness tests on new algorithm parameters .Higher number of objective function evaluation. To find more factors that influence stress among Professor .

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