

THE COMPARATIVE STUDY OF STRESS LEVEL OF THE SENIOR COLLEGE STUDENTS WHO LIVED IN HOSTEL AND THE STUDENTS WHO LIVED WITH THEIR FAMILY FOR USING MACHINE LEARNING ALGORITHMS

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Abstract

Now a day almost sixty percentage of the students are taking their education from hostel as due to the lack of the higher education facility in their own hometown so to gain more knowledge, many students move to the different cities. This research is showing the comparative study of stress level of students who are taking education from hostel and also the students who are with their family using machine learning algorithms.

Keyword: Stress, Hostellers, Random Forest, Support Vector Machine.

Introduction:

We have seen that, so many students are under stress when they left their home specially girls for higher education. Education is the key of success. Education is only the key of making carrier beautiful. Because of the education only the student can take the job offer on the basis of the degree they gained. Now a day, in 21st Century, without education, it is not possible to survive in the society. So because of this, almost all the cities started with new colleges and the existing colleges come up with the new concepts and new courses. It is observed that almost all the colleges have their own new courses and after giving the knowledge and the degree in the same new field, that college have many collaborations with the reputed companies who are visiting to the particular campus and taking the students inside company for the work.

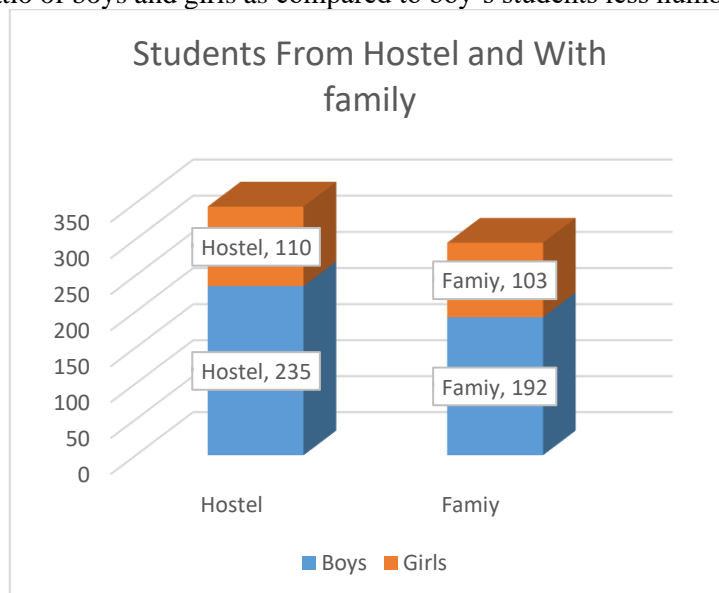
As education is the main factor for the carrier of the student, almost all the students from village area are not getting the education properly. There are many factors behind not getting the education to village students. Some of them are discussed below.

Objectives of the Study:

The objectives of the present study are as follows:

- 1) To study the stressors experience by the hostellers of academic courses.
- 2) To study the stressors experienced by student's who lived with their family of academic course.
- 3) To the comparative study of stress level of both by using machine learning methods

We collected data from 640 students from different colleges of engineering in Pune city we observed that out of them 345 students are hostelries and came from different districts and even state also. We also observed the ratio of boys and girls as compared to boy's students less number of girls are there.



Dataset and Preprocessing:

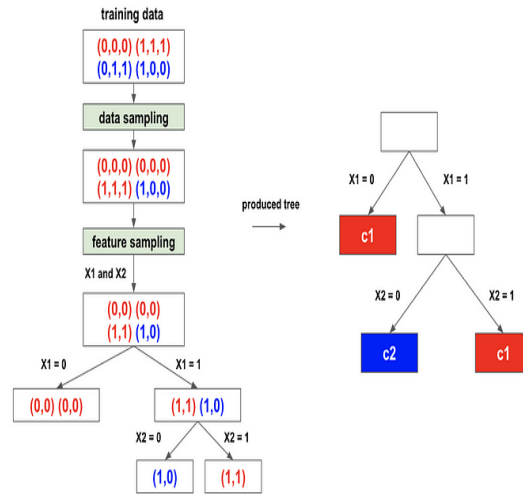
The dataset was taken from the 640 students of different colleges of engineering in Pune city. We have classified the data in two conditions college students who lived in hostel and the students who lived with their family. The dataset was collected for PSS test which includes 14 questions overall including the entire emotional questions. The questions are given them in five ways (a) Never (b) Almost Never (c) Sometimes (d) fairly Often (e) Very Often. Then the weighted average model is used, preference is given to every question. The students are divided into 3 categories highly stressed, stressed and normal. The dataset was collected from different colleges of engineering in Pune city.

Methodology:

1) Random Forest:

Random Forest is used to a classify the dataset. This algorithm contains a number of decision trees on various subsets of the given dataset. It is used takes the average to improve the predictive accuracy of that dataset.

The process of building a random forest tree.



2) Naïve Bayes:

Naïve Bayes used to classify the dataset. Naïve Bayes algorithm uses statistical Bayes theorem and a supervised learning algorithm used for solving classification problems. It is mainly used in text classification that includes a high-dimensional training dataset.

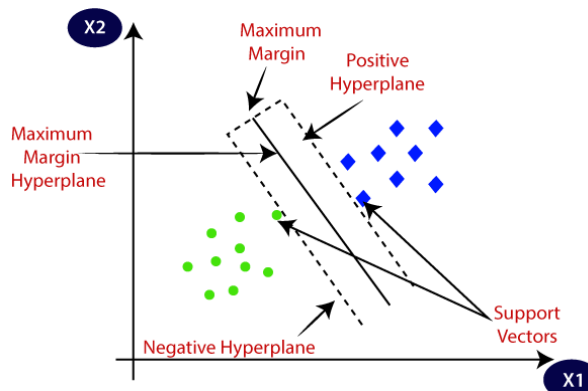
$$P(A|B) = \frac{P(B|A) \cdot P(A)}{P(B)}$$

Labels for the equation:

- $P(A|B)$: Probability of A occurring given evidence B has already occurred
- $P(B|A)$: Probability of B occurring given evidence A has already occurred
- $P(A)$: Probability of A occurring
- $P(B)$: Probability of B occurring

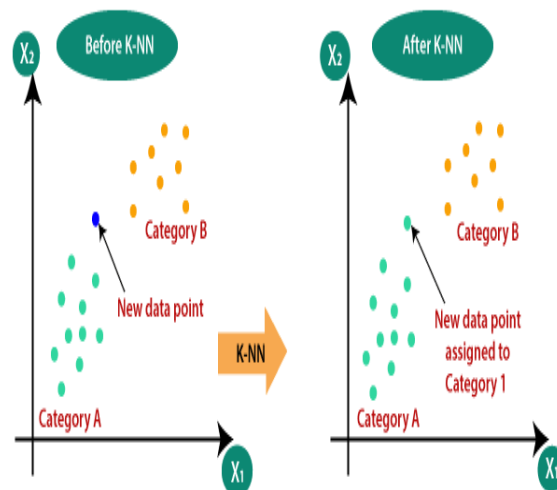
3) Support Vector Machine(SVM):

Support Vector Machine(SVM) is used for both classification and regression and it is supervised machine learning algorithm. The aim is to create the best line or decision boundary that can segregate n-dimensional space into classes so that we can easily put the new data point in the correct category in the future of the SVM algorithm. This best decision boundary is called a hyperplane.



4) K-Nearest Neighbors:

The k-nearest neighbor's algorithm, also known as KNN or k-NN, is a non-parametric, supervised learning classifier. K-NN algorithm assumes the similarity between the new case/data and available cases and put the new case into the category that is most similar to the available categories.



Factor Which is consider for stress students who lived in hostel and the students who lived with their family

1. Lack of awareness:

As the city area are fully involved with the latest technology, but is it observed that the people from the village area even don't know the names of the current trends happing now a day. Because of which parents from the village area are not showing that much interest in sending their child to college on regular basis. This is the main factor because of which the students from the village area are not getting that much education.

2. Network:

This is also the main factor of not getting education properly to the village students. In city area, there is always a strong Wi-Fi connectivity always bonded to the students so all the latest news and all the current affairs in the field of education, the students can grasp very easily and can approach to the particular institute for getting more knowledge about the particular field. On the other hand, the student from the village area don't have any access to the strong Internet connectivity so they don't get all the updates about the current trends happing in the particular field.

3. Support from the family:

This is also the main part of the students. From the observation, is it concluded that almost 90 % of the parents from the city area are well educated and having the great carrier with them, because of which the parents from the city area are more interested in giving the great knowledge to the child's for getting the good placement opportunities. They support their child in all possible way. But on the other hand in the village area, very few parents are having the good carrier option with them and other parents are engage with their own family business so these kind of parents who are running their family business are approaching their child to do the same thing and support their family. Because of which, the students from the village area are not getting the required knowledge about the current trends.

4. Following another's trend:

It has been observed that the students from the city area are properly focusing on their carrier options and following the same path they have decided. The students already prepared to the perfect plan of what to do in their carrier and they are discussing with their parents and teachers about the same for properly getting the same thing they decided. On the other hand, the students from the village area are

not making any perfect path for making their carrier beautiful. They are following the way; the another student is concentrating. If any educated family from the village area are sending their child for joining the any course, then most of the times it happens that the another parents are sending their child to the same course instead of asking their child's interest. This is also one of the major factor of not getting the proper education by following another's course structure.

5. Lack of Infrastructure:

This is also one of the import factor taken into consideration where the students from the city area can get access to the perfect infrastructure required for the education that consists of the lab required for the attending practical's and well equipment's are also arranged that helps in making practical's more effective. But on the other hand, the students who are from rural background don't have access to such infrastructure where they don't get well equipped lab so because of this the students from the rural background don't get that much knowledge as compared to students who lived in city.

There are so many other factors that taken into consideration due to which the several students are diverted from the proper education. In the same observation, it is also found that many parents from the village area are also supporting their child's by sending them to the city for the higher education. In that case, the students from the village are taking hostel for living where they are completing their study. When the stress level of the students who are living in hostel are compared with the students that are living at home, then it has been observed that the students from hostel are facing so much pressure and taking too much stress. There are also many factors behind it. Few of them are trying to discuss here.

1. Match with the current environment:

From the observation, it is observed that the students who are coming from the village area are not that much involving in all the college level activities due to the insufficient knowledge. They feel that the students from the city area have the knowledge of the particular field so only those students are actively participating in many outside functions arranged by the college.

2. Communication Gap:

It is observed that the students from the city area have too much confidence while communicating with the other parties due to the continuous touch up with the subject while on the other hand, the students from the hostel who came from the different rural area have lack of confidence while making the communication with the other parties like friends or with the teachers.

3. Language Problem:

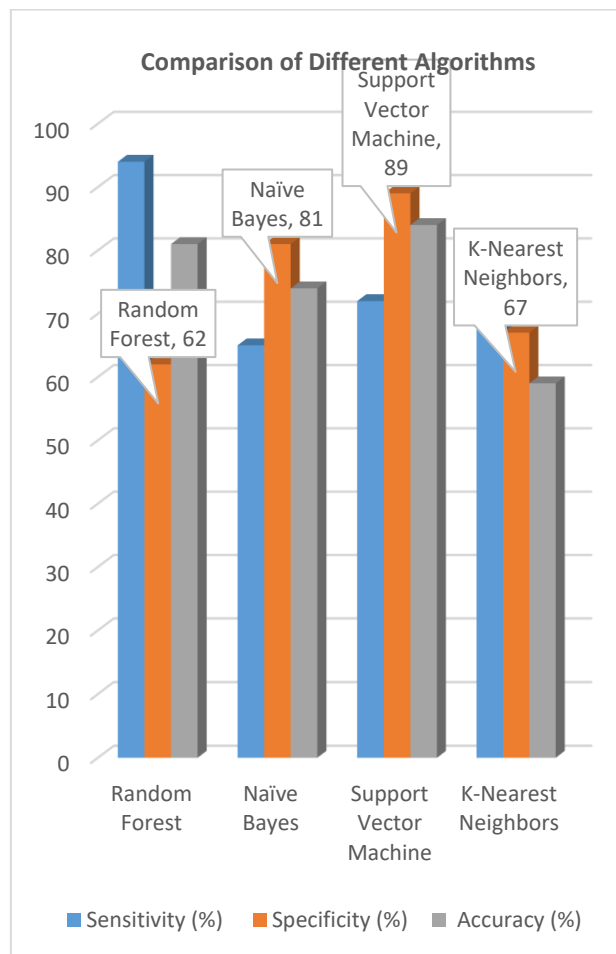
It seems that almost all the students from the city area are trying to send their message in English and this can be easily done by continuous practice but on the other hand, the students from the rural background are not using that much English while communicating with the other parties due to the insufficient knowledge of the subject.

There are many other factors through which is observed that the students from rural area are always taking one step back. From the survey it is clear that that hostel students are facing so many difficulties. Adding one more the important factor that the hostel students don't have as such watch from their family. The students who are taking the education who lived with the family have a continuous watch on what the child is going to do, at what time he / she is joining the college and what the child is doing in their free time. Family members mainly mother and father are taking follow up of all these factors for better future of the child but on the other hand, the students who lived at the hostel don't have that much watch from the family members because of which the students are not giving proper attention toward their study and not joining practical batches as per the schedule so at the examination time, the hostel students can face so much of the stress.

Results and Discussion:

Comparison of Different Algorithms

	Sensitivity (%)	Specificity (%)	Accuracy (%)
Random Forest	94	62	81
Naïve Bayes	65	81	74
Support Vector Machine	72	89	84
K-Nearest Neighbors	70	67	59



Conclusion:

As per the study, it is concluded that the students from the rural area are suffering too much of the mental stress, somatization, obsessive, interpersonal sensitivity, depression, anxiety, hostility, fear, paranoia and psychosis as compared with the students who are living with their family in city. But if family is very supportive and take keeping watch on student then Hostellers also given best performance. It is also found that dropped in academic year percentage is more in hostellers as compared to students with family.

References:

- 1) <https://www.javatpoint.com/machine-learning-support-vector-machine-algorithm>

- 2) https://jpt.spe.org/top-machine-learning-algorithm-explained-support-vector-machines?gclid=CjwKCAjw5pShBhB_EiwAvmnNV8JlxYT0bbnGmjRAHOwiMJZ9895f7HOLurOPSz3v98FBRsWWpYBnzRoCSDMQAvD_BwE
- 3) <https://www.analyticsvidhya.com/blog/2017/09/understaing-support-vector-machine-example-code/>
- 4) <https://ijrpr.com/uploads/V3ISSUE9/IJRPR6854.pdf>
- 5) <https://www.omicsonline.org/open-access-pdfs/a-qualitative-study-investigating-the-impact-ofhostel-life-1522-4821-1000204.pdf>
- 6) https://www.researchgate.net/publication/339911074_Model_for_predicting_academic_stress_among_students_of_technical_education_in_India
- 7) https://www.googleadservices.com/pagead/aclk?sa=L&ai=DChcSEwjyG_G1r4X-AhXLk2YCHaFwBncYABABGgJzbQ&ohost=www.google.com&cid=CAESbeD2ADEAPUrQf9ioZdMom6MFIClzbVCJaZ5OJKTyzmUxz4jz5kGivNmgWnFZ0NDobTBUiNgCLpBVgpleQbBQsK5TxyEABlupQidFFr5UG3OQf2kkY4FFiXBupBGy0nfOTtYoigc16mn4xTMLBRQ&sig=AOD64_2Auge7Wqy8_wV7Tz0GSmbkQZEBNw&q&adurl&ved=2ahUKEwjnh-m1r4X-AhVT4DgGHSktAkWQ0Qx6BAgIEAE
- 8) https://www.researchgate.net/figure/Association-of-stress-factors-with-students-in-hostel_tbl1_329916797
- 9) <https://rjptonline.org/HTMLPaper.aspx?Journal=Research%20Journal%20of%20Pharmacy%20and%20Technology;PID=2015-8-6-26>
- 10) <https://www.sciencedirect.com/science/article/pii/S2590291122001115>
- 11) https://www.alwujud.com/stress/?gclid=CjwKCAjw5pShBhB_EiwAvmnNV10ZzVS87jlbwN7E9E7IPZ_nufujo4EvB03iA4QjYRzD7-lQqIDXQBoCNnMQAvD_BwE
- 12) https://humanjourney.us/health-and-education-in-the-modern-world/mind-and-health/?gclid=CjwKCAjw5pShBhB_EiwAvmnNV1zz6bxZwAN56C36yCEXaFGI5mz50hJoUllD6RDsWbcGZyUV1gAzkhoCqt0QAvD_BwE
- 13) [https://americanaddictioncenters.org/blog/college-coping-mechanisms#:~:text=Degree%20of%20Stress,was%20exams%20\(89%20percent\).](https://americanaddictioncenters.org/blog/college-coping-mechanisms#:~:text=Degree%20of%20Stress,was%20exams%20(89%20percent).)
- 14) <https://dl.acm.org/doi/fullHtml/10.1145/3184558.3191627>
- 15) https://www.researchgate.net/publication/360823672_Prediction_of_Mental_Stress_Level_Based_on_Machine_Learning