Implementation of Machine Learning Algorithm on Factors Effecting Divorce Rate

[1]Prof. Swapnil Wani, [2]Mr.Soham Patil, [3]Miss.Viral Jangale, [4]Miss.Mayuri Baviskar

[1]Asst.Professor,[2,3,4]UG Student,[1,2,3,4]Computer Engg. Dept. Shivajirao S. Jondhle College of Engineering & Technology, Asangaon, Maharshatra, India. [1]swapnilwani27@gmail.com, [2]patilsoham98@gmail.com, [3]vjangale7777@gmail.com, [4]baviskarmayuri56@gmail.com

Abstract- As the number of marriages are growing, so does the amount of detachment and separation. The major factors that prompt separation can be numerous, and machine performed different computations to determine how to characterize the variables. The amount of separation can be reduced by this project as this will consists of possible factors leading to divorce. A sample data set has some main features that cause divorce, and it was properly understood using three different categories of algorithms and its issues are being compared. Based on these factors this project has decided which algorithm is more effective for the characterization of the data set in this operation.

Keywords- Machine learning, divorce.

I. INTRODUCTION

Application of an artificial intelligence machine learning which provides systems the capability to automatically study and upgrade from the experience without being an explicitly programmed. The machine learning enables analysis of massive amounts of data. The reasons for divorces are particularly changeable. There was an research which stated the following purposes. The first was to describe and classify the apparent reasons of separation as reported by quantitative analysis. The alternate purpose was to perceive how the revealed reasons for divorce shifted with supplementary rudiments, (for illustration, sexual exposure also, social class) and life course factors, (for exemplification, age at marriage, term of marriage, precedence changes with time & having children. The third purpose concentrated on a theme little tended to in the literature check relation between the apparent reasons for separation and posterior modification. Specifically, we reviewed individualities' unproductive attributes for separation and how these attributions linked with separate change, connection to the former mate, and general appraisals of life. The most generally perceived reasons people give for their separation are nonappearance of obligation, a great deal of hostility, foul play, marrying too youthful, shy solicitations, absence of fidelity in the relationship, absence of planning for marriage and abuse. Some of these issues can be settled and insulate averted. This design considers a portion of the major factors that can make issues for couples and can lead the relation to its end. The instructional indicator comprises of 10 values and have applied 3 different bracket algorithms on the data to cipher the data pick up from them and subsequently comparing the consequences of every one of the 3 computations to detect the stylish grouping computation among them that can best work in the operation of divorce factors bracket.

II. AIMS AND OBJECTIVE

a) Aim

Testing and detecting various factors affecting separation, changes can be done in the future to help better understand this social problem. The informational index comprises of 10 values and has applied 3 diverse classification algorithms on the data to compute the data pick up from them and afterward compare the consequences of each calculation to locate the best grouping calculation among them that can best work in the application of divorce factors classification.

b) Objective

The main motive of this project is to search reasons affecting divorce rate and make better decisions in the future. Description and categorization of apparent reasons for separation as reported by quantitative analysis. Cognitive technologies that improve the efficiency with which large amounts of information are processed. Perception about how the revealed reasons for divorce shifted with auxiliary elements, and life course factors. Linkage between the apparent reasons for separation and subsequent modification.

III. LITERATURE SURVEY

Paper 1: The Third Wheel: The Impact Of Twitter Use On Relationship Infidelity and Divorce:

The actual motive of this study was to examine, how the social networking spot use, specifically The Twitter use, influences pessimistic interpersonal relationship issues.

This study examined the meditational consequence of Twitter related dispute on the link between effective Twitter use and pessimistic relationship issues and how this medium may be based on the period of the romantic connection. An aggregate of 581 Twitter druggies aged 18 to 67 years (Voodoo = 29, SDage = 8.9) finished an online survey questionnaire.

Paper 2: The Cheating, breakup, and divorce: is Facebook use to blame?:

The actual motive of this study to research the link between using the SNS named as Facebook and pessimistic interpersonal relationship issues. A check of 205 Facebook druggies aged 18-82 was managed using a 16-questions online survey to examine whether high statuses of Facebook use prognosticated negative relationship issues (separation/ divorce, emotional unfaithfulness, and physical unfaithfulness).

Paper 3: Reasons for divorce and openness to marital reconciliation:

This study explores constituents that annulment couples say resulted to the failure of their marriage and how those constituents are related to debates and interest in conflict.

Common reasons given for getting a divorce were "growing piecemeal" and "not capable to talk together". Growing piecemeal, variations in tastes and commercial problems were pessimistically associated with interest in conflict; abuse and unfaithfulness weren't associated with interest in conflict.

IV. EXISTING SYSTEM

The usage of social networking spot (SNS), particularly Twitter, has an impact on the outcomes of poor interpersonal relationships. This study explores the meditational influence of Twitter-related dispute on the link between effective Twitter use and pessimistic relationship outcomes, as well as how this mechanism may differ relying on the period of the loving bond. Breakup, poignant cheating and tangible cheating are all predicted unfavorable relationship outcomes by Facebook users. Those who used Facebook more frequently were predicted to have worse relationship results than those who had less usage. The researchers next looked into whether Facebook-related conflict mediated these relationships. Furthermore, the researchers examined the period of the relationship as a judged variable in the aforementioned model.

V. COMPARTIVE STUDY

SR NO.	PAPER TITLE	AUTHOR NAME	METHOD	ADVANTAGE	DISADVANTAGE
1.	The third wheel: the impact of Twitter use on relationship infidelity and divorce	R. B. Clayton	Moderation- mediational relapse examines using bootstrap technique designated that Twitter-related conflict medicated the relation active twitter outcomes.	Twitter-related conflict will mediate the negative relationship outcomes.	Increased amount of twitter use will lead to more disputes.
2.	Cheating, breakup, and divorce: is Facebook use to blame	R.B. Clayton, A. Nagurney, and J. R. Smith	Mediation and Moderation upon information collected via online survey link.	It will mediate the relationship between Facebook usage and negative relationship outcomes.	Online survey link was only limited to Facebook users.
3.	Reasons for divorce and openness to marital reconciliation	A. J. Hawkins, B. J. Willoughby, and W. J. Doherty	Multinomial Logistic Regression.	Factors recognized for divorce increased the chances of successful reconciliation.	Time consuming and limited dataset which cannot be generalized.

VI. PROBLEM STATEMENT

Commitment is without a doubt a key component in why just a few couples manage to stay together. The desired goal of every commitment is for it to last as long as possible. There are many roadblocks in the way of reaching this goal. Researchers have uncovered a variety of explanations that people give for their parting of ways. According to a recent online study, the common cause for divorce is "lack of commitment." A lot of bickering, unreasonable desires, betrayal, as well as early age marriages, maltreatment, and excessive expectations, were all major factors. Divorced people are more depressed, have more health difficulties, and are less contented with their lives than married people. Because divorce has such a negative impact on people, researchers have tried to figure out how the causes of divorce are linked to various post-divorce outcomes. The number of uncoupling can be diminished if we have adequate knowledge of the key reasons and behaviors that can direct towards connection's termination. The addition of reconciliation factors, identification, and classification of more mercurial and rare factors are all problems that the factors impacting the divorce rates system must answer.

VII. PROPOSED SYSTEM

The first was to delineate and categorize the apparent reasons for separation as reported by quantitative analysis.

The second intent was to perceive how the divulged reasons for divorce shifted with auxiliary elements, (for example, sexual orientation also, social class) and life course factors, (for example, age at marriage, term of the marriage, priorities changes with time & having kids. The third goal concentrated on a theme infrequently tended to in the literature survey: linkage between the apparent reasons for the parting of the ways and successive modification. It looked at a few of the primary causes that might cause problems for couples and contribute to the separation of their relationship. The informational index has ten values, and we used three distinct algorithms based on the classification to compute the data, then compared the results of each of the three computations to find the finest grouping calculation among them that can work best in the application of factors related to divorce classification.

VIII. ALGORITHM

Step 1: Start
Step2: importing the database and establish the connection.
Step 3: initialize DivorceAplAction
DivorceUtility du new DivorceUtility()
request.getParameter("usrmarriegedate")
cheatingScore
du.cheatingandInfidelityScore(reason)
abuseScore du.calculateAbuseScore(reason)
ageScore du.ageCalculation(age)
("Cheat Score " +cheatingScore+"Abuse Score "+ abuseScore + " Age " + ageScore);
response.sendRedirect("ApplyingDivorce.jsp?msgsuccess")
response.sendRedirect("ApplyingDivorce.jsp?msgfaild")
response.sendRedirect("ApplyingDivorce.jsp?msgexist")
Step 4: UserRegisterAction
Step 5: UserLoginCheck
Step 6: implementing divorce steps
cheatingandInfidelityScore(String reason)
score 0
divorceWOrd reason.split("\\s+")
count 0
("Error at cheatingandInfidelityScore " + e.getMessage())
return score
calculateAbuseScore(String reason) {
score 0
ageCalculation(int age) {
ageScore 0
(age >= 18 && age <= 30) {
ageScore 3
} else if (ageScore >= 30 && ageScore <= 40)
ageScore 2
} else { ageScore 1
Step 7: Applying decision tree
calculateDecesiontree(String email, int cheating, int gender, int age, int abuse, int socialactivity) {
String divorceStatus null
(cheating 1) {
(socialactivity 3) {
(abuse 1) {
(gender1)
divorceStatus "Yes"
} else {
divorceStatus "No"
}} else {divorceStatus "Yes"}} else if (socialactivity 2)
if (age 3) {divorceStatus "Yes"} else if (age 2) {divorceStatus "No"} else { divorceStatus "Yes"
} } updateUserDivorseStatus(email, divorceStatus)

return divorceStatus
 <li class="nav-item">
Decision Tree
Step 8: Applying NaiveBayes
calculateNaiveBayes(int cheating, int gender, int age, int abuse, int socialactivity) {
divorcereason nul
if (cheating 1) {
if (socialactivity 3) {
if (abuse 1) {
if (gender 1) {
divorcereason "Gender
} else {
divorcereason "Gender"
}} else {
divorcereason "Abuse"}}
 else if (socialactivity 2) {
if(age 3) {
divorcereason "AGE
} else {
divorcereason "Social Activity"
} else { divorcereason "Cheating"
}return divorcereason
public void updateUserDivorseStatus(String email, String divorceStatus) {
 <li class"nav-item">
<a class"nav-link" href"NaiveBayes.jsp">Naive Bayes
Step 9: Applying KNN
calculateKNN (int cheating, int gender, int age, int abuse, int socialactivity) {
divorcereasonnull
<li class="nav-item">
Nearest Neighbor
Step 10: comparing the consequences and calculations to locate the best grouping calculation for all above algorithm**.**
Step 11: Update the divorce status { }
Step 12: Stop

IX. MATHEMATICAL MODEL

1.Decision tree: In this project, using this technique on the dataset to create hypotheses to make general conclusions is an excellent method of machine learning for classification. In this technique, each attribute of a dataset is compared to the target attribute, and the IG is calculated using the entropy of each attribute to measure how well a specified attribute divides the training examples based on their target classification.

$$\text{Gain}(x, y) = \text{Entropy}(x) - \text{Entropy}(x, y)$$

2.K-nearest neighbor: It is use for classifying objects. It uses the distance formula to analyze distance between 2 points in the dataset First the numerical value was assigned to every attributes value in dataset. The value of K=1, then by Euclidean distance formula we calculate the KNN.

$$D_H = \sum_{i=1}^{k} |X_i - Y_i|$$

$$x = y => D = 0$$

$$x \neq y => D = 1$$

$$dist\big((x,y)(a,b)\big) = \sqrt{(x-a)^2 + (y-b)^2}$$

3.Naive Bayes: It is statically supervised classification learning based on the proposed Bayesian theorem. Every set of features being classified is distinct from the others.

We took new cases from the dataset and attempted to classify them. First, we create a tabular format for the dataset, then we use 'A' as a test case for the dataset in order to calculate hypothesis 'B' using the theorem.

$$P\left(A/_B = \frac{P(B/A)P(A)}{P(B)}\right)$$
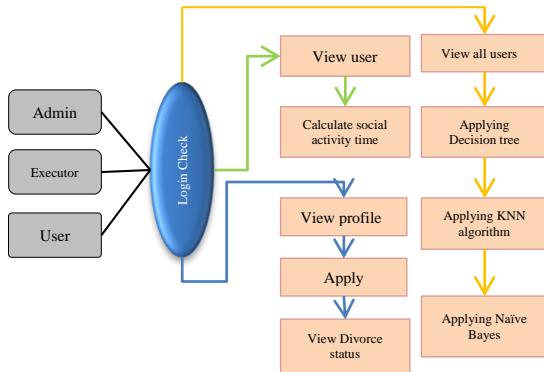
X. SYSTEM ARCHITECTURE

Fig.1: System Architecture

Description: There are 3 main modules

User: The user is the person who is married in their teen age or the ordinary age like 22, or 23 are having probability of separation and applying for divorce. People who marry in teen age have little time to find appropriate partner, and may be poorly prepared to understand marital roles and often lack economic resources these people are the users.

The Executor: The executor will observe the social activity of the users. He can calculate the overall social activity time of the users. When users applying for divorce that users' social activity time the executor will calculate and forward to administrator for further calculation.

Administrator: The administrator will apply the 3 algorithms on user dataset. Based on users applied divorce he can calculate the individual score of abuse words list. Here we can take the abuse word list from dataset. The Administrator will apply the algorithm of decision tree after that he can apply KNN & Naive Bayes algorithm to identified which is approved or not.

XI. ADVANATGES

Less power to be used for computation or resources, such as RAM, CPU, GPU, or TPU, etc.

The most common factors can be predicted that can be the reason for marriage.

Naive Bayes is a simple algorithm that works well when we are dealing with small training sets. Delivers faster and more reliable results to identify profitable opportunities. Testing and detecting various factors affecting separation, changes can be done in the future to aid in better understanding of this social problem.
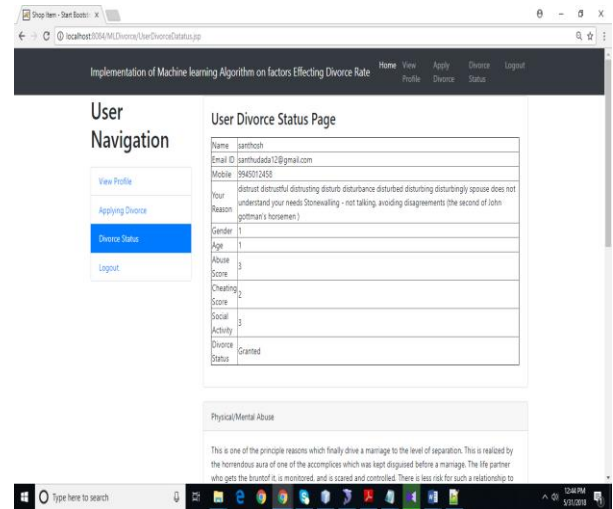
XII. DESIGN DETAILS

Fig.2: Result

XIII. CONCLUSION

Thus, we have tried to implement the paper "Sana Sohail, Sadia Aziz, Faizan Tahir and Sufyan Haqqui, Fellow", "Implementation of Machine learning Algorithm on factors Effecting Divorce Rate", IEEE 2018, and according to the implementation the conclusion is to predict whether a couple is going to get divorced or not with the information of user data about their married life. The Naive Bayes algorithm is the most accurate algorithm for predicting a divorce in a small training dataset. The accuracy is compared with other algorithms i.e., KNN and decision tree. Based on calculations of all algorithms and their comparisons, it decides whether to grant a divorce or not. It can be seen that the naive Bayes algorithm gives high accuracy than others; but if the training dataset increases, KNN is more considerable.

REFERENCE

[1] Sana Sohail, Sadia Aziz, Faizan Tahir, Sufyan Haqqui, "Implementation of Machine learning Algorithm on factors Effecting Divorce Rate", IEEE 2018.

[2] R. B. Clayton, "The third wheel: the impact of Twitter uses on relationship infidelity and divorce," Cyberpsychology, Behavior, and Social Networking, vol. 17, pp. 425-430, 2014.

[3] Amato, P. R., & Rogers, S. J. (1997). A longitudinal study of marital problems and subsequent divorce. Journal of Marriage & the Family, 59, 612-624.

[4] C. Gelb and E. Leibowitz, "Developmental Psychology at Vanderbilt."

[5] A. J. Hawkins, B. J. Willoughby, and W. J. Doherty, "Reasons for divorce and openness to marital reconciliation," Journal of Divorce & Remarriage, vol. 53, pp. 453-463, 2012.

[6] R. B. Clayton, A. Nagurney, and J. R. Smith, "Cheating, breakup, and divorce: is Facebook use to blame?" Cyberpsychology, Behavior, and Social Networking, vol. 16, pp. 717-720, 2013.

[7] D. Previti and P. R. Amato, "Is infidelity a cause or a consequence of poor marital quality?" Journal of Social and Personal Relationships, vol. 21, pp. 217-230, 2004.

[8] D. Kurz, "Separation, divorce, and woman abuse," Violence against women, vol. 2, pp. 63-81, 1996.