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ABSTRACT

Passwords are ubiquitous authentication methods and they represent the identity of an individual for a system Thus it is important for users to recognize the vulnerabilities to which passwords are subjected, and develop strong policies governing the creation and use of passwords to ensure that those vulnerabilities are not exploited. We provide a solution to solve this problem through employs machine Learning technique to analyze the strength of the password to facilitate and raise the efficiency and strength of their passwords to provide a highly secure environment.

Key Words

Password strength, Classification, Machine Learning, Data-set

INTRODUCTION

Keeping our data private is a major concern, and one way to keep our data safe is via a good password.
Password Strength Checker are widely used helping users to create better passwords , yet they often provide ratings of password strength that are, at best, only weakly correlated to actual password strength Machine learning applications vary from field to field ,This work proposes a framework to analyze the strength of the password proactively. To analyze the chosen password, By classification algorithms in machine learning with comparisons of the classification accuracy of each algorithm

RESULTS

The results were very interesting through accuracy and predictability Strongly password by using ensemble of six classification algorithms
and It was the best algorithms is neural network as the diagram shows Chart 2.Accuracy Comparison of Algorithms .

And with the use of technology Voting Classifier the we find the accuracy comes out to be 95% which is great considering we did not use a large amount of data.

the table of classification report at the bottom Table 1 shows the result of using voting algorithm .

followed by the histogram of Class Prediction Error Chart 1.

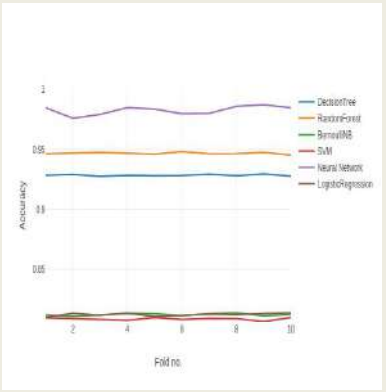


Chart 2.Accuracy Comparison of Algorithms .

METHODS AND MATERIALS

- We use machine learning technique allows us to provide feedback on the strength of the password entered by the difficulty classification of passwords from weak to medium to difficult Depending on the classification algorithms and the database containing a set of passwords with their class. by using the following :
- Implementation: We chose python as language, libraries (Scikit-learn)
- Environment : PyCharm Community Version (2018.1) Multiclass
- classification algorithms : RandomForest Classifier,Logistic Regression DecisionTree Classifier,Naive Bayes classifier for multivariate (BernoulliNB),Linear Support Vector Classification,neural_network(MLP Classifier) Ensemble classification
- methods : Voting Classifier (majority vote) Data-set contains the password and its classification .

Table 1. Classification Report.

Class	precision	recall	f1-score	Support
weak	0.95	0.81	0.88	17833
Average	0.93	0.99	0.96	99525
strong	0.98	0.74	0.84	16570
avg / total	0.94	0.94	0.93	0133928

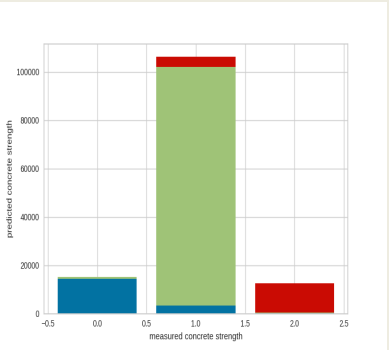
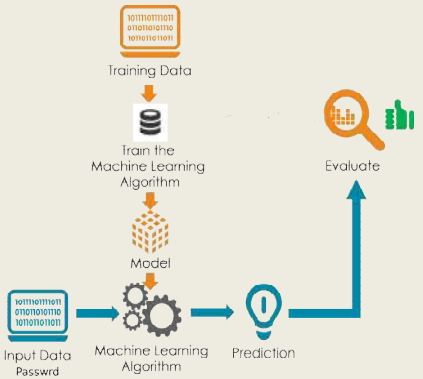


Chart 1. Class Prediction Error.

Despite the existence of more secure methods of authenticating users, including smart cards and bio metrics, password authentication continues to be the most common means in use.

The problem of choosing weak passwords that are highly vulnerable and likely to undergo brute force attacks and enforcing the choice of strong passwords is something vital and has to be addressed in a proper manner ,like Depending on artificial intelligence applications to classification of passwords and with using like our work we can the password security layer can be increased



Example 1. Evaluation of Password.

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