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Name: G Sai Nithin Kumar
Register Number: 192110652
Guided by N.Poongavanam

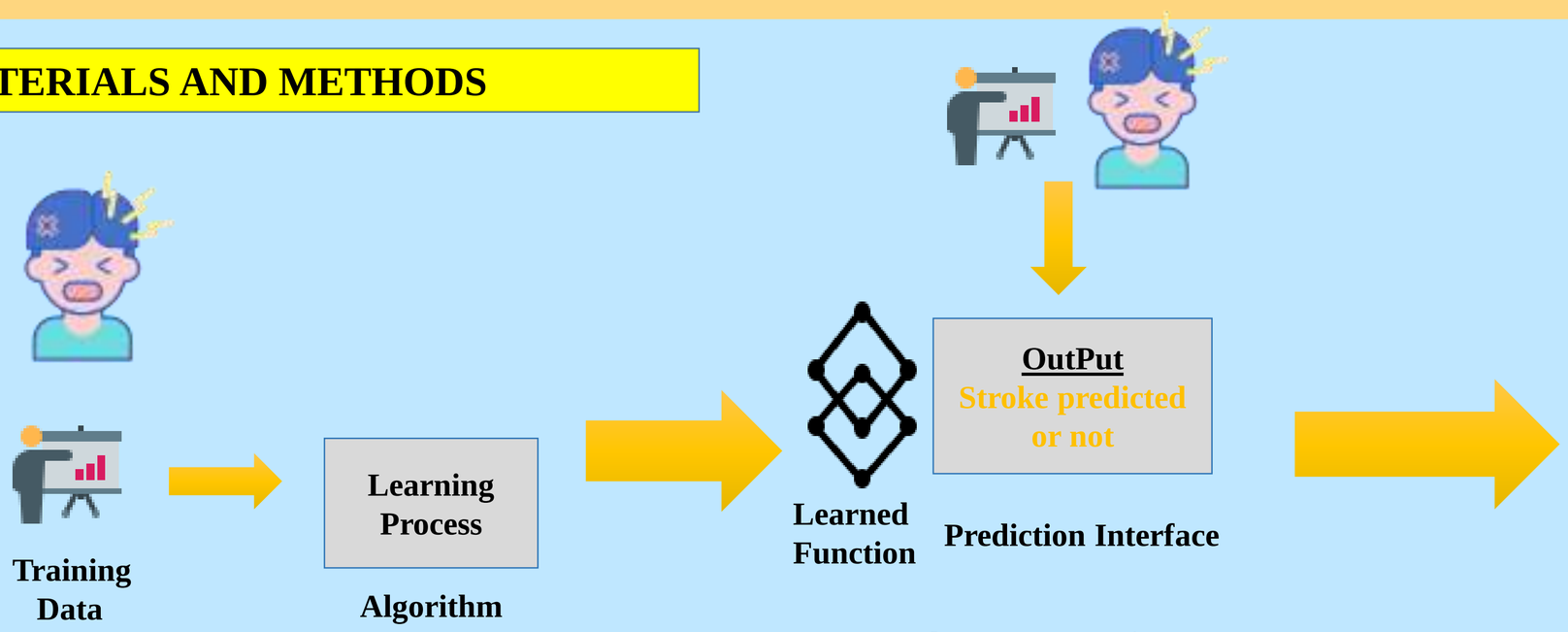
Competitive Analysis Between Advanced Random Forest Algorithm and Logistic Regression In Automated Stroke Anticipating Mechanism With Improved Accuracy

INTRODUCTION

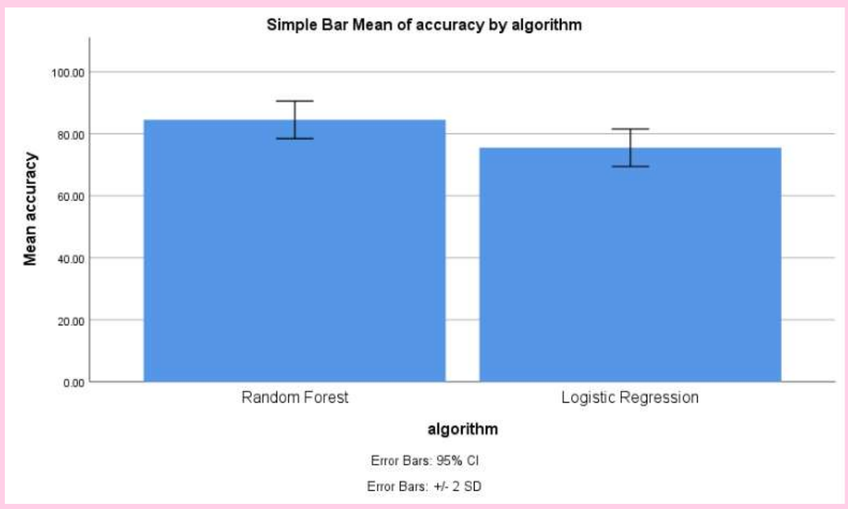
- The aim of this study is to compare the performance of the Advanced Random Forest Algorithm with Logistic Regression in automated stroke anticipating mechanism to identify which algorithm yields superior accuracy.
- The objective is to compare and contrast RF with LR in terms of accuracy for stroke Anticipating Mechanism Using Machine Learning Algorithm.
- The study involves two groups, each with a sample size of 10 patterns, using 'healthcare-dataset-stroke-data.csv' data set for Stroke Rate Detection with machine learning. Prediction settings G-power 90%, CI 95% & α=5%
- Machine learning techniques are used to Stroke Rate Detection analyzing previous Stroke Rate and other relevant parameters.
- The system makes use of RF and LR which are optimized for the prediction of stroke.
- The total number of samples should be discussed in the context of achieving a balance between statistical power and practical considerations.
- Implementation of the Advanced Random Forest Algorithm leads to Healthcare providers can use the algorithm with higher accuracy to assist in the early anticipation of stroke, leading to prompt interventions and improved patient outcomes.

Stroke Rate Detection System

MATERIALS AND METHODS



RESULTS



Comparison of RF algorithm and LR algorithm considering mean accuracy

	Algorithm	N	Mean	Std.Deviation	Std.Error Mean
Accuracy	RF	10	84.5000	2.02765	0.95743
	LR	10	75.5000	2.02765	0.95743

Leven's Test for Equality of Variances				t-test for Equality of Mean			95% Confidence Interval of the Difference	
		F	Sig	Sig (2-tailed)	Mean Difference	Std.Error Difference	Lower	Upper
Accuracy	Equal Variance assumed	0.00	0.280	.001	5.27000	.01354	3.17363	6.36637
	Equal Variance not assumed			.001	5.27000	.01354	3.17329	6.36671

DISCUSSION AND CONCLUSION

- The p-value (significance) is <0.001 obtained from the Independent Samples t-Test using the SPSS statistical tool, which is less than our chosen significance level p=<0.05. In other words, the observations were statistically significant. In this Test we are Taking 10 Samples For Each Group.
- The Random Forest has an 97.00% accuracy when compared to the Logistic Regression with an accuracy of 79.00%.
- The major drawback is Integrating Random Forest models into production environments may be more complex compared to Logistic Regression due to their computational requirements and potential scalability issues. Logistic Regression models are generally easier to deploy and maintain in real-world applications.
- Additionally, Test the algorithms in clinical settings and assess their practical utility for early stroke anticipation and intervention and Explore methods to improve the interpretability of Random Forest models without sacrificing accuracy.
- In future the drawbacks can be overcome by implementing advanced machine learning algorithms such as Random Forest which give more accuracy within a a short interval of time.
- According to the findings, in terms of accuracy, the Random Forest achieves considerably better than the Logistic Regression for Stroke Anticipating Mechanism.

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