**Machine Learning Case Study**

**Team 6**

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**Summary**

The model building and prediction is being done for company X Education and to find ways to convert potential users. We will further understand and validate the data to reach a conclusion to target the correct group and increase conversion rate.

Let us discuss steps followed:

1. **EDA:**

* Quick check was done on % of null value and we dropped columns with more than 40% missing values.
* We replaced the ‘select’ values with ‘NaN'.
* Since India was the most common occurrence among the non-missing values, we imputed all not provided values with India.
* Then we saw the Number of Values for India were quite high (nearly 97% of the Data), so this column was dropped.
* We also worked on numerical variable, Categorical variables and remove the ouliers.

1. **Train-Test split & Scaling :**

* The split was done at 75% and 25% for train and test data respectively.
* We have done scaling on the variables ['TotalVisits', 'Page Views Per Visit', 'Total Time Spent on Website']

1. **Model Building**

* We have attained top 13 relevant columns out of which 12 are independent and 1 is dependent (‘converted’ column).
* Independent columns contain 9 categorical feature and 3 numerical features.
* Dummy variables of the categorical features were created by using get\_dummies() method.
* As our target variable is categorical, for providing training or fitting the model to the training set, we will import the Logistic Regression class of the sklearn library.
* After importing the class, we have created a classifier object and used it to fit the model to the logistic regression.

**4. Predicting the Test Result**Our model is well trained on the training set, so we have predicted the result by using test set data.

1. **Model Evaluation**

* We have created the confusion matrix here to check the accuracy of the classification.
* True Positive = 745.
* True Negative = 1330
* False Negative = 82
* False Positive = 54

**Accuracy = 93%**

**Precision = 94%**

**Recall = 87%**

**Specificity = 96%**

1. **Conclusion**

Top variable contributing to conversion:

* Tags: Will revert after reading the email. Closed by Horizon.
* Total time Spent on Website:
* Last Notable Activity: SMS Sent.
* Lead Origin: Lead Add Form.
* Current Occupation: Working professional.

The Model seems to predict the Conversion Rate very well and we should be able to give the Company confidence in making good calls based on this model.