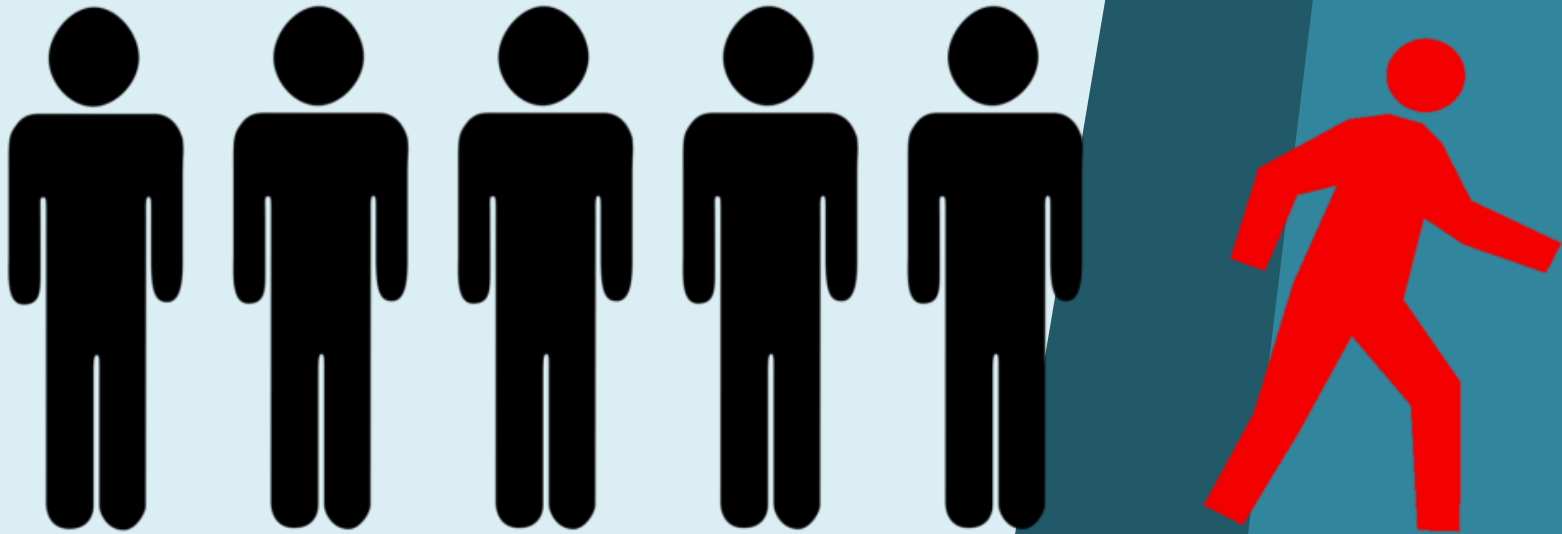


Use-case Churn:

Mobile Phone Contract



By

Isaac Ikwuegbu

Introduction

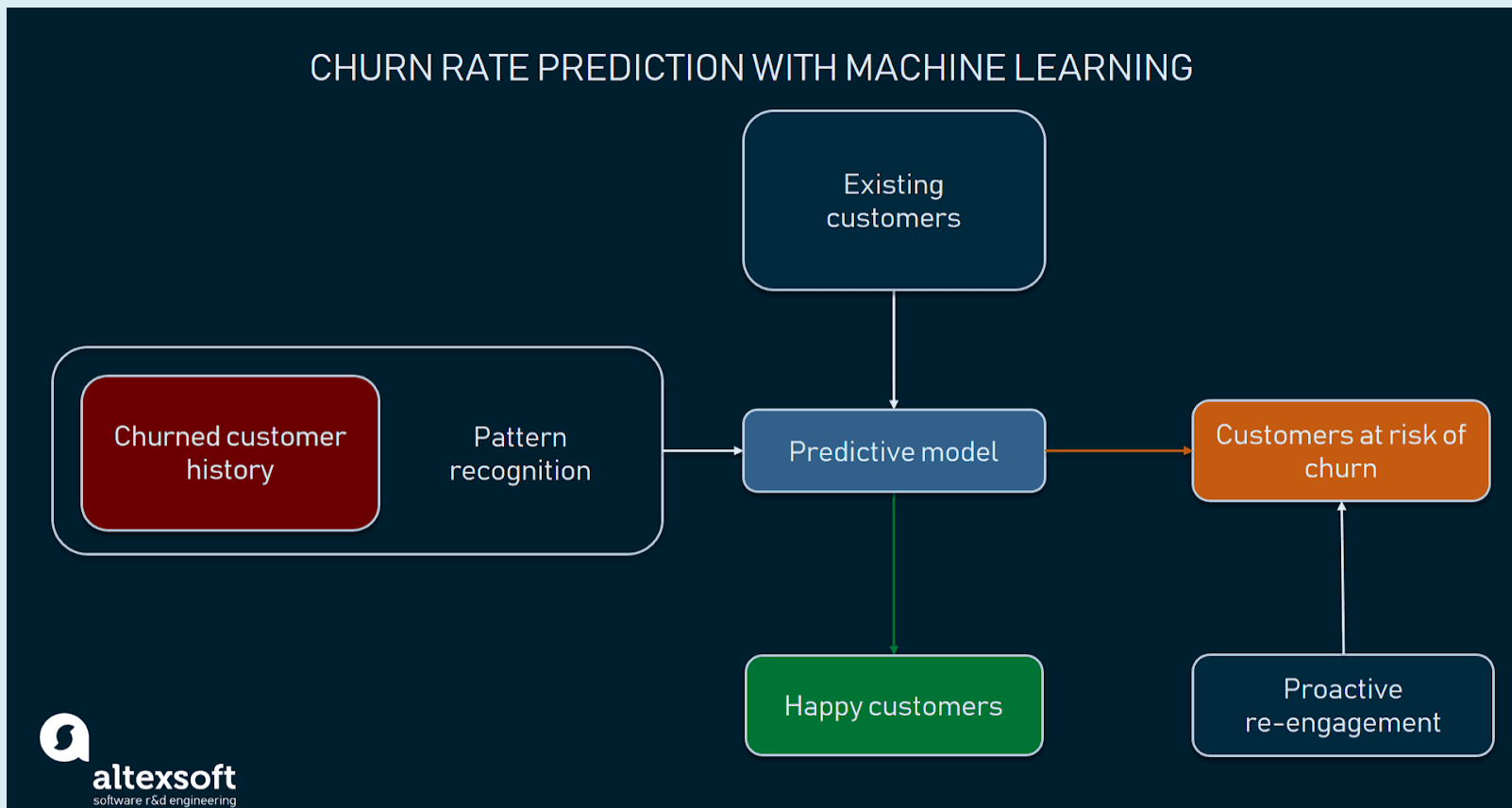
Justification for the Use-Case Churn:

In a typical Telecommunication company, customers often find reasons to cancel subscription contracts from one outfit to another – a term called churn. There is need to prevent this occurrence using machine learning procedures. Doing this properly will help identify customers who may churn, reduce churn rate and improve success rate of retention effort.



Use-case Aim

- We will develop a machine learning technique for predicting these target customers in order to increase value for the telco.



Use-case Scope

- The project scope will be limited to the creation of a Machine Learning Canvas for this use-case. I would proceed to discuss all the various sections of it, as well as how to apply it to a real scenario.



Overview of the Structure of the Project

- Prepare a machine learning canvas to discuss how the use-case will generate value
- Develop methodologies to quantify the use-case
- Discuss ways to obtain data sets to train the prediction model
- Determine how successful the prediction model will be. Then measure the success metric.











The Machine Learning Canvas

Designed for:

Designed by:

Date:

Iteration:

Decisions  <p>How are predictions used to make decisions that provide the proposed value to the end-user?</p> <p>Based on the classifier rating, a threshold is used to determine if a target is a churner</p>	ML task  <p>Input, output to predict, type of problem.</p> <p>Input: customer output: churn classification</p> <p>Classification methods for Input datasets of churners and active users for output of target users</p>	Value Propositions  <p>What are we trying to do for the end-user(s) of the predictive system? What objectives are we serving?</p> <p>Making better phone contracts by preventing customer churn:</p> <ol style="list-style-type: none"> 1) Predict customers likely to churn 2) Find out their reasons for churning 3) Resolve the issues for them by making better offers to them 	Data Sources  <p>Which raw data sources can we use (internal and external)?</p> <p>Monthly data volume for churned and active users, survey results, payments database, individual analysis results</p>	Collecting Data  <p>How do we get new data to learn from (inputs and outputs)?</p> <p>Check out, Customers snapshot taken last month, ERP systems</p>	
Making Predictions  <p>When do we make predictions on new inputs? How long do we have to featurize a new input and make a prediction?</p> <p>Decision trees are used to create a model that predicts the values of a target based on several input values.</p>	Offline Evaluation  <p>Methods and metrics to evaluate the system before deployment.</p> <p>Evaluate new models accuracy on pre-defined customers, ROC plots, lift curves, and expected probability.</p>	Features  <p>Input representations extracted from raw data sources.</p> <p>Basic customer info such as: age, city, etc subscription, customer support interactions</p>	Building Models  <p>When do we create/update models with new training data? How long do we have to featurize training inputs and create a model?</p> <p>Monthly retraining of the prediction model</p>		
Live Evaluation and Monitoring  <p>Methods and metrics to evaluate the system after deployment, and to quantify value creation.</p> <p>Accuracy of last month's predictions on hold out set, Feature weight, Confusion matrix, accuracy score, Precision-Recall-Curve, F1 score, ROC curve</p>					

How the Use-case will generate value

- By carrying out a use-case prediction analysis, Telecom companies will be able to:
- -better anticipate the moves of dissatisfied customers in order to offer them better and improved incentivized services that could keep them
- -this will in turn increase profitability for the Telco
- -this can be used to plan for targeted market campaigns which results in reduced costs and higher potentials

How can this use be quantified

Churn rate can be quantified from monthly data obtainable from CRM database.
This can be calculated thus:

$$\text{Churn rate} = (U_b - U_e) / U_b$$

$$N_c / [(U_m \times D_m) + N_u \times 0.5 \times D_m] \times D_m = \text{Probable monthly churn}$$

Where U_b = Users at beginning of month

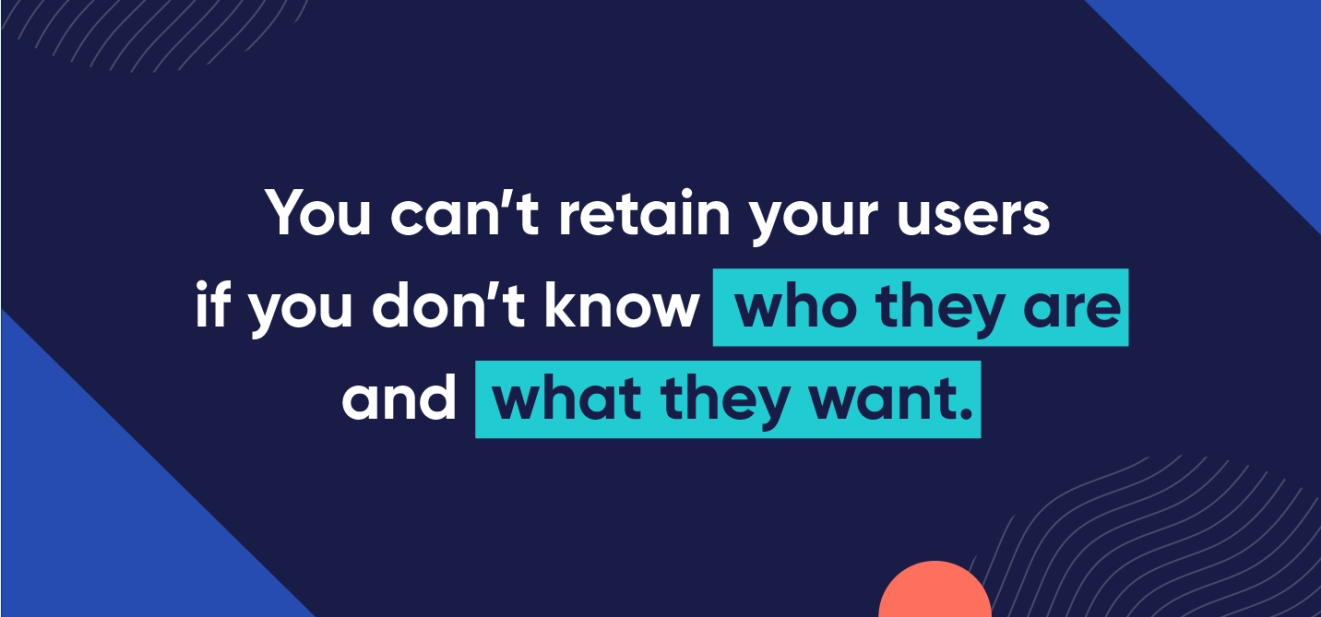
U_e = Users at end of month

U_m = Users at end of month

D_m = Days in the month

Which data are likely needed

- Customer and call details for any network provider. A call detail will contain information such as plan data, reload amounts, handset attributes, and counts and times of various categories of calls or messages. In total, up to 111 local attributes relating to call/customer details could be gathered for analysis.



**You can't retain your users
if you don't know **who they are**
and **what they want.****

How is success defined and how is it measured for the use-case

- Success for this use-case is defined for when the implementation of the use-case leads to a reduction in the churn rate of the telco.
- By comparing the churn rate with industry benchmark, local churn rate is determined for the telco. We can determine that our model is successful when local churn rate is less than the benchmark.



Presentation of use-case churn for Mobile phone contract, Isaac I.

Conclusion

The use-case analysis for a mobile phone contract of a company is becoming a popular trend. Mobile phone companies must strive to keep their customers, esp. unhappy ones. The tools to predict and analyze the use case starts with a Machine Learning Canvas (MLC). In this presentation, the MLC is used to answer questions such as:

1. How to generate value using use-case
2. How can this use-case be quantified
3. Which data are likely needed, what needs to be predicted and what are the subsequent actions
4. How is success defined and how is it measured.

List of figures

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