

## A brief report on Wells Fargo Campus Analytics Challenge

By: Sheikh Rabiul Islam , Email: sislam42@students.ntech.edu

In brief, by analyzing the dataset we want to give each customer a gift on his/her birthday. The gift will be according to the customer's credit card usage categories. For example, from credit card usage category if we see that a customer likes to purchase product from the category "Movies" then we can send some movie ticket to the customer on the birthday. Here the purpose of sending a gift is multifold:

Firstly, making the customer happy and showing proof to them how much the bank does care for its customer. Second, get feedback from the customer about the service and what they really expect from the bank.

Wells Fargo can send a stamped envelope and a card with the gift to the customer so that the customer can send it back. In the card, Wells Fargo can ask the customer to write few words about their experience and expectation about the bank and service. The gift will make the customer happy and also encourage to express their feeling. Wells Fargo can also take the chance of a brief product or service advertisement on the other side of the card.

To me, nothing can beat the old-fashioned handwritten feedback from the customer. Using the fixed template to collect feedback introduce limitations in its scope of knowledge gathering. Though handwritten feedback needs longer processing time, it can reveal some innovative idea or some prevailing unknown issues.

Here are technological **steps** to implement the idea above:

1. I have used WF credit card usage category data to find out popular keywords for the customer to find out an appropriate gift. I have used TF-IDF to score the keywords and get top five keywords for each customer.
2. Later I have used following data to calculate the appropriate gift value for a customer:
  - Checking account balance (the more balance the more points towards getting highest valued gift)
  - Savings account balance (the more balance the more points towards getting highest valued gift)
  - Age (the more age the more points towards getting highest valued gift)
  - Tenure (the more old customer the more points towards getting highest valued gift)
  - Interaction (the more interaction the more points towards getting highest valued gift, as the customer wasted lots of time for getting proper service)
  - Web page visit (the more page visit the more points towards getting highest valued gift)

Each of the above profile attributes or user actions has different weight. I have given different weight to those and develop a formula to calculate the appropriate gift value for a customer. The formula is implemented in the code.

3. So, after getting the gift category and gift value, send a gift to the customer (better for customers birthday) with a feedback card.
4. If the customer returns the card with feedback then mine those card for innovative ideas or hidden or unknown issues that need to be taken care of by the management.

I have written the code for above step 1 and 2 which is attached. I have used python to write this code. I stripped the original dataset into multiple parts as needed. Did some preprocessing [capitalization, removing quotes] on the data. All customer does not use a credit card. Those who do not use a credit card, for them we can use debit card use data [if available] to determine the perfect gift for the customer. Almost all required data to implement the idea is available in the given data file except the birthday. I am pretty sure bank has that information (Birthdate) and which is confidential but they can execute some actions based on that information.

Here is the sample output from the program:

<b>masked_id, calculated_gift_value,</b>	<b>gift_choice_hints</b>
1, 5.7131,   MUSIC:0.0074   RETAIL-MISCELLANEOUS:0.0059   MEDIA:0.0049   MOVIES:0.0049   MANUAL:0.0049	

Here,

First column, is the customer id

Second column is an approximation of the gift value that the customer should get.

And the third column contains the top five popular keywords for the customer to get the hints of the gift that the customer may like.

The implementation of the idea is available here:

<https://github.com/SheikhRabiul/Wells-Fargo-Campus-Analytics-Challenge>