**The Crisis at Niagara**

Vikram kept pacing the length and breadth of the room while the rest of the meeting attendees waited for him to say something*. ‘This isn’t working out. We are missing something’* said Vikram.

Vikram was the head of Niagara Credit services, an ambitious and successful Indian credit-card startup started with the aim of beating the big boys and creating an indigenous premium credit card company from India. The company’s point of differentiation was that it targeted only premium customers who spent big and in-turn the company made big profits from the discount revenues (commission from the merchant for each transaction). The company had grown quarter over quarter and everything looked rosy. But the customers who were acquired recently in the last one year had caused a lot of headache.

For some reason, the credit defaults of the recently acquired customers and hence the overall portfolio had increased and Niagara’s credit risk models had not caught it. The model’s prediction accuracy was degrading day by day. And since they had acquired more and more of high net worth individuals in the hope of making big returns, now they were looking at even bigger losses per customer as well. The gods of risk and reward were at play.

Vikram had called up a meeting with all the bright minds in his team to discuss what was going wrong. ‘*Why aren’t our models working? Can anyone please say something? This isn’t a monologue’.* Vedha, a bright new talent who just joined couple of months ago from IIT-Madras had something on her mind.

‘*I think our models are outdated. We are using a logistic regression equation to predict who will pay our money back or not, while the world has moved on to better things. Even in college, we are taught more advanced Machine Learning techniques which have superior prediction power. Switching to a better technique might just help us minimize our losses by a huge margin.*

Vikram had a gut feeling this was going to work. Even he had heard how Machine Learning algorithms was taking over the financial industry. He laid out an action plan to Vedha.

Can you step into Vedha’s shoes and

1. **Build the best ML model that better helps predict who would default**
2. **Bring out the top influencers / predictors in the model which will help in this prediction.**
3. **Use ML methods to analyze spending data to see if it can add value to the predictive model.**

**Data Description**

* 1. The Data Dictionary excel has the explanation of all the variables on the training and test datasets.
* 2. The Training Data has 2 csvs.

*Train.csv* has Customer Profile data for each customer along with the Default Indicator and the *Train\_Spend.csv* has the list of Industry IDs that each customer has spent at in order.

* 3. The Test Data csvs has the same information as Training Data for different set of customers and the Default Indicator is not provided.