Cost estimation of spam call detection

Kick-off Presentation Report

Data acquired so far:

1. Average Salary for Data Scientist around in Washington DC Area
2. Average Salary for Data Analyst around in Washington DC Area
3. Average Salary for Frontend developer in Washington DC Area
4. Average Salary for Backend developer in Washington DC Area
5. Average Salary for Full Stack Developer in Washington DC Area
6. Typical hardware requirements for building Machine Learning models
7. Price for Amazon AWS, Microsoft Azure and IBM Watson cloud services
8. Cost for posting app ads on Apple Store apps

Deliverables of the work output being estimated:

WBS Context:

To establish a machine learning approach to detect scam calls, the most critical task is the collection of data. The collection of data is done by developing an iOS app that allows users to tag spam calls. The data is stored in a database after cleaning and pre-processing. Based on this data, Data Scientist and Machine Learning Engineers develop appropriate ML-models which has the ability to predict spam calls. This is integrated with the app via an app update.

Deliverables

The work breakdown structure is divided into five parts at the first level namely:

1. Data Accumulation
2. ML Model Development
3. App Update
4. Maintenance and Support
5. Overhead

Data accumulation consists of two phases, one is the deployment of the app that allows users to tag calls as spam. The other phase includes the organization, cleaning and pre-processing of the acquired data.

Based on this data, an appropriate model is developed. The development of the ML model consists of training, testing and parameter tuning steps. Once the ML-model is developed, an update is sent along to the app integrating ML framework.

The other two leaves in the first level are maintenance and overhead. The app, database and the model, all require maintenance and updates at regular interval of times. Also, there may be an unscheduled runtime issue that must be solved by the maintenance and support team.

The Overhead cost includes cost for hardware, cloud infrastructure, systems engineering, project management and G&A (General and administrative cost).

Preferred Date of Final Presentation: December 9, 2019

Top-Down Cost Estimate

1. App v1.0 design, development and testing cost = $ 300,000 [1] [2]
2. Disbursing information about the new app to existing telecom user (considering cost for iOS users only) = $200,000 [3]
3. Database development cost (Considering database development time for 3 months and a team of 10 data analysts) = $200,000 [4]
4. ML model development cost (Considering ML model development time of 3 months and a team of 5 Data Scientists) = $150,000 [5]
5. Cost to update app along with integrated ML model = $50,000
6. Overhead costs = +100% of direct costs
7. Maintenance & Support = +25% of development costs per year [6]

Overall cost* = $2,250,000 = 2.25 Million Dollars

*Overall cost is based upon the average cost and industry standards. The maintenance and overhead cost for only one year is included in calculation.

References for top-down cost estimate

[1] Figuring the costs of custom mobile business app development by Adriana Neagu, Formotus
[2] App development costs: The ultimate guide to app budget by app type by Ken Yarmosh, Savvy
[3] Fikusu's 2015 research
[4] Average Data Analyst Salaries in Washington DC area, Glassdoor
[5] Average Data Scientist Salaries in Washington DC area, Glassdoor
[6] Computer Economics, Metrics for IT Management