

Relatas AI ML Assignment

Version 1.0

Scenario

Pied Piper is a Technology company with a portfolio of products that primarily cater to business customers from medium size businesses to large enterprises. They are achieving fast revenue growth and are expanding into multiple business segments and new regions. To cater to this growth they are hiring sales teams at a fast rate. They have some marquee customer accounts which have been growing in revenue and are also acquiring new customers. To manage the company efficiently they have an ERP software and have implemented financial systems, HR systems etc. They use a CRM system which captures opportunities with new customers as well as existing customers. The CRM system also integrates with the email system of the company and captures email interactions of the company with their customers and prospects. The following data is captured in the CRM system –

- Opportunities (File Name - interactions.xlsx)
- Email Interactions including extracted (File Name - sales-pipeline.xlsx)

Problem Statement

The company management has a business need to forecast the revenue of the company over the current month, quarter and coming quarters and year for financial planning and reporting.

What we expect from you

The data required is made available along with this assignment. Create a design document that describes the solution. Please feel free to state any assumptions that you feel will assist you in arriving at a better solution. At a minimum, we expect a problem statement, high level solution, technical architecture diagram, ML Pipeline diagram with algorithms that can be used. We suggest using NLP algorithms on the extracted text as one of the influencing factors on the forecast. Once the design is complete please submit it back for a short discussion. This is the end of step 1 of the assignment. The next step is to implement the design using Python and arrive at revenue forecast for the company. You can implement this step using your own laptop. We expect the following outputs.

- Forecast for the current month.
- Forecast for the current Quarter.
- Forecast for the current Financial Year
- Back Testing with accuracy for past known outcome data

Financial Year is from January to December. Consider the current date as 01 Jan 2018. If you are wondering why the “**Close Date**” has values even for “**In Progress**” opportunities, it is because usually opportunities have an expected end date. So for the purpose of calculations, consider **Close Date** as “**Actual Close Date**” for opportunities whose result is known (i.e Won or Lost opportunities) and as “**Expected Close Date**” for opportunities that are in progress. If you look at the data, you will notice that all opportunities from 01 Jan 2018 are in “**In Progress**” Stage. With the data available, we expect you to calculate the forecast for

1. The Month of January 2018
2. The First Quarter of 2018 (Jan, Feb and March)
3. The whole year of 2018

To create your model please use 01 October 2017 as a start date and use all past date (From 2016) to predict Revenue for –

1. The Month of October 2017
2. The Quarter Oct, Nov, Dec 2017
3. Revenue Forecast for the year 2017 (Revenue for the year would be a sum of all opportunities won in 2017 till 01st October 2017 + Predicted Revenue for the Quarter Oct, Nov, Dec 2017)
4. Revenue is calculated by summing all deals that are in the “Won” stage for past opportunities (i.e for Opportunities prior to 01 Oct 2019)
5. Forecasted revenue is calculated by summing opportunities in October, November and December 2017 that are likely to win. (You are free to use other methodologies to calculate total revenue as well if you think they are more effective)
6. Compare the forecast to the actual revenue (Back Testing)
7. Try to vary parameters (NLP, Past patterns etc) and see how it influences the forecast.
8. Using the model, try to predict the revenue for 01 Jan 2018, Q1 2018 and FY 2018

The summary output would look something like this –

Month/Quarter/Year	Forecasted Revenue	Actual Revenue	% Deviation from actuals
October 2017 (Month)	X	A	
Quarter 3 2017 (Oct, Nov,Dec) 2017	Y	B	
Financial Year 2017 (From Jan 2017 to Dec 2017)	Z	C	
January 2018 (Month)		Not Applicable	
Quarter 1 2018 (Jan,Feb,Mar) 2018		Not Applicable	
Financial Year 2018 (From Jan 2018 to Dec 2018)		Not Applicable	

Please let us know if there are any clarifications required.

Please send your findings with the design, predicted values per opportunity and finally summary back to the person who sent the assignment to you.