AIFL | MODULE PROJECT

Neural **Networks**

TOTAL
SCORE

30

• **DOMAIN:** Hospitality

• **CONTEXT:** An Online travel booking company is suffering from loss in revenue because of the uncertain booking cancelation of its customers. The company wants to know which customer will cancel the booking. As a data-scientist we have to help the company to predict whether the customer will cancel the booking or not. We have all the booking details like arrival_date_year, stays_in_week_nights, arrival_date_day_of_month etc of the customers from various countries. We have to do some data analysis to answer some questions and we have to run a NN model to predict whether the customer will cancel the booking or not.

• **DATA DESCRIPTION:**

• **hotel** - Type of hotel(resort hotel/city hotel)
• **is_cancel** - Is the booking cancelled or not (target)
• **arrival_date_year** - Year of arrival
• **arrival_date_month** - Month of the guest arrival
• **arrival_date_day_of_month** - Date of the guest arrival
• **Stays_in_weekend_nights** - Weekend night guest spends in hotel
• **Stays_in_week_nights** - Weekdays night guest spends in hotel
• **adults** - No. Of adults
• **children** - No. Of children
• **babies** - How many babies the guest have
• **meals** - How many babies the guest have
• **country** - country code in which hotel is located

• **distribution_channel** - Distribution type of guest
• **is_repeated_guest** - Whether the guest previously stayed in the same hotel or not
• **previous_cancelation** - Whether the guest previously cancelled the booking
• **previous_booking_not_canceled** - Whether the guest previously not cancelled the booking
• **reserved_room_type** - Type of room the guest reserved
• **assigned_room_type** - Type of room that is assigned to the guest
• **deposit type** - Deposit type of guest
• **days_in_waiting_list** - Waiting days for the guest
• **customer_type** - What type of guest
• **required_car_parking_spaces** - How much car parking space required
• **reservation_status** - Whether the guest has checkout or cancel

• **OBJECTIVE:**

To use Neural Network modelling technique to predict cancellation of bookings of rooms along with some intuitive findings from the data.

• **STEPS AND TASKS:**

1. **Exploratory Data Analysis(EDA) : [15 Marks]**
   A. Import and Read 'BookingDetails.csv'. [1 Mark]
   B. Visualise the target column and state whether if it is balanced or not. [2 Marks]
   C. Identify which type of hotel has highest number of cancellations? [2 Marks]
   D. Identify the name of the country that has the highest number of resort hotels and the country that has the highest number of city hotels. [2 Marks]
   E. Find the percentage of check-outs of Indian hotels with respect to all the hotels across the globe. [2 Marks]
   F. Identify the country where the maximum number of BB meals have been booked? [2 Marks]
   G. Report the name of at least three countries where the number of SC meals is zero? [2 Marks]
   H. It is said that if the 'deposit_type' is "non-refund" then there are no cancelations. Could you prove/disprove this claim? [2 Marks]

2. **Model Building: [15 Marks]**
   A. Split the dataset into 80:20 ratio. [1 Mark]
   B. Train any one traditional ML model on training data and predict results on test data. [4 Marks]
   C. Normalize the data. (Train and/or test as required). [1 Marks]
   D. Build a neural network classifier on training data and predict the results on test data. [6 Marks]
   E. Evaluate both models and compare performance of both the models [3 Marks]