OE-2 : BI MINI HACKATHON

FACEBOOK AD ANALYSIS

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INTRODUCTION

Along with Google's search and display networks, Facebook is one of the big players when it comes to online advertising.

Facebook builds a profile of that user based on who they are and what they're interested in.

Advertisers can create Facebook adverts, then create an 'Audience' for that advert or group of adverts. Audiences can be built from a range of attributes including gender, age, location and interests.

ABOUT THE DATASET

ad_id	xyz_campaign_id	fb_campaign_id	age	gender	interest	Impressions	Clicks	Spent	Total_Conversion	Approved_Conversion
708746	916	103916	30-34	M	15	7350	1	1.43	2	1
708749	916	103917	30-34	M	16	17861	2	1.82	2	0
708771	916	103920	30-34	M	20	693	0	0.00	1	0
708815	916	103928	30-34	M	28	4259	1	1.25	1	0
708818	916	103928	30-34	M	28	4133	1	1.29	1	1
708820	916	103929	30-34	M	29	1915	0	0.00	1	1
708889	916	103940	30-34	M	15	15615	3	4.77	1	0
708895	916	103941	30-34	M	16	10951	1	1.27	1	1
708953	916	103951	30-34	M	27	2355	1	1.50	1	0
708958	916	103952	30-34	M	28	9502	3	3.16	1	0

Columns in the data as follows:
1) ad_id: unique ID for each ad.
2) xyz_campaign_id: ID associated with each ad campaign of XYZ company.
3) fb_campaign_id: an ID associated with how Facebook tracks each campaign.
4) age: age of the person to whom the ad is shown.
5) gender: M/F
6) interest: a code specifying the category to which the person's interest belongs.
7) Impressions: the number of times the ad was shown
8) Clicks: number of clicks on for that ad.
9) Spent: Amount paid by company xyz to Facebook, to show that ad.
10) Total conversion: Total number of people who enquired about the product after seeing the ad.
11) Approved conversion: Total number of people who bought the product after seeing the ad.

PRE-PROCESSING

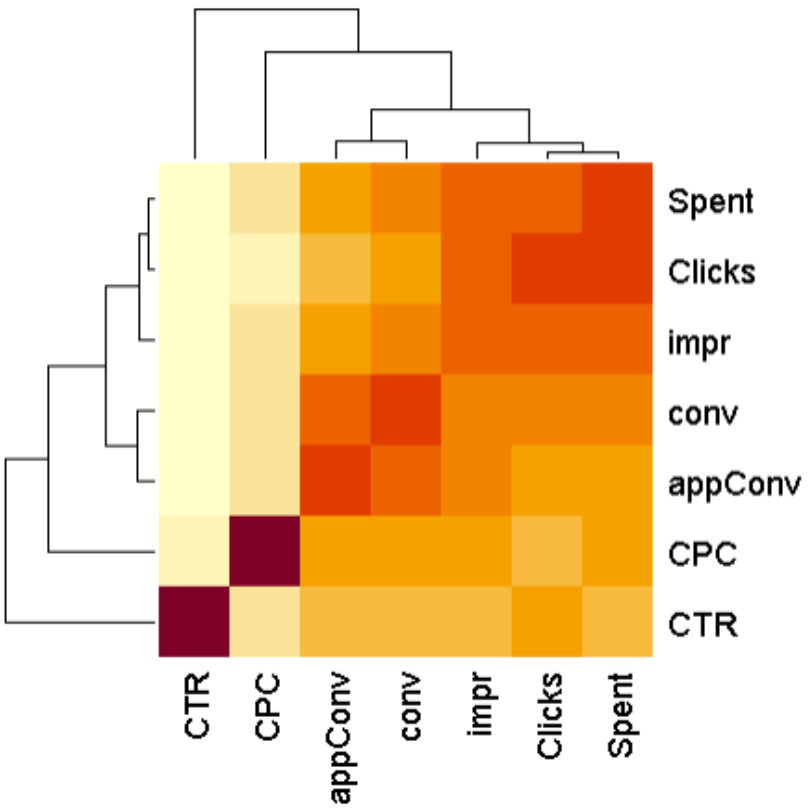
1. Imputed Missing Values.
2. Replaced character string age ranges with a number.
3. Converted gender variable to an integer.
4. Abbreviated column names that are too long.
5. Normalized data using Z-Score normalization.
6. Divided the dataset into the training set and test set with a ratio of 70:30.

EXPLORATORY DATA ANALYSIS

1. Implemented **Pearson's Correlation Matrix** to identify the linear relationship between variables.
2. Created **histograms** that were plotted against each variable.
3. Also implemented a **heatmap** to further understand relationships between variables.
4. Because of the above EDA techniques we added additional metrics as KPI ; CTR & CPC.

   Click-through-rate (CTR) - is the percentage of how many of our impressions became clicks. A high CTR is often seen as a sign of good creative being presented to a relevant audience.
   CTR = (Clicks / impr) * 100

   Cost Per Click (CPC) - how much (on average) did each click cost. **CPC = Spent / Clicks**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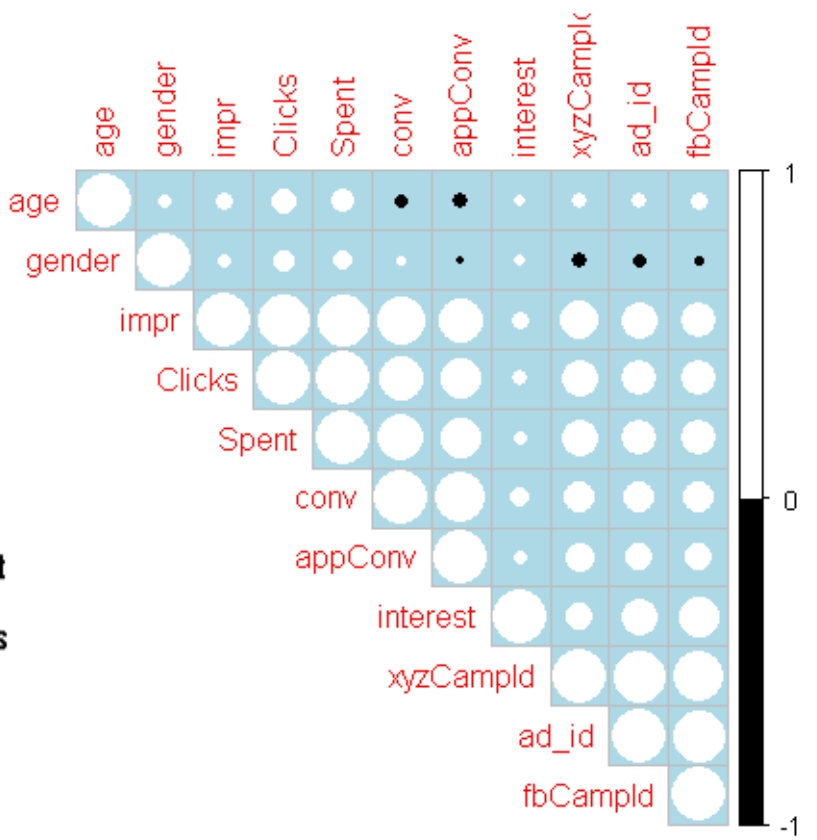
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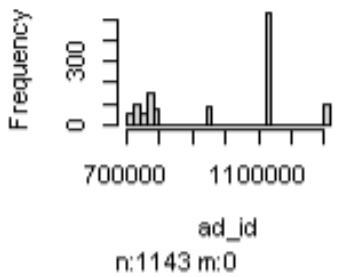
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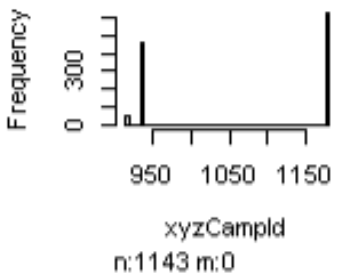
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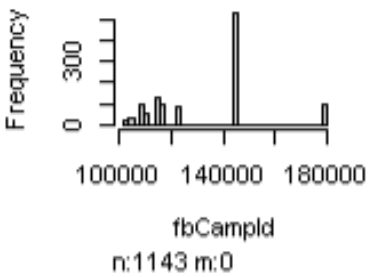
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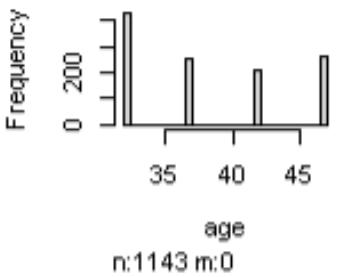
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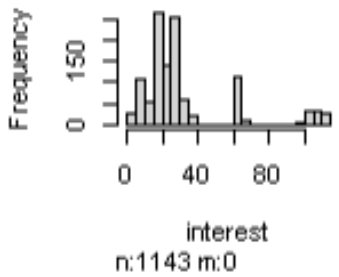
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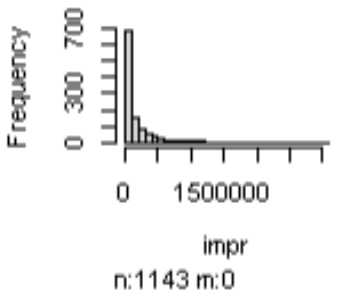
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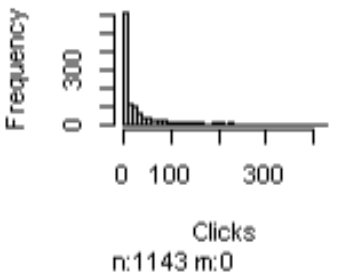
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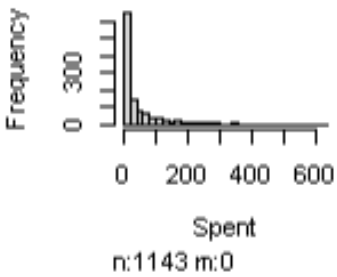
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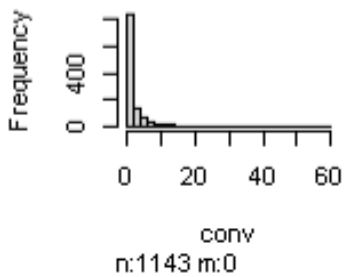
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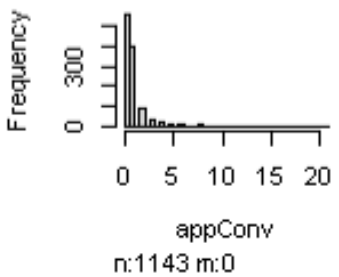
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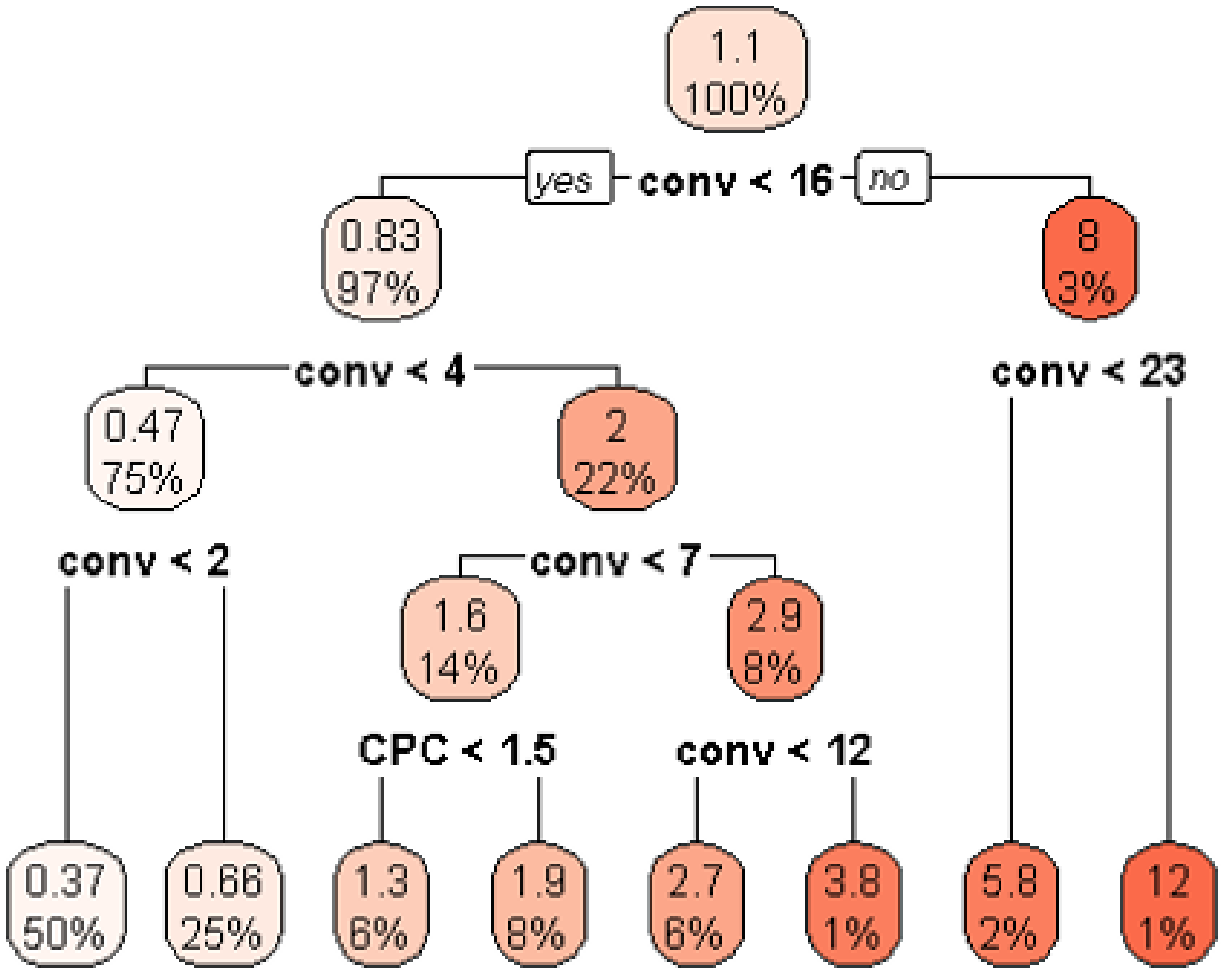
MODEL

- The goal of the project was to determine whether an ad hosted by Facebook gets converted or not (Binary Classification).
- Therefore we implemented a **Decision Tree Algorithm** which is a classification algorithm.



CONCLUSION

- We've got some strong correlations between the amount we spent and how many impressions and clicks we got, with less strong correlations between our spend, clicks and impressions and our conversions.


THANKYOU !