Data Scientist Exercise

Thank you for taking the time to complete this technical test. Objective testing helps us to hire people based on their ability to do the job, regardless of their background, their previous experience and how they perform in verbal interviews.

The purpose of the test is to collect evidence about your ability to achieve objectives in the online performance profile (i.e. the job description). THERE ARE MANY CORRECT ANSWERS! We're not looking for a specific one, instead we are looking for how you approach the problems. We hope you'll find it challenging, interesting and even a little fun!

Context

Sanlam is a leading financial services group, recognized for our innovative approach towards providing comprehensive insurance, investment, health, and credit solutions to millions of clients across Africa. Sanlam Fintech is a newly established digital first business within the group on a mission to democratize financial advice and solutions for everyone across the African continent. We exist to pioneer inclusive financial confidence helping people build strong foundations to bridge the gap in generational wealth. And we're hiring top talent from around the world to make it happen!

Improving marketing spend efficiency and targeting

The Brief

Sanlam FinTech is building a cost effective and scalable client acquisition capability using social media, among other channels. The digital growth team believe some segments of the market are particularly active on Facebook but don't know which ones. They ran some campaigns for you to generate initial learnings and make recommendations for where to invest next. Specially, they're asking you to help them figure out what segments they should invest further ad spend on and why.

The Exercise

Produce some insights and make recommendations for the growth team. Consider building a story by exploring data, helping them understand how different campaigns are performing and establish if there are any differences in conversion or spend. Ideally, they'd like to predict conversion rates for different segments so they can predict how they're budget will perform based on "What if" allocations across them.

Submission checklist

- Share your insights in an engaging form (e.g. a slide or document)
- Share any code you generate, packaged Tableau workbooks, drawings, etc
- If you don't manage to use ML to arrive at your segments, or make predictions about conversion rates, add a few lines about your proposed approach so we can explore together in the panel interview!

The Data

The data in the file conversion_data.csv contains data from a Facebook ad campaign by company XYZ. The column names mean the following:

- ad_id: an unique ID for each ad.
- xyz_campaign_id: an ID associated with each ad campaign of XYZ company.
- fb_campaign_id: an ID associated with how Facebook tracks each campaign.
- age: age of the person to whom the ad is shown.
- gender: gender of the person to whim the add is shown
- interest: a code specifying the category to which the person's interest belongs (interests are as mentioned in the person's Facebook public profile).
- Impressions: the number of times the ad was shown.
- Clicks: number of clicks on for that ad.
- Spent: Amount paid by company xyz to Facebook, to show that ad.
- Total conversion: Total number of people who enquired about the product after seeing the ad.
- Approved conversion: Total number of people who bought the product after seeing the ad.