



How to Evaluate LinkedIn Ad Performance with a data-driven Approach?

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Agenda



Background & Objective of the project

- Obstacles Overviews



Products, Solution & Insights:

- Data Extraction Pipelines
- Ad Performance Tracking Center
- Data Center



Actions:

- Recommendations and Research
- Future works

Background & Objectives of the Project

To better optimize ad-spend, we need to be able to track the efficiency of ad campaigns and ad creatives and assess their effectiveness at providing aircover support for sales. - Verituity

We would love to see a tool to help construct optimal campaign settings on LinkedIn Campaign Manager that maximize the effectiveness. The ad fatigue trend and the quantified indicators play a big role.

Verituity started to utilize LinkedIn Ads channel for marketing on June 2022, it is critical to identify the LinkedIn data limitations as well as LinkedIn API limitations through out the exploratory data analysis process.

Objectives of the Project: Obstacles Overviews

Business Understanding

- How does Target audience look like ?
- How does TA interact with the ad in each sales process?
- How well does the ad distribution perform over time and when to terminate ?

Analysis Obstacles

- Unable to divide Campaigns data into companies and job titles simultaneously
- Normalizing the difference in employee number within various companies

Data Limitations

- Too much manual work of downloading data
- LinkedIn API: Limited insights
- LinkedIn Manager: Limited Datasource

Products and Solutions

Data Extraction Pipelines

Ad Campaign Performance Analytics

Ad Creative Performance Analytics
(demographic analytics included)

Target Audience Setting Extraction
Database Construction Pipeline

✓  [LinkedIn API_adCampaign&adCreative TA Settings Extraction.ipynb](#)

✓  [LinkedIn API_adCampaign Performance Analytics.ipynb](#)

✓  [LinkedIn API_adCreative Performance Analytics.ipynb](#)

✓  [LinkedIn API_Database Construction_Campaign&Creative.ipynb](#)

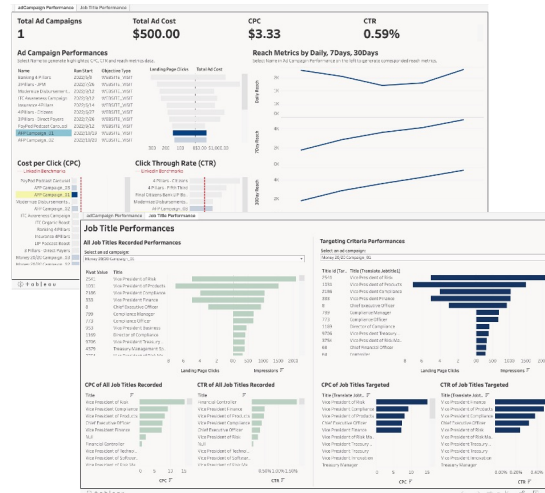
Ad Performance Tracking Center

Ad Campaign Performance

Job Title Performance

Company Performance

Ad Creative Performance

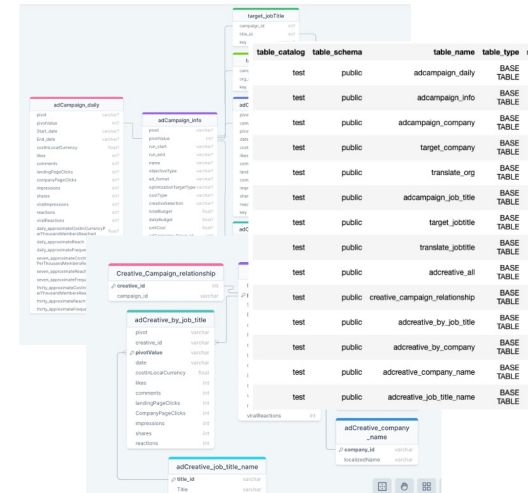


Data Center

PostgreSQL Database

Ad Campaign schema and tables

Ad Creative schema and tables



Products and Solution: Data Extraction Pipelines

Ad Campaign Performance Analytics

Start_date, Likes, Comments, Impressions, Landing page clicks, Cost, Reach Metrics

Pivoted by: adCampaign, Job title, Company

Ad Creative Performance Analytics

Start_date, Likes, Comments, Impressions, Landing page clicks, Cost

Pivoted by: adCreative, Job title, Company

Target Audience Setting Extraction

Campaign_id, Title_id, Title

Obstacles we are trying to solve:

- Too much manual work of downloading data from LinkedIn Campaign Manager

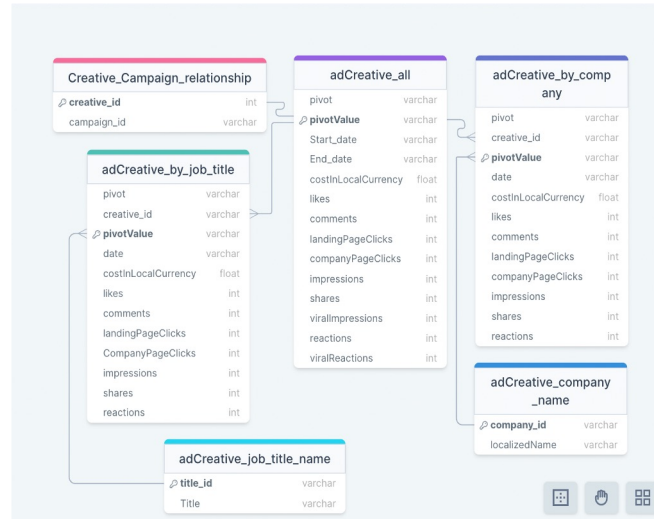
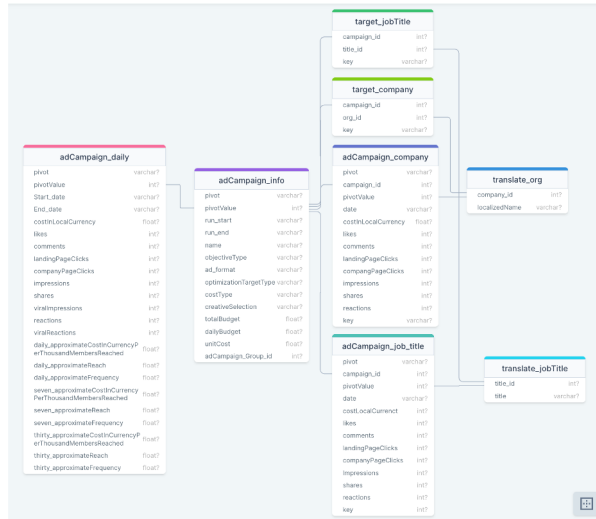
Business Value

- Easy access to insightful datasource
- Data file can be used in other applications in the future (e.g machine learning building)

Products and Solution: Data Extraction Pipelines

Database Construction Pipeline

To be addressed in Products and Solution: Data Center part.



table_catalog	table_schema	table_name	table_type
test	public	adcampaign_daily	BASE TABLE
test	public	adcampaign_info	BASE TABLE
test	public	adcampaign_company	BASE TABLE
test	public	target_company	BASE TABLE
test	public	translate_org	BASE TABLE
test	public	adcampaign_job_title	BASE TABLE
test	public	translate_jobtitle	BASE TABLE
test	public	adcreative_all	BASE TABLE
test	public	creative_campaign_relationship	BASE TABLE
test	public	adcreative_by_job_title	BASE TABLE
test	public	adcreative_by_company	BASE TABLE
test	public	adcreative_company_name	BASE TABLE
test	public	adcreative_job_title_name	BASE TABLE

Products and Solution: Ad Performance Tracking Center

Ad Campaign Performance

Ad campaign performance, ad cost spent, CPC, CTR, Reach Metrics

Job Title Performance

All job titles recorded performance, Targeting job titles performance

Company Performance

All companies recorded performance, Targeting companies performance

Ad Creative Performance

Ad creatives performance of specific company, A/B tests the content variant under same campaign

Problems we are trying to solve:

- When to stop the ads?
- Are the ads effective?
- Useful data showed only in LinkedIn API but not in Campaign Manager
- What job titles should we target?
- What keywords are companies interested in?

Business values:

- **Drill down the scope** from ad campaigns to job title/company and to ad creatives
- Compare all records with the targeting criteria to **optimize the TA settings.**
- **Expand the tracking center** with anything that MKT team would like to monitor in the future.

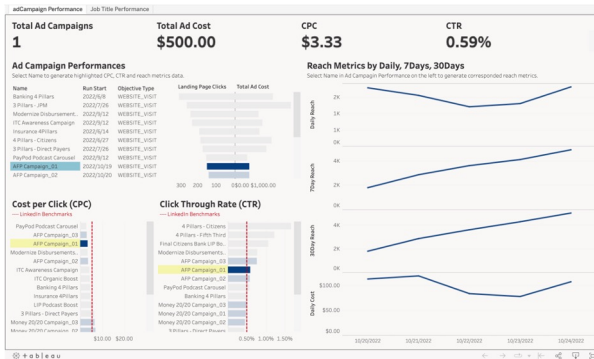
Products and Solution: Ad Performance Tracking Center

Ad Campaign Performance

Create a Tableau dashboard to show the ad campaign overview and compare them with LinkedIn ads benchmarks.

Ad Quality Metrics: Utilise CPC and CTR to determine ad quality

Ad Fatigue Metrics: the time series trend of 7Day_Reach and 30Day_Reach metrics



Job Title Performance

Pull out the demographic data for analyzing the performance metrics (Landing page clicks, CPC, CTR) of each job title.

Some Insights:

3Pillars- JPM: Vice President of Technology

4Pillars- Citizen: Business Banking Relationship Manager

4Pillars- Fifth Third: Vice President of Credits

*** These are some job titles not targeted but are interested in Verituity ads. (Details in written reports.)**



Products and Solution: Ad Performance Tracking Center

Roles in Sales Process & Ad Performance

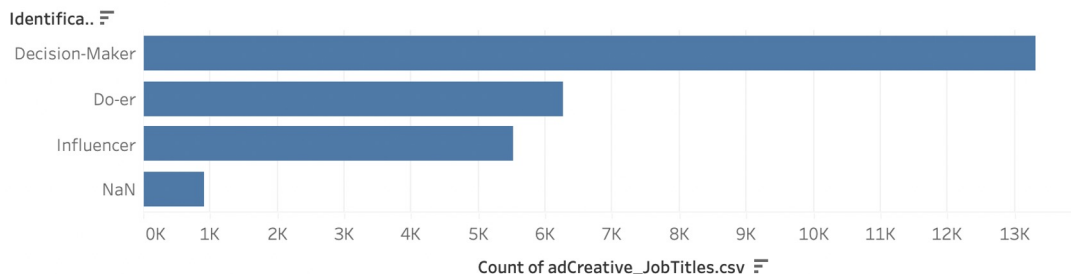
Method:

After filtering out the top 200 benchmark ad creatives audiences, we tagged these audiences based on their titles and categorized* them as Decision-Maker, Do-er, Influencer, Unidentified. Following graphs show how different roles in sales process respond to our ads in general.

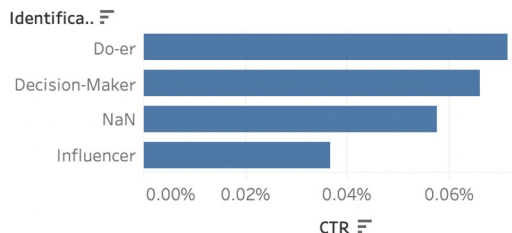
Roles:

- Decision-Maker: Ultimate decider, high-level manager (VP, CEO)
- Influencer: Mid-level managers (head of department)
- Do-er: Junior level employees responsible for execution (Associate, Specialist)

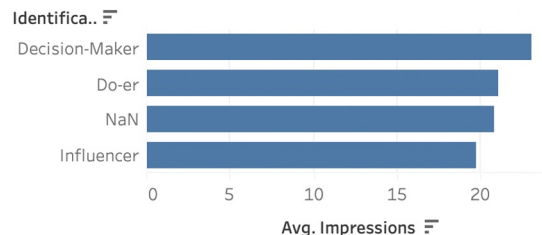
Roles in Sales Process



CTR by Roles



Impressions by Roles



Products and Solution: Ad Performance Tracking Center

Insights with Recommendations

1. Low CTR in Decision-Maker

- It has high adCreative count and Impressions
- But CTR is lower than Do-er
- Need to increase Decision-Maker's CTR

2. Improvements to Influencers

- Position with authority as head of department
- needs to increase the number of adCreatives, impressions to increase the CTR as a result

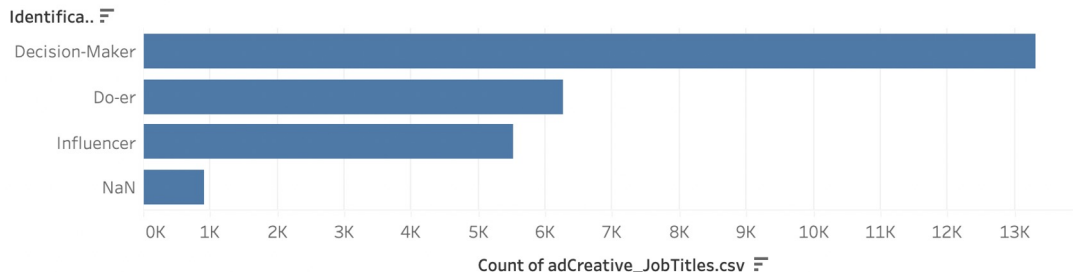
3. The CTR for all titles are small

- CTR of Do-er: 0.07%
- CTR of Influencer: 0.04%
- CTRs are not even 0.5% in overall

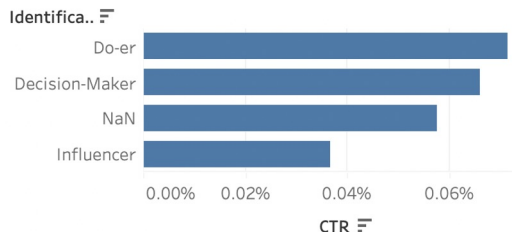
Recommendation

- Keep its content concise and visually appealing
- Focus on storytelling to get to the point of content and advertising
- Make full use of images and videos of contents
- Increase the conversion rate of using the site quickly and easily with proper link placement
- Devising the use of other advertising methods

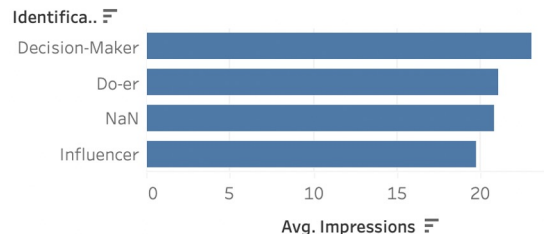
Roles in Sales Process



CTR by Roles



Impressions by Roles



Products and Solution: Ad Performance Tracking Center

Company Performance

Method:

Filtering out the financial institution audiences out of the top 200 ad creatives audiences as industry benchmark. The below chart indicates which company gives the best response to help identify TAs. It can be used as a tool to observe specific company preference on ads.

Insights: Banking 4 Pillars

JPM: Lower Cost Payouts

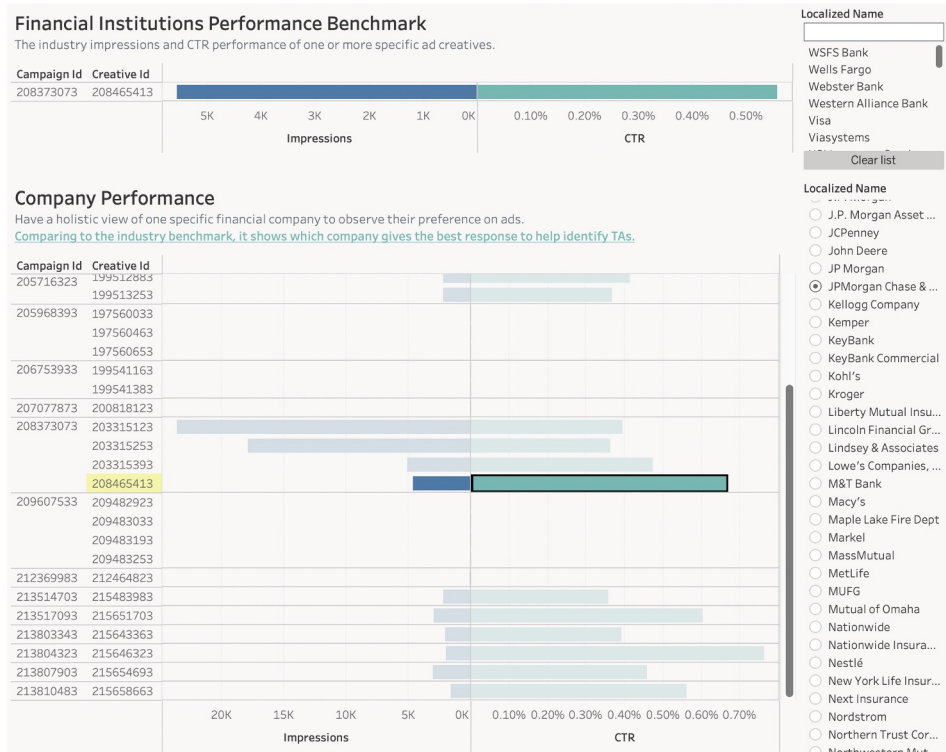
PNC: Holistic Verification

AMEX: Pay-by-anything

Ad Creative Performance

Method:

Given the ad creative and ad campaign relationship table from data center, pull out the ad creatives performance of impressions and CTR. Comparing the ad creatives performance under the same campaign for creatives content A/B testing.



Products and Solution: Ad Performance Tracking Center

The biggest difference between Tracking Center and Campaign Manager

Visualize the performance of ads all at once

Campaign manager only shows numbers of all the campaign groups, campaigns, and ads, which is hard to identify the results efficiently.

Get CPC, CTR, Reach, the performance metrics, at a glance

Campaign manager only allows user to view one metric at a time, which is painful to understand how the ad is performing well or not when comparing with other campaigns.

Show the performance of Targeting Criteria and Demographic data all at once

Campaign manager only shows all the job titles and companies recorded.

Products and Solution: Data Center

PostgreSQL Database

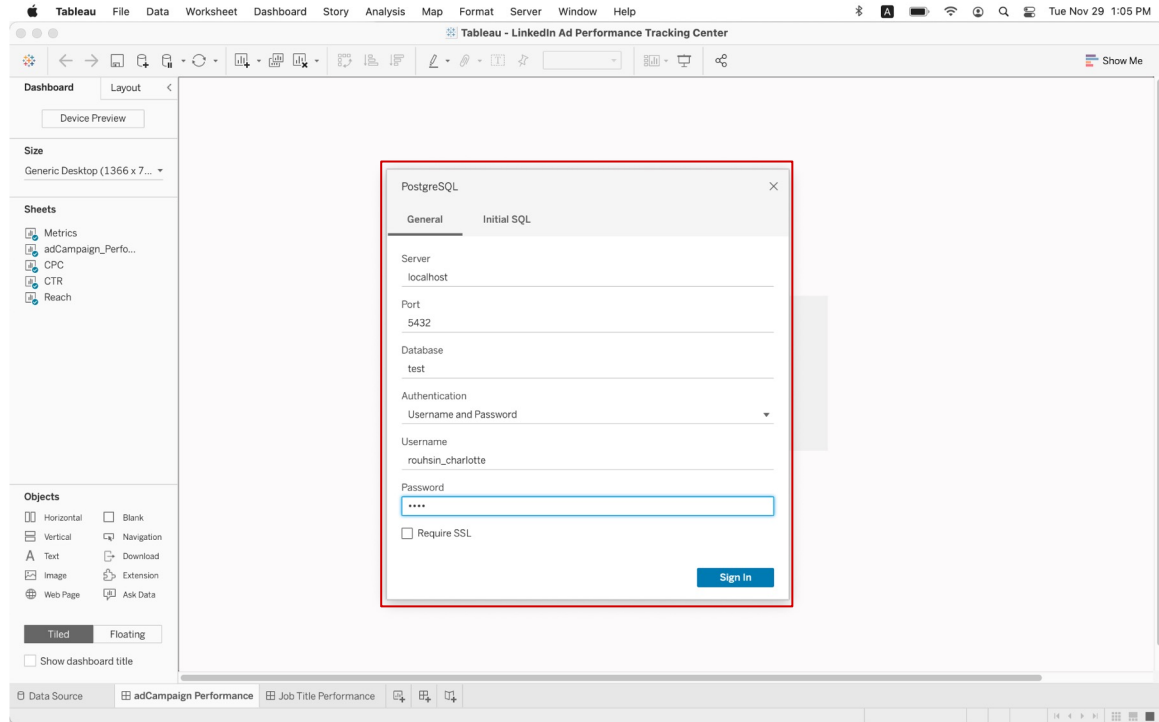
Ad Campaign Schema and Tables
Ad Creative Schema and Tables

Obstacles we are trying to solve:

- Save labor work in downloading the files and uploading the files to Tableau

Business Value:

- Gather all the data files in one place
- Make sure the tables are most updated.
- Update Tableau Dashboards in only one click



Obstacles we are trying to solve:

- ## Why are we doing this?

-
- The screenshot shows the Tableau Desktop interface for a project named 'Tableau - LinkedIn Ad Performance Tracking Center'. The left sidebar contains the 'Connections' pane with 'localhost PostgreSQL' selected, the 'Database' pane with 'test' selected, and the 'Table' pane listing various tables including 'adcampaign_company', 'adcampaign_daily', 'adcampaign_info', 'adcampaign_job_title', 'adcreative_all', 'adcreative_by_company', 'adcreative_by_job_title', 'adcreative_company_name', 'adcreative_job_title_name', 'creative_camp...relationship', 'target_company', 'target_jobtitle', 'translate_jobtitle', and 'translate_org'. Below the table list are options for 'New Custom SQL' and 'New Union'.
- The main workspace displays the 'ad_campaign_daily Analytics' view. At the top right, there are options for 'Connection' (Live or Extract) and 'Filters' (0 or Add). The central area shows a message 'Need more data?' with a diagram of two tables and a link to 'Learn more'. Below this, a table of fields is displayed, including 'Pivot', 'Pivot Value', 'Start date', 'End date', 'Cost in Local Currency', and 'Likes'. A red box highlights the 'Update Now' and 'Update Automatically' buttons.

Products and Solution: Data Center

PostgreSQL Database

Ad Campaign Schema and Tables

Ad Creative Schema and Tables

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The screenshot shows the Tableau Desktop interface. On the left, the 'Connections' pane shows a 'localhost PostgreSQL' connection. Below it, the 'Database' pane shows a 'test' database. The 'Table' pane lists various tables, including 'adcampaign_daily'. The main view displays the 'adcampaign_daily' table with 41 fields and 283 rows. A red box highlights a portion of the data table, showing columns for 'Pivot', 'Pivot Value', 'Start date', 'End date', 'Cost in Local Currency', and 'Likes'.

Type	Field Name	Physical Table	Rem...
Abc	Pivot	adcampaign_d...	pivot
#	Pivot Value	adcampaign_d...	pivotV...
Abc	Start date	adcampaign_d...	Start...
Abc	End date	adcampaign_d...	End_d...

Abc	#	Abc	Abc	#	#
adcampaign_daily	adcampaign_daily	adcampaign_daily	adcampaign_daily	adcampaign_daily	adcampaign_daily
Pivot	Pivot Value	Start date	End date	Cost in Local Currency	Likes
CAMPAIGN	212,369,983	9/29/2022	9/29/2022	\$51.16	0
CAMPAIGN	206,753,933	8/18/2022	8/18/2022	\$50.57	0
CAMPAIGN	206,753,933	8/3/2022	8/3/2022	\$33.68	0
CAMPAIGN	203,684,903	6/12/2022	6/12/2022	\$40.24	0
CAMPAIGN	205,716,323	7/13/2022	7/13/2022	\$65.70	0
CAMPAIGN	208,363,513	7/27/2022	7/27/2022	\$54.41	0
CAMPAIGN	209,607,533	9/29/2022	9/29/2022	\$49.67	1

Actions: Recommendations and Research

Track Ads Quality and Ads Fatigue

Ad Quality Metrics: Utilise CPC and CTR

Ad Fatigue Metrics: Observe time series trend of reach metrics (7Day & 30Day)

Air Cover Strategy (Digital Ads)

Before conference -> During conference -> After conference

Targeting Criteria Optimization

Remove the underperforming TA settings, or separate the TA settings into two ad campaigns. Test the underperforming TA settings again with different content.

Maintenance: Renew the tokens every 90 days

This can also be done by data automation codes.

Automate reports: Jenkins CI/CD and GitHub/Tableau integration

Jenkins API helps data center to continuously integrate and deliver latest data and dashboard for client without manual work

Machine Learning and Parameter Tuning for Ads inversion point

Identifying the anomaly signal in reach metrics, optimize job title segmentation

Actions: Future Works

Incorporate Google Analytics Data

Collect more demographic data, and do self-defined segmentation.

Search Engine Optimization

Identify the key differentiating factors with best performance between ad creatives under each campaign, use these keywords with SEO

Generate ML models

Process large amounts of data for prediction. This can be used to detect signals and play the right ads in front of the right audience at the right time.

A/B Testing with New Ads

Perform A/B testing on newly created ad campaigns or ad creatives with our performance tracking system



Thank you! Questions?

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