Xen.AI Media & AdTech is an Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning based solution for the Media and the Ad Tech industry.

Overview

It is hard to think about today's advertising industry without appreciating the pervasive use of Ad Tech, the tools that enable brands to target, deliver, and analyze digital advertising. Artificial Intelligence (AI), machine learning (ML), and predictive analytics help reinvent the Ad Tech industry completely. With the data accumulating at an exponential rate, it's simply impossible for data analysts to extract relevant and timely business insights without autonomous analytics.

Automated data reports, dashboards, audience discovery tools and predictive analytics are important ingredients of successful advertisement. Effective predictive analytics means it's possible to monitor budgets, bids and all relevant Key Performance Indicator (KPI) metrics, and, based on this, suggest the optimal budget placing and bidding strategy -- all in real time. This was impossible just a few years ago.

Also, these days, many brands express concern regarding content of videos on different social media platforms (YouTube, Facebook, etc.) run their ads. Digital video advertising should take care of brand protection by filtering out videos with explicit and suggestive content, and also help classify videos by topics and choose ones that correlate with advertisers' interests.

Goals of Xen.AI Media & AdTech Solution

1. Turning casual shoppers to habitual shoppers.
2. Recommendation of audience groups that best match the advertiser's KPI.
3. On-fly predictive modeling and optimization of advertising campaigns.
4. Selection of brand safe videos and channels.
5. YouTube channel recommendation.
6. Online monitoring tools.

Xen.AI Media & AdTech Solution Overview

1. **Turning occasional shoppers to habitual shoppers.**

   With the recent increased demand for e-commerce marketplaces many shoppers are ordering services or products online. Many of these customers do not return as recurring customers. These customers had affinity to the brand and most likely liked the product they received, thus Brands had the opportunity to turn these casual shoppers into habitual shoppers. Xen.AI can help your clients build an optimized media plan to target these occasional shoppers

2. **Recommendation of audience groups.**

   Using customer's data on past advertising campaigns obtained from different social media (e.g. from Google AdWords, Double Click, or Facebook, Pinterest, Snapchat etc), we can create a recommender system that would generate a media plan composed of audience groups ranked by performance for a chosen KPI and relevance to advertiser's vertical, and set of interest groups. The audience groups typically result from a combination of interest, topics, keyword and re-marketing groups combined with demographic (and location) information.

3. **Predictive modeling.**

   Predictive models would allow to predict performance of audience groups (and a media plan as a whole), including numbers of expected views/clicks/conversions, budget spend probabilities, costs per action (CPA), and optimal bidding price. These models can be updated daily or hourly with every new data retrieval.

4. **Optimization.**

   After the media plan has been launched, it requires permanent online support since initial predictions for the audience group performances are not ideal. Our optimization engine would allow our customers to redistribute the advertising campaign budget, set bidding prices to (mathematically) guarantee a maximal KPI,

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and take into account different constraints (daily budgets, maximal CPA, minimum view rate, etc.).

5. **Selection of brand safe videos.**

   Many big brands (e.g. Honda, Bank of America, etc.) prefer to run their ads only on good videos, i.e. without any explicit and suggestive content, and also the ones having content (topic) match their requests. Using Natural Language Processing (NLP) techniques applied to textual video and channel metadata, as well as detected video objects, we have developed models that predict extreme content probabilities and allow impose filtering based on these probabilities.

6. **YouTube channel recommendation.**

   Sometimes brands would like to run their advertisement only on the channels that belong to particular categories, correlated with their interests. Using NLP, sets of positive and negative keywords, we can determine positive and negative content in each video channel. Then we can implement a content-based recommender system and order all the channels by their relevance scores.

7. **Online monitoring tools.**

   Ongoing advertising campaign status reports, as well as recommendation and optimization tools can be run online. Using them, one can easily see the current most performing groups and factors, and also expectations for all relevant metrics towards the end of a given campaign.

8. **Usage of Open Source tools.**

   To minimize dependence on vendors, we prefer to use open source tools (like Python and machine learning libraries) as much as possible.

Xen.AI Media & AdTech Solution Architecture

Choice of architecture will be dictated by a set of chosen directions from the section above.

- Data needed for the audience recommendation system would be pre-aggregated and can be stored in *AWS Redshift* database for a quick media plan generation.
- Optimization models can either be trained and used on the fly and be invoked using AWS *Lambda function* and *CloudWatch*. Big models can be trained nightly and stored at AWS *S3 buckets*.
- Solution for Brand Safety problem is based on the AI models pre trained to detect unsafe content. They can be applied to videos by processing them on computational cloud clusters at AWS or GCP.
- While cloud resources cost money, their use would be minimized by a pay-as-you-go approach, i.e. for the individual services you need, for as long as we use them.

Xen.AI Media & AdTech Solution Features

Automated insight generation.

Using ongoing and historical data, one can perform factor analysis and find out driving factors and trends to improve performance of advertising campaigns. Results can be presented in clear graphical and tabular formats to be used inside a given advertising agency or be shown to a client/advertiser.

Automated recommendation and optimization tools.

For a new client, it is often very hard to compose an optimal media plan that would maximize a chosen KPI with a minimal dollar spend. Online support of ongoing campaigns

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is a serious challenge. Also, manual operations with spreadsheets are error prone. Lack of practical expertise to work with social media APIs and with dedicated optimization tools is another challenge.

Automated generation of media plan and online optimization is a *scalable* solution with minimal human involvement. It is based on modern data processing tools and Machine Learning algorithms, and would significantly boost an advertising campaign performance.

Brand safe and content matched videos.

Preselected brand safe video channels can be later associated with a set of interest groups (Sport Enthusiasts, Music Lovers, etc.), and used for recommendation purposes for advetiser's needs in online regime instantly.

Key Benefits of Xen.AI Media & AdTech Solution

The suggested solution can be helpful for digital video advertising agencies who run their ads on social media platforms and are struggling with the amount of diverse data. Based on our deep practical experience in digital advertising industry, we suggest the following:

- Significantly reduces the load on the media buying team by automating the majority of daily duties.
- Recommendation system, based on historical data, allows generating media plans in interactive ways during seconds.
- Optimization system that will be retrieving relevant data from social media APIs, and suggest optimal budget split and bids to maximize a campaign KPI.
- AI/ML models, based on textual and video object data, would allow to run ads on brand safe videos. It would significantly facilitate communication to big brands, and their level of trust to video advertising.
- Content-based recommendation systems help select video channels tightly correlated with advertiser's vertical and set of desired audience interest groups.

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- Online monitoring of current and expected metrics would reveal main ongoing trends, and increase transparency of advertising campaign results, and can help generate reports for the client.

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