Video on Demand Forecasting for an Advertising solution provider in US

Business Problem

Our client generates playlists from the content and a number of advertisements based on the selected program and sells this advertising space to cable companies. Currently advertising is based on selling a fixed number of ad slots to advertisers based on demographic and programming criteria. Since VOD is on demand, the number of ad slots corresponding to a specific program, for example, is not known in advance. This requires an estimate of the number of ad slots that would be available in advance.

Challenge

Since our client works with large cable companies, there is an enormous amount of view data generated over time. Data analysis and modeling requires processing a huge amount of log files. In addition, client's playlist framework cannot process an unlimited number of concurrent requests.

The algorithm that the client uses to assign ad slots is complex. The advertisement slots for an advertiser may get divided over a variety of different content providers and times. Each one of the individual divisions would be competing with a variety of other advertiser. The solution approach needs to take into account how proposed advertising slots for the target, and previously sold advertising slots get consumed over time. This eliminates simple modeling as an approach.

Finally, there is a great deal of variation in the data. Programs come in and out of season, networks and viewers get added or dropped, and season effects such as holiday vacations result in changes in viewer behavior. Developing a framework that allows for reasonably accurate forecasts at fine-scale given a high degree of intrinsic variability provides another challenge.

Solution

We developed a rapid end-to-end solution to process, sample and upload the log data into a database. We then created a framework for simulating a scaled stream of viewer sessions that could be sent to the client's playlist system as if they were actual user VOD requests. We then add the proposed advertisers information to the playlist system, and pass the system the simulated VOD requests. The responses from the client's playlists system can then be processed to determine the actual number of advertising slots that are available for the requested advertising criteria. We developed a parallel processing environment to optimize the number of VOD requests that can be sent over a fixed period of time.

Impact

Our solution approach is currently being added to the client's production system. Preliminary analysis shows very good performance (MAPE < 20%) for the most popular networks forecasted over a four week independent testing period.

About Tiger Analytics

We are an advanced analytics consulting firm. We combine our quantitative modeling expertise with deep understanding of business needs and state-of-the-art technologies to solve complex problems.

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