LogicPlum

CASE STUDY

RECRUIT

Company Info

Name: Recruit Holdings

Location: Tokyo, Japan

Industry: Human Resources

Be My Guest. Predicting how many customers a restaurant will have today.

HELPING RESTAURANTS TO FOCUS ON WHAT MATTERS TO THEM

Have you ever entered into a restaurant and seen idle personnel? Have you ever seen the amount of fresh produce that sometimes restaurants have to give away? Managing a restaurant is not an easy task. How does one determine the "correct" amount of perishables or the number of optimal personnel on a given day?

One of the tricks is to be able to know how many customers to expect each day. Most restaurateurs estimate this based on their experience. However, this prediction is not easy to do, as it depends on internal factors and many externalities, such as local competition and weather.

So, to effectively forecast restaurant attendance, restaurateurs need a lot of different data. Data is what Recruit Holdings realized they had and decided to use to help restaurant owners better run their businesses.

This Japanese company owns Hot Pepper Gourmet - a restaurant review service, AirREGI - a restaurant point of sales service, and Restaurant Board – a reservation log management software. Together these systems store vast amounts of information, which Recruit Holdings bundled together to use AI to create a restaurant attendance prediction model.

“They knew that they had a robust AI platform, which contained the most advanced and modern algorithms on the market.”

Exploring the data with LogicPlum

LogicPlum's data scientists saw the potential of this opportunity: this was a global problem. Moreover, Japanese restaurants are characterized by a sound reservation system, which is generally honored by patrons. Although not granted, this fact could mean a very complete data set.

Recruit Holdings made its data available to LogicPlum. LogicPlum's scientists wanted to see for themselves if they could build a useful restaurant attendance model. They knew that they had a robust AI platform, which contained the most advanced and modern algorithms on the market. So, they decided to give it a chance.

Digging in

The first thing that the team realized was that they were dealing with a time series problem. So they used LogicPlum's exploratory data analysis module to ***"create a visual representation of it,"*** explained one of LogicPlum's data scientists.

A quick analysis revealed a clear weekly periodic pattern and that, on average, restaurants had 20 guests per day. They also noticed that the period between March and May was incredibly busy..

"We used a facet plot to distinguish the time series for the 14 categories available“, added the scientist, and ***"we found that the restaurant-goers in this dataset love going to Karaoke bars during weekends when they also indulge in international cuisine.“***

The dataset was, therefore, complete and ready for use!

Creating the model

Now that they had a useful dataset and a fair understanding of the data it contained, the team decided to create a model. They fed the data into the platform. As it was a time series, they began with ARIMA, which stands for "AutoRegressive Integrated Moving Average" and is a well-known technology for time-series.

"We found that our prediction was not able to detect large spikes," said the analysts, but ***"it was a useful starting point."***

So, they moved to an automated algorithmic search through the platform. The results were quickly obtained and showed to be very promising!

The winner was an LGB model, which stands for Light Gradient Boosting. LogicPlatform determined that it could predict restaurant attendance with a 0.50 root mean squared logarithmic error (RMSLE) when given a specific restaurant's values.

Focus On What Matters

According to LogicPlum, understanding why a model predicted an outcome, or offering model interpretability, is essential when businesses rely on the algorithm to make strategic decisions. Thus, the scientists reviewed LogicPlum's generated model blueprint that explained each of the steps the algorithm used in forecasting patron attendance. Additionally, they noted what LogicPlum saw as the most important features involved in the prediction.

As market conditions are very dynamic, a prediction model must be updated continuously. As the LogicPlum platform can be connected via a single point API, this task can be done anywhere, anytime, by only feeding it with updated data. Armed with this AI solution, the team created a portable, accurate, and cost-efficient version and ready to be used by any Japanese restaurant.

Following Recruit Holdings' mantra, this model provided an invaluable tool for restaurant owners and managers that allowed them to ***"focus on what really matters"*** to their business, providing a great dining experience.

Contact Us

LogicPlum
1550 West
McEwen Drive
Suite 300
Franklin, TN 37067USA

www.logicplum.com
message@logicplum.com

LogicPlum