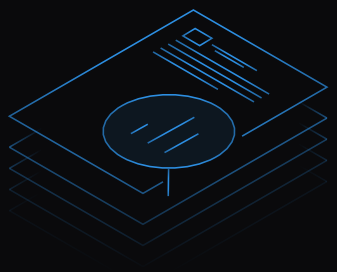
Predicting Carpark Capacity at Ascendas-Singbridge Using Machine Learning



Every driver knows the frustration of circling the carpark or driving up and down the street, trying to find an available parking spot. In a densely populated city like Singapore, parking capacity is a major issue. Even with all its high-rise buildings, many of which have carparks or garages of some kind, parking capacity remains a challenge for both property managers and drivers.

Improving parking lot efficiency at their many properties around Singapore and throughout Asia became a top priority for Ascendas-Singbridge Group (Ascendas). The company is Asia's leading sustainable urban and business solutions provider, with more than $20 billion worth of Assets Under Management (AUM) in 28 cities across 11 countries, including Australia, China, India, Indonesia, and Singapore.

Ascendas wanted to forecast and predict parking lot capacity. Being able to predict carpark capacity at their various properties would allow the group to optimize how they were operating their parking services, improving the experience for visitors and drivers while potentially increasing revenue.

ascendas SINGBRIDGE

Company Info:

Name: Ascendas-Singbridge Group
Location: Singapore
Industry: Real Estate

Ascendas-Singbridge Group (ASG) is Asia's leading sustainable urban and business space solutions provider, with Assets Under Management totaling more than $20 billion worldwide.

Headquartered in Singapore, the Group has a presence across 11 countries in Asia, Australia, Europe, and the United States of America.

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Leong Hiong Yee
Manager — IT Enterprise Information Management

In order to accurately forecast the capacity of Ascendas' parking lots, they turned to DataRobot's automated machine learning platform — and more specifically its Time Series features — for help.

The Importance of Analytics at Ascendas

"We always keep ourselves up-to-date on the latest data science trends and options available, through talking to partners and performing technology scanning," said Lionel Teo, Manager at Ascendas. "This is where we came to know about DataRobot, which we identified as suitable for our current needs."

Lionel and his Group IT team were previously building models using a different platform but found the high cost to be prohibitive, and ultimately it did not deliver the accurate predictions for parking lot capacity or ROI they were looking for.

"When we start to seriously think about investing in [a predictive analytics platform], ROI emerges as a key consideration," said Lionel. "Ideally, it would be an enterprise level software — like DataRobot — that we can extend usage and scale for other purposes."

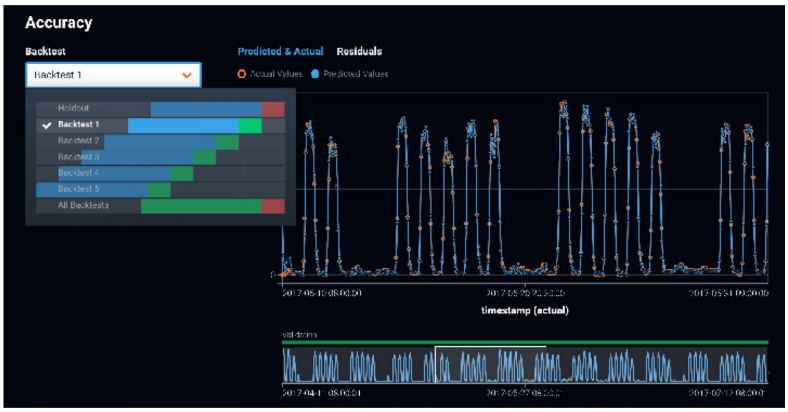
Because they weren't satisfied with the model-building process and prediction accuracy of the previous platform, Ascendas started looking around for an alternative solution and kicked off a proof of concept (POC) with DataRobot. The initial POC produced high-quality models and proved that the DataRobot platform could generate accurate predictions, more accurate than the models built using the previous vendor. During the POC, ease of use for the DataRobot platform was immediately apparent, which was a big asset to Lionel's team, which did not have any data scientists with formal academic training on board.

"DataRobot allows our IT developers to pick up supervised machine learning easily and pick up the tool and immediately start working on developing predictive models," said Hiong Yee. "It lowers the steep learning curve of machine learning, and unveils the complexity of the underlying models from the developers."

The Impact of Carpark Capacity Predictions

"We started our journey into machine learning with the hypothesis that revenue and utilization can be further optimized through dynamic allocation of carpark lot availability," said Lionel.

If Ascendas could accurately forecast carpark usage — how full the carpark would be at any given time of day and day of week, as well as the split between season pass parkers and regular hourly parkers — they could better optimize their capacity at each property. For example, if the carpark at one property was full of season pass parkers on all weekdays except Fridays, that property could open up the parking lot to hourly parkers on Fridays, opening up a new revenue stream for that property.



As Lionel's team continues tweaking the model to improve the accuracy of its carpark predictions, the ultimate goal is to make carpark availability information accessible to drivers through an app. Drivers can then pull up the app to find which buildings around them have hourly parking spots available. Ascendas has a new revenue stream while drivers enjoy a better (and less frustrating) parking experience.

The impacts have been immediate and significant: according to Lionel, just in the first eight months after the rollout of the project, Ascendas has experienced a 20% increase in revenue by optimizing their carparks.

DataRobot's Time Series functionality has been a huge impact on Ascendas' early success with the carpark project, making the entire modeling process and deployment easier. The Group IT team no longer had to manually engineer time series features such as moving averages, stationary and seasonality. DataRobot not only delivered more accurate predictions but also significantly automated the data preparation and made the model building and deployment less time-consuming and easier to maintain. DataRobot also provides the team with detailed insights into car park demand and the ability to scale the approach to new carparks without much additional effort.

One of Ascendas' many cutting-edge and sustainable business space solutions across Singapore

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>
> **— Loh Tat Siong,**
> **VP — IT Business Applications**

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