

CASE STUDY

DYNAMIC ROUTING FOR TRANSPORTATION



630.692.6700 | aptude.com

How a Large Transportation Company Achieved Dynamic Routing with Aptude's Python Center of Excellence

Dynamic routing and pricing can be a challenge for even the largest of trucking firms. That was the case with one large client of ours: they were doing some things programmatically internally, but it wasn't efficient, dynamic, or all-encompassing.

The Problem

Dynamic routing and pricing can be a challenge for even the largest of trucking firms. That was the case with one large client of ours: they were doing some things programmatically internally, but it wasn't efficient, dynamic, or all-encompassing. And with human interaction with the routing, there's invariably only so many data points that can be addressed in the decision-making process... and humans are biased. They wanted a robust, dynamic, and real time scheduling algorithm that factors a number of historical data points such as:

- Weather
- Traffic
- Load data
- Driver availability
- Truck availability
- Pricing and demand (dynamic pricing)

... and they wanted the algorithm to provide real-time analysis of the historical decisions and pricing PLUS the real-time data to make highly dynamic routing and pricing decisions, resulting in more efficiency and profit than might be immediately apparent.

They also wanted to AVOID the long delays caused by spending hours or even days to find the record and rules that the scheduler was using and then fix that algorithm. They wanted a programmatic way to speed data processing, improve decision-making quality, and decrease the historical evaluation time.

The Result

This company trusted Aptude with the task. Our data scientists developed the machine learning models based on the use case and the data sources available. Because certain data points like fuel prices, accidents and weather, for example, can change on a dime, a big hurdle we had to solve for them was the "real time" problem.

Most of the time, there's a latency in the data – a day, half a day later the data might get "ingested" for the model. To solve this problem, we installed a team of expert python data engineers whose job is to ingest the data in real-time and deliver it to the machine learning model quickly. That model is constantly learning and applying that learning to the algorithms without delay.

As a result, the model is spitting out recommendations in real-time based on nearly real-time data. So if their customer wants a quote, they will get pricing and turnaround times that are both efficient and profitable. The client is able to quote different pricing based on the factors and make highly data-driven routing decisions.



Transportation Python Case Study (continued)

Why Python instead of R for this Project?

- A) **The availability of the workforce is greater with Python**
- B) **There is a rich variety of libraries available in Python for Big Data as opposed to R**
- C) **Python is quick to develop as opposed to other programming languages**

We've developed a Python Center of Excellence in data science for this reason: Python is the language of choice for data science initiatives.

The AptudeFlex Difference

Now that we've solved the original problem for them, our client has asked us to ramp up our staffing. This dynamic balancing of the resources allows organizations to respond to market or budget demands without losing us as their project partner. We are able to deliver extra resources as soon as it is asked thanks to the AptudeFlex resourcing model and the Project Lead we put in place that can coordinate it all.

And because we're working from a Python Center of Excellence, we can provide more thought leadership and direction into new areas where we can use machine learning. They trust that they can conceptualize it, and then ask us to implement it with our expertise to guide the way.

Interested in Testing a Proof of Concept?

With data science projects, it's often best to start small so you can prove the ROI to other stakeholders in your organization. We get it – that's why we are happy to work with you on a small proof of concept you can use to ask for greater machine learning and big data initiatives in your organization.

Book a call today to discuss your project and how we can keep moving forward together.

Keep Moving Forward with Aptude

Aptude is your own personal IT professional services firm. We provide our clients with first class resources in a continuous, cost-containment fashion.

Our support services will free up your senior IT staff from the overwhelming burden of day-to-day maintenance issues. Now they'll have time to launch those new projects and applications you've been waiting for. Simply put, we can free up your resources and contain your costs. Let's have a quick chat to discuss our exclusive services.



Guy DeRosa
Senior Vice-President

aptude.com

gderosa@aptude.com
630.692.6700 ext. 406



Chicago, Illinois Headquarters



Atlanta, Georgia, United States



Mexico City, Mexico



Hyderabad, India



Kuala Lumpur, Malaysia



630.692.6700 | aptude.com