Uber Data Science Interview

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Feb 15, 2018 · 3 min read

The goal of Acing AI is to learn about AI from different perspectives. Companies where AI is being employed to develop technology which bring AI mainstream, patents which help understand AI and literature which is factual in nature. The goal is to help technical and non technical enthusiasts to learn about AI and help them venture into it mainstream.

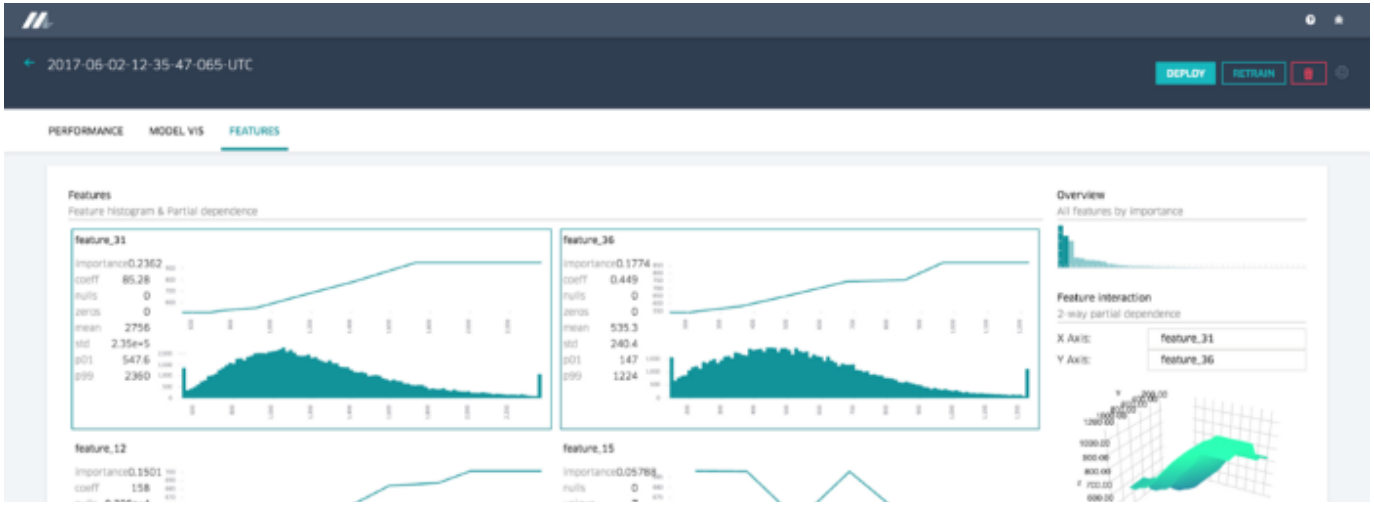
My first article explained the Autonomous Transport Landscape organizing it into various sections. The goal was to provide an easier way to understand the space. The second article was a closer look at Uber's implementation from the point of view of their patents of the space.

As a follow up going with the ethos of Acing AI I wanted a way to help people venture into this space. I believe hands on working on a technology is the best way to venture into it. This article provides the information to help people venture into Uber ATG.

Interview Process

Uber's technical interview process is a standard technical interview process. It consists of Phone screen/s followed by onsite interviews(usually 5–6 interviews). Uber has explained this in detail on their Engineering Blog.

Important Reading(About Uber AI)



Michelangelo — Uber's MLaaS. Source: Uber Blog

1. Scaling Machine Learning as a Service: Explains how they build scalable Machine Learning platform as a service for real time applications. This is the paper behind their Michelangelo platform.
2. Uber's Engineering Blogs: AI Labs, ATG Research, Machine Learning these are the three sections of the Uber blog which relate to AI. They explain Uber's architectures, technology stack and processes in great detail.
3. Uber Horovod: Uber's Open Source Distributed Deep Learning Framework for TensorFlow.

> ***AI/Data Science Related Interview Questions***

- Describe Binary Classification
- Calculate AUC of an ROC curve

- How do you use A/B testing?
- Write function to return value samples from normal distribution using a random Bernoulli trial Generator
- What does P-Value mean?
- Explain Linear Regression, assumptions and math equations
- Define CLT and how is it relevant for Uber?
- Explain Logistic Regression, assumptions and math equations
- How much would it cost to have a fleet of vehicles take street view photos of every major city of US?
- How to model cost of renting cars to drivers?
- Explain how surge pricing algorithm works and how to test which strategy works better?
- What is cross validation?
- How do network effects influence choice to define experiments and measure outcomes?
- What are anomaly detection methods?

- How does driving condition and congestion impact Uber revenue?
- How does driving condition and congestion impact Uber revenue or rider experience?
- How does caching work and how do you use it in Data science?
- How to optimize marketing spend between various marketing channels?
- How to calculate radius for Uber Pool in a city?
- How to decide if a location should be included in Uber Pool?
- What are time series forecasting techniques?
- Explain PCA, assumptions, equations.
- Does Uber cause traffic congestion?

> ***Reflecting on the Questions***

1. **Real Product Based Problems:** The questions contain the real problem scenarios at Uber which require to understand the product and the marketplace well.

2. **AI problems with a layer Technical Infrastructure constraints:** Some questions also target exposing the technical constraints required to solve data related problems.
3. **Model training and evaluation:** Questions aim to explore the AI research by considering different models from different data perspectives.

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For a more consumable list of questions: 25 Uber AI Interview Questions

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A special thanks to my friend Chase for his inputs and support on this article.

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