



Business, Metrics & Product

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- All the applied machine learning interviews I've had focused on supervised learning.
- The interviewer will present you with a prediction problem, and ask you to explain how you would set up an algorithm to make that prediction.
- The problem selected is often relevant to the company you're interviewing at, but can also be a toy example.
- This type of interview doesn't depend on much background knowledge, other than having a general understanding of machine learning concepts.
- However, it definitely helps to prepare by brainstorming the types of problems a particular company might ask you to solve.
- Even if you miss the mark, the brainstorming session will help with the culture fit interview.

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Examples

- Figuring out which product to recommend to a user
- Predict which users are going to stop using the site
- Figure out which ad to display

When answering this type of question, I've found it helpful to start by laying out the setup of the problem.

- What are the inputs?
- What are the labels you're trying to predict?
- What machine learning algorithms could you run on the data?
- Sometimes the setup will be obvious from the question, but sometimes you'll need to figure out how to define the problem.
 - In the latter case, you'll generally have a discussion with the interviewer about some plausible definitions (e.g., what does it mean for a user to "stop using the site"?).

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- The main component of your answer will be feature engineering.
 - (There is nothing magical about brainstorming features.)
- Think about what might be predictive of the variable you are trying to predict, and what information you would actually have available.
- I've found it helpful to give context around what I'm trying to capture, and to what extent the features I'm proposing reflect that information.

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Example:

- Suppose Amazon is trying to figure out what books to recommend to you.
- To predict what books you're likely to buy, Amazon can look for books that are similar to your past Amazon purchases. But maybe some purchases were mistakes, and you vowed to never buy a book like that again.
- Well, Amazon knows how you've interacted with your Kindle books. If there's a book you started but never finished, it might be a positive signal for general areas you're interested in, but a negative signal for the particular author.
- Or maybe some categories of books deserve different treatment. For example, if a year ago you were buying books targeted at one-year-olds, Amazon could deduce that nowadays you're looking for books for two-year-olds.

It's easy to see how you can spend a while exploring the space between what you'd like to know and what you can actually find out.

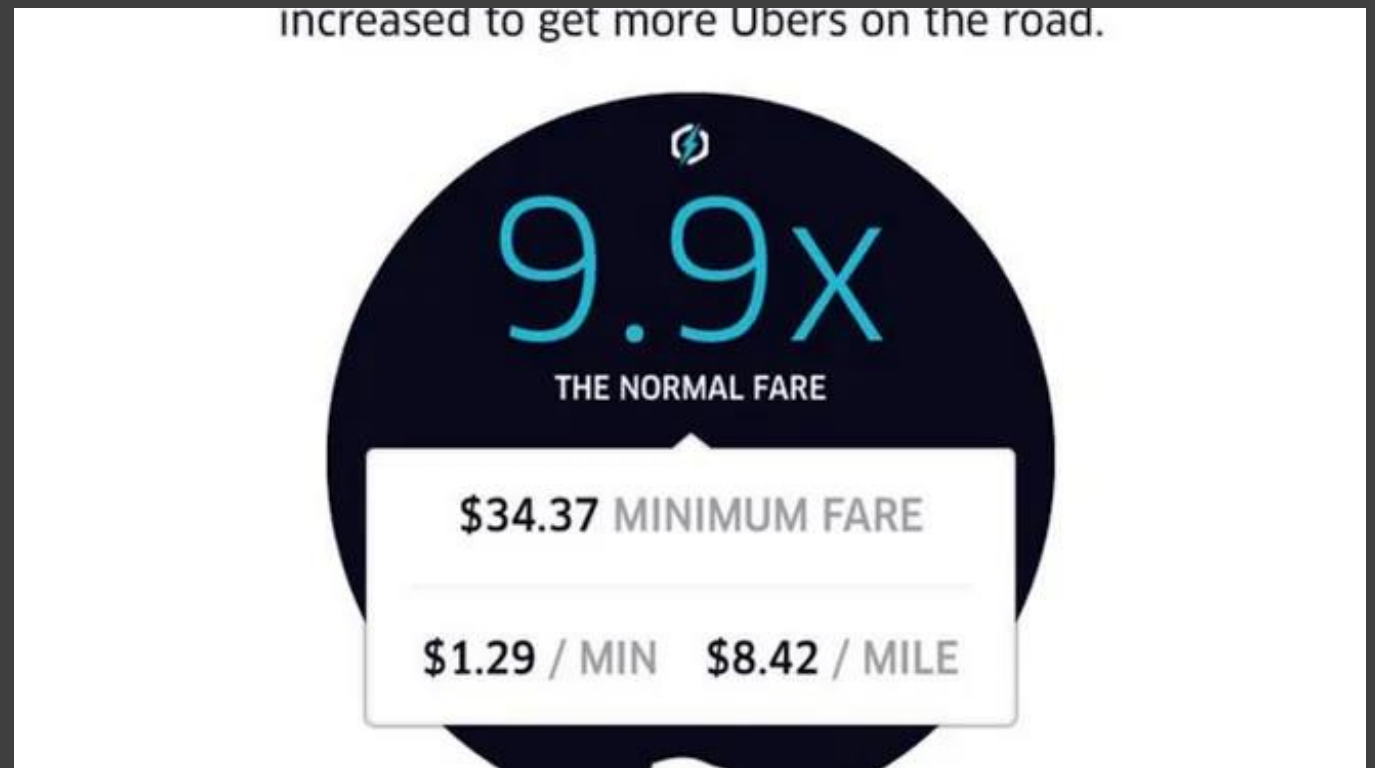
Uses of a certain Instagram filter has gone down. How would you dig into the causes?



What metrics
would you use
to quantify the
success of
youtube ads?



How does
Uber's surge
pricing work?



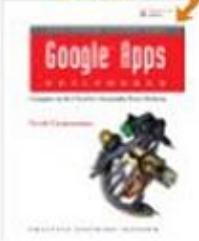
How does
Amazon's Kindle
recommendation
work?

amazon.com

Recommended for You


Amazon.com has new recommendations for you based on [items](#) you purchased or told us you own.

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[Google Apps Deciphered: Compute in the Cloud to Streamline Your Desktop](#)

LOOK INSIDE!



[Google Apps Administrator Guide: A Private-Label Web Workspace](#)

LOOK INSIDE!



[Googlepedia: The Ultimate Google Resource \(3rd Edition\)](#)

How many high schools that people have listed on their Facebook profiles are real? How do we find out, and deploy at scale, a way of finding invalid schools?



If 70% of Facebook users on iOS use Instagram, but only 35% of Facebook users on Android use Instagram, how would you investigate the discrepancy?

