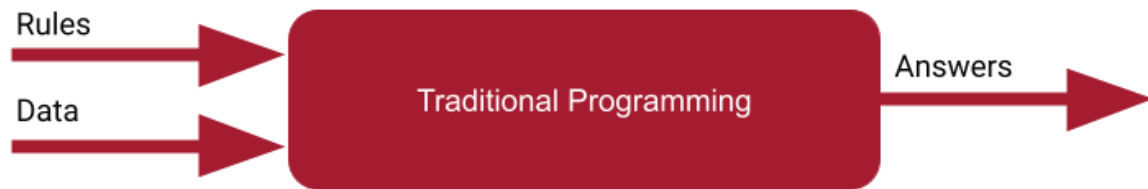
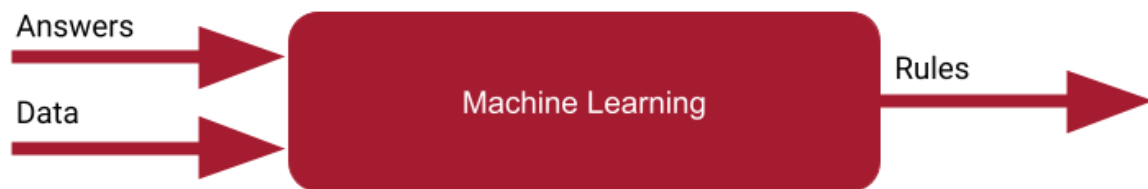


Finding Patterns

In the previous video you learned about how traditional programming is where you explicitly figure out the rules that act on some data to give an answer like this:



And then you saw that Machine Learning changes this, for scenarios where you may not be able to figure out the rules feasibly, and instead have a computer figure out what they are. That made the diagram look like this:



Then you read about the steps that a computer takes -- where it makes a guess, then looks at the data to figure out how accurate the guess was, and then makes another guess and so on.

So, consider if I give you a set of numbers like this:

X: -1, 0, 1, 2, 3, 4

And then I give you another set of numbers like this:

Y: -3, -1, 1, 3, 5, 7

Can you figure out the relationship between the two sets? There's a function that converts -1 to -3, 0 to -1, 1 to 1, 2 to 3, 3 to 5 and 4 to 7. Can you figure out the relationship. Think about it for a moment.

...

Often when I ask people about it, they see that the 0 is matched to -1, so Y is (something) times X - 1. Maybe they'll take a guess at the something, and come up with 3.

Then fill in the gaps, if $Y=3X-1$, then

X: -1, 0, 1, 2, 3, 4

Becomes

Y: -4, -1, 2, 5, 8, 11

Other than working for 0, it fails for everything else. In ML terms, you can define this as your loss is 'high'. With what you learned from that, you might think, what if it's $Y=2X-1$?

Then, when you fill in the results for $Y=2X-1$, you'll get:

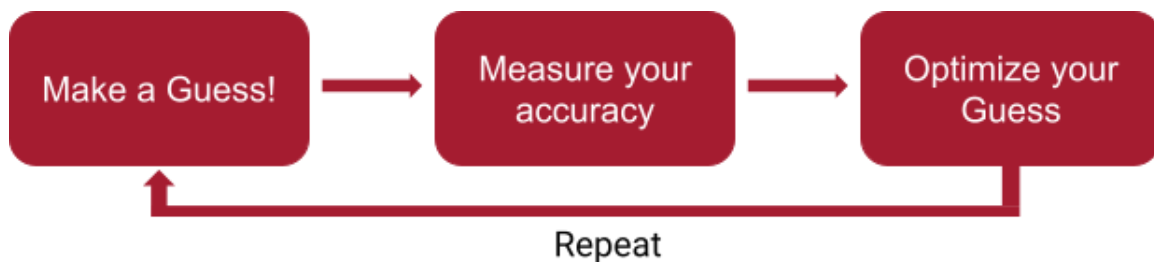
X: -1, 0, 1, 2, 3, 4

Becomes

Y: -3, -1, 1, 3, 5, 7

...which matches your original data perfectly. Your loss is zero.

You've just gone through this process:



In the next video you'll explore this in a little more depth.