AI & Machine Learning
Lesson 4
Patterns in Data

Warm Up

Writing Prompt:

Choose one question to respond to:

1) When browsing the internet, what's the weirdest thing an ad has ever tried to get you to buy?

1) When sending a message, what's the funniest thing autocomplete has suggested to finish a sentence?

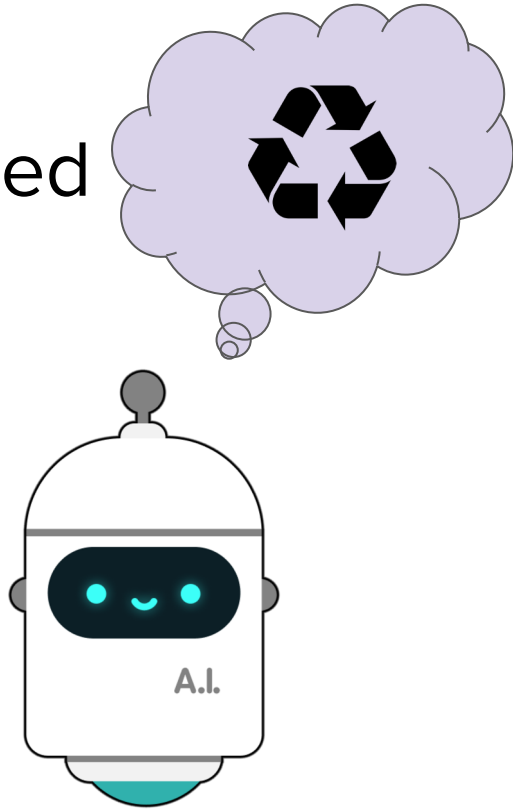
Rhetorical Question of the Day

What strategies do computer models use to make decisions?

Activity

Key Vocabulary

- **Model -** a computer program designed to make a decision



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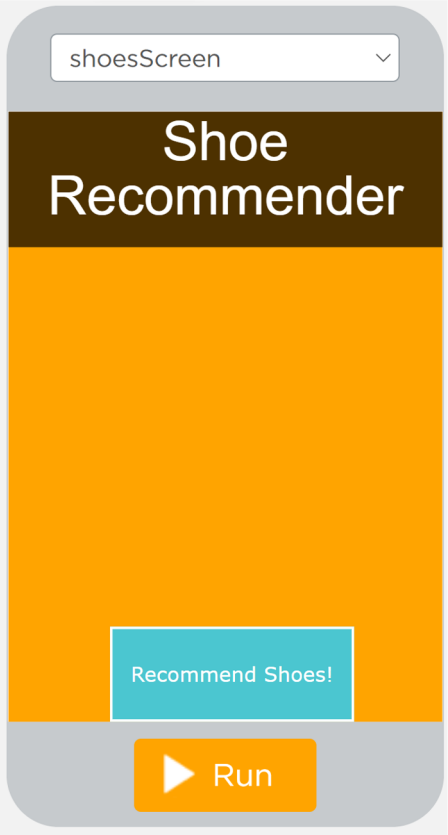
Log in

Navigate to
Lesson 4 Level 1 -
Shoe Recommender

Level 1 Shoe Recommender

Do This

- Navigate to Lesson 4 Level 1
- Run the app several times.
  - See if you can get each of the 4 recommendations
- Make a prediction:
  - How do you think this model is making its decision?



Writing Prompts

Is this program helpful for deciding shoes?

Why or why not?

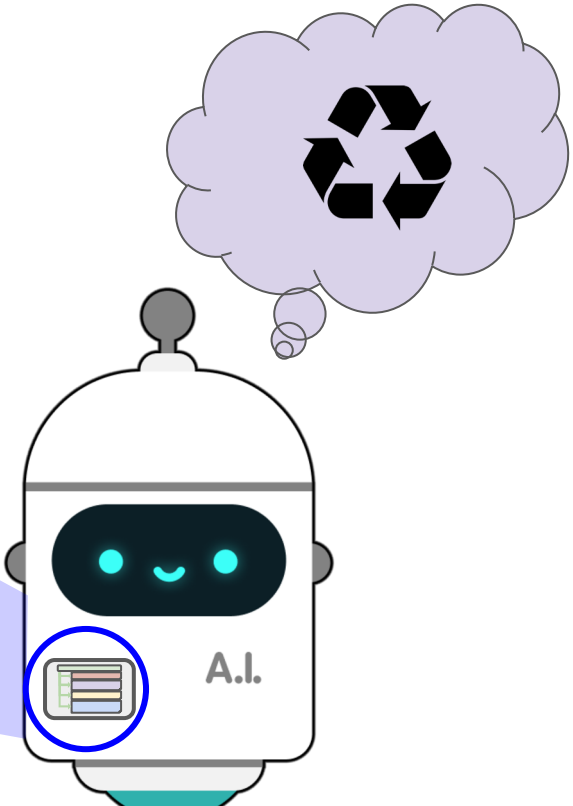
Shoe Recommender

Intended Use

I can predict what shoes someone should wear

Here's How My Model Works

I make **random** guesses about what shoes you should wear. Each time you run the app, a new shoe will get recommended



Writing Prompt

What would improve this model to help it make better decisions?

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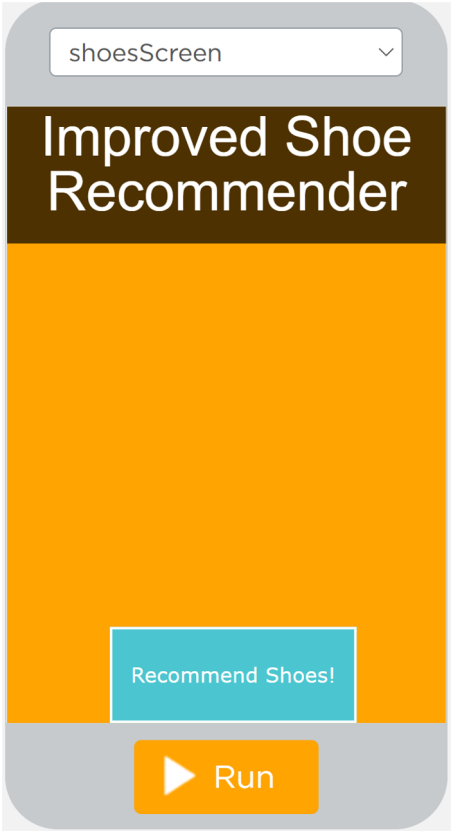
Navigate to
Lesson 4 Level 2 -
Improved Shoe Recommender

Level 2

Improved Shoe Recommender

Do This

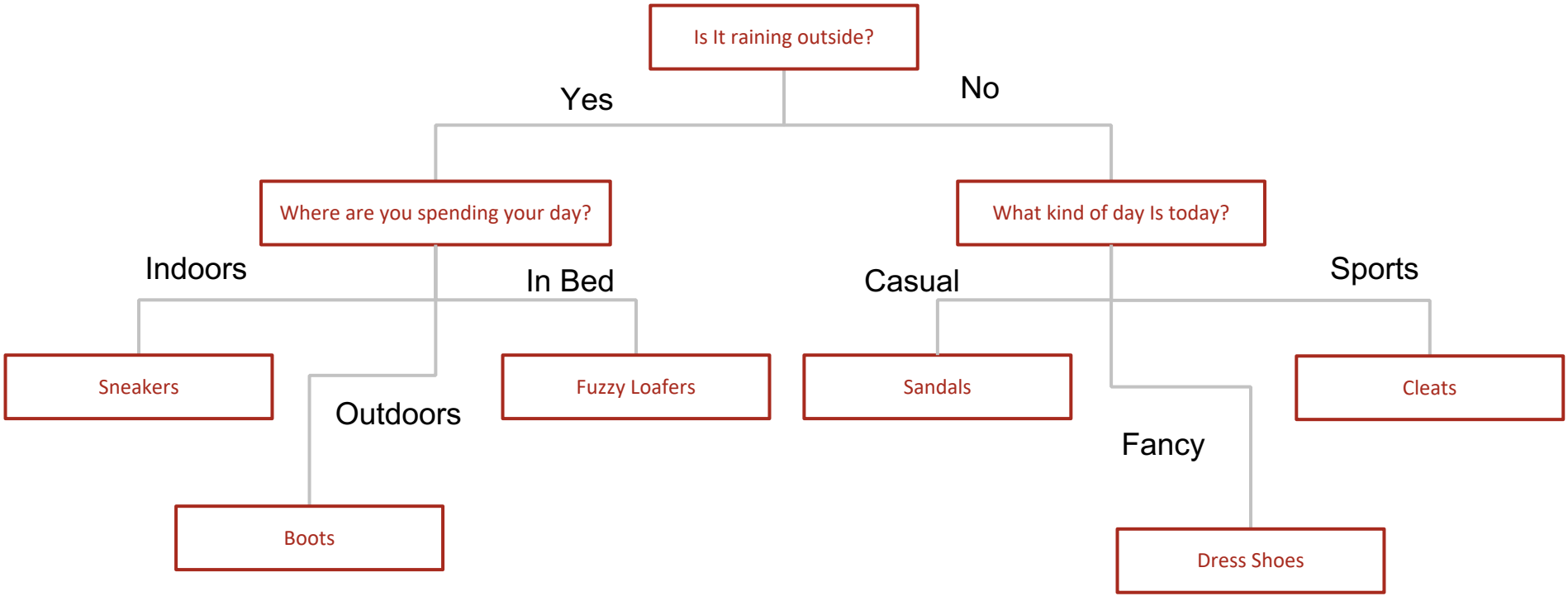
- Navigate to Lesson 4 Level 2
- Run the app several times.
  - See if you can get each of the 6 recommendations
- Make a prediction:
  - how do you think this model is making its decision?



Writing Prompts

1.How do you think this program is making its decision?

2.Is it more or less helpful for deciding shoes than the last program?


Is It raining outside?
Yes
No
Where are you spending your day?
What kind of day Is today?
Indoors
In Bed
Casual
Sports
Sneakers
Outdoors
Fuzzy Loafers
Sandals
Fancy
Cleats
Boots
Dress Shoes

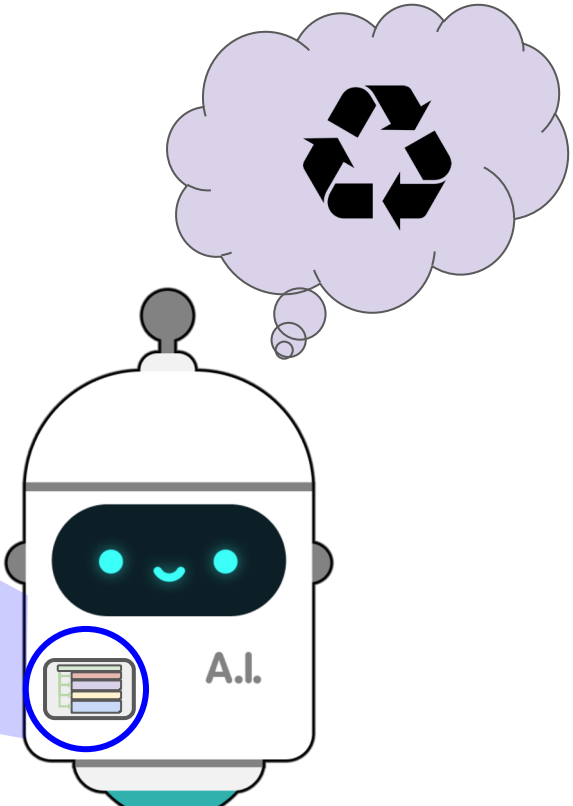
Improved Shoe Recommender

Intended Use

I can predict what shoes someone should wear

Here's How My Model Works

I use a **Decision Tree** to make decisions. After answering several questions, a shoe is recommended



Writing Prompts

Do you agree with the questions that were asked and how the shoes were assigned?

Who do you think decided which shoes went with each answer?

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Navigate to
Lesson 4 Level 3 -
Shoe Recommendation Survey

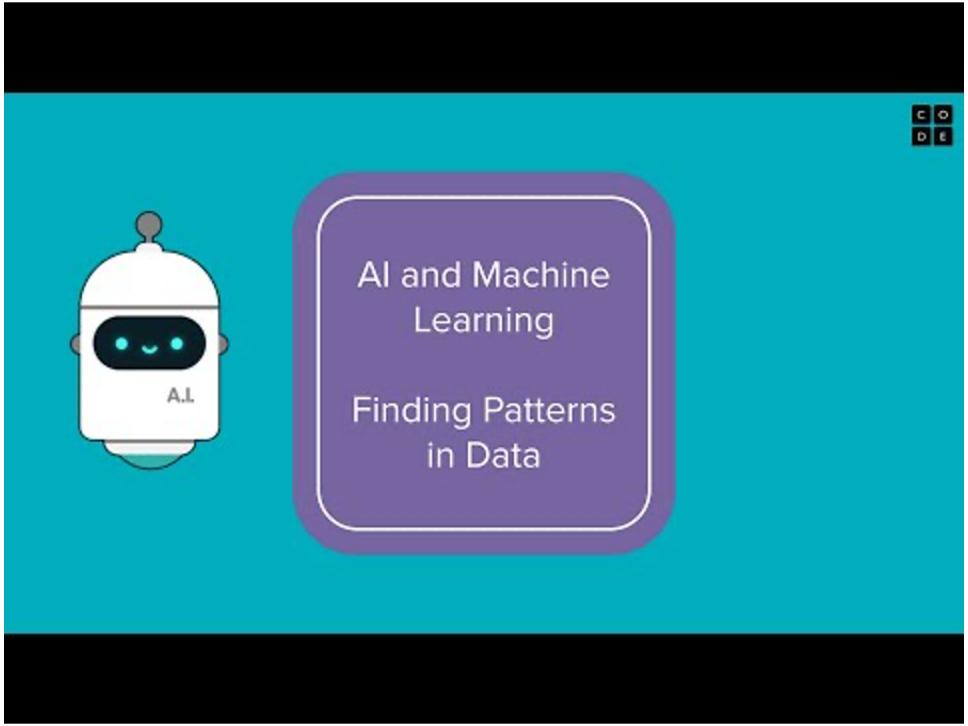
We’re collecting data to help with our Shoe Recommender App.

Do This: Take the survey to help gather data about what shoes we should be recommending.

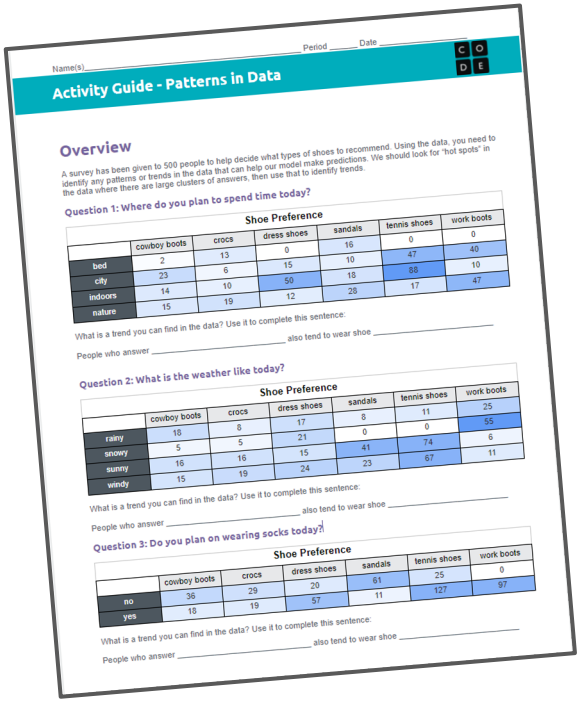
You can take the survey multiple times and pretend you’re in a different situation, such as:

- Pretending it’s the weekend
- Pretending you’re going to a birthday party
- Pretending you’re sick and not feeling well

Video



Patterns in Data



Name(s)_____ Period_____ Date_____

Activity Guide - Patterns in Data

Overview

A survey has been given to 500 people to help decide what types of shoes to recommend. Using the data, you need to identify any patterns or trends in the data that can help our model make predictions. We should look for "hot spots" in the data where there are large clusters of answers, then use that to identify trends.

Question 1: Where do you plan to spend time today?

Shoe Preference

	cowboy boots	crocs	dress shoes	sandals	tennis shoes	work boots
bed	2	13	0	16	0	0
city	23	6	15	10	47	40
indoors	14	10	50	18	88	10
nature	15	19	12	28	17	47

What is a trend you can find in the data? Use it to complete this sentence:

People who answer _____ also tend to wear shoe _____

Question 2: What is the weather like today?

Shoe Preference

	cowboy boots	crocs	dress shoes	sandals	tennis shoes	work boots
rainy	18	8	17	8	11	25
snowy	5	5	21	0	9	55
sunny	16	16	15	41	74	6
windy	15	19	24	23	67	11

What is a trend you can find in the data? Use it to complete this sentence:

People who answer _____ also tend to wear shoe _____

Question 3: Do you plan on wearing socks today?

Shoe Preference

	cowboy boots	crocs	dress shoes	sandals	tennis shoes	work boots
no	36	29	20	61	25	0
yes	18	19	57	11	127	97

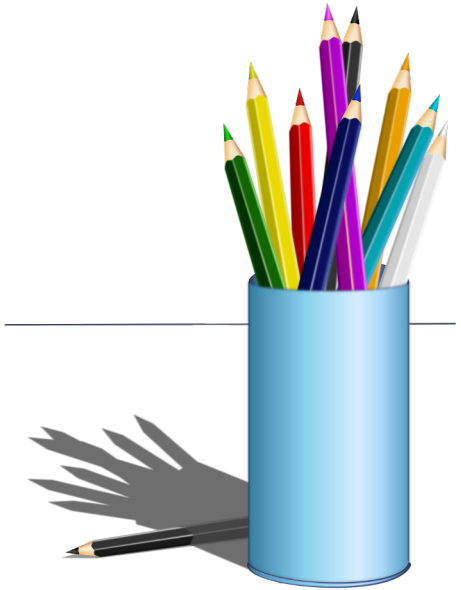
What is a trend you can find in the data? Use it to complete this sentence:

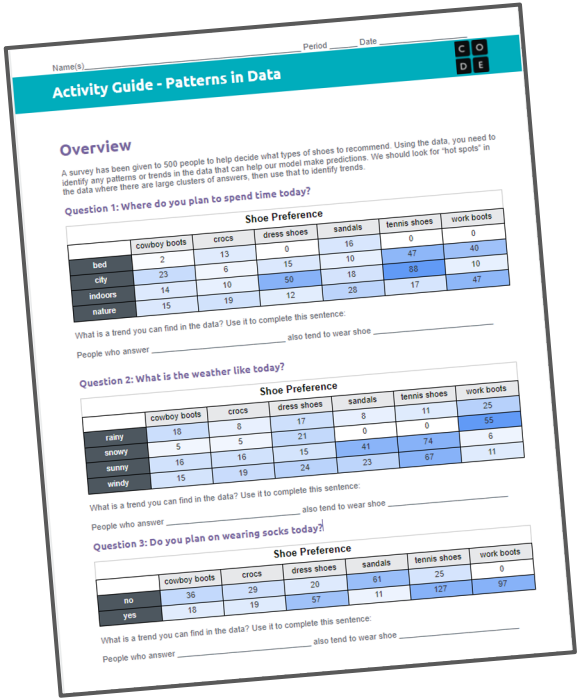
People who answer _____ also tend to wear shoe _____

You should have:

Patterns in Data Activity Guide

Pen/Pencil





Name(s) _____ Period ____ Date _____

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What is a trend you can find in the data? Use it to complete this sentence:

People who answer _____ also tend to wear shoe _____

Do This

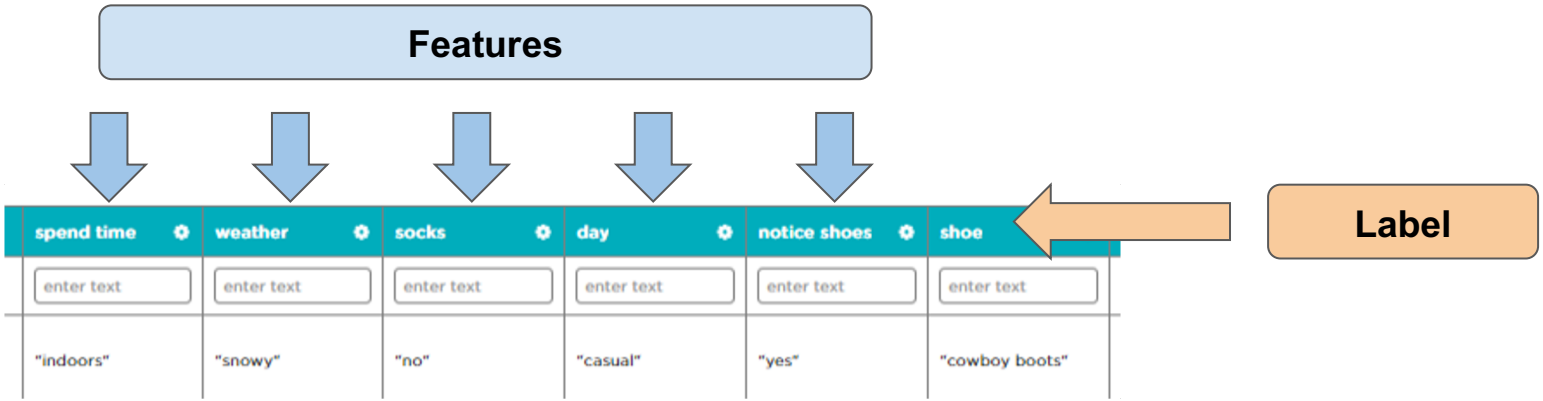
Complete the activity by finding patterns and trends in the data using the Cross Tab charts

Share Out

Using trends from all five questions, what are some shoes we can recommend based on the patterns in the data?

Key Vocabulary

- **Feature -** an input that the model uses to make decisions
- **Label -** the output you are trying to decide or predict with a model



Ultimate Shoe Recommender

Intended Use

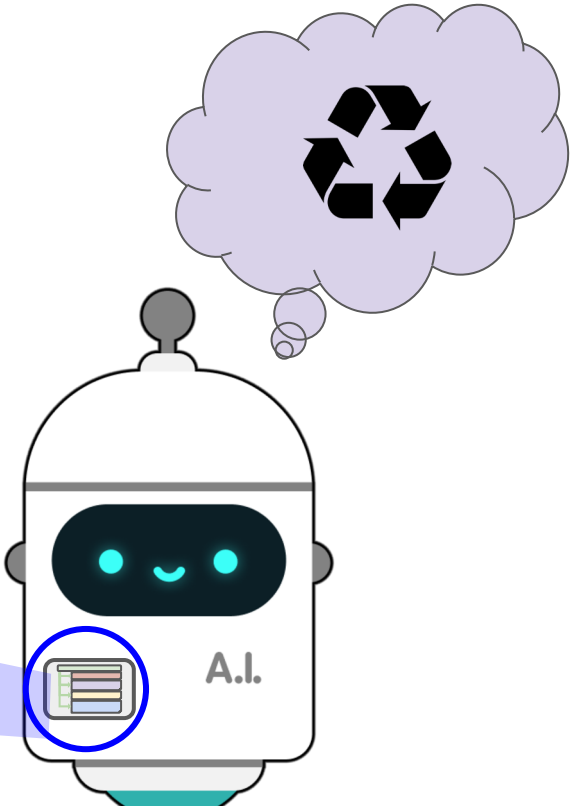
I can predict what shoes someone should wear

Here's How My Model Works

I use patterns and trends in data to find strong relationships between **features** and the **label** I want to predict

Here's The Data I Was Trained From!

I used data from a survey with 500 responses



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Navigate to
Lesson 4 Level 4 -
Ultimate Shoe Recommender

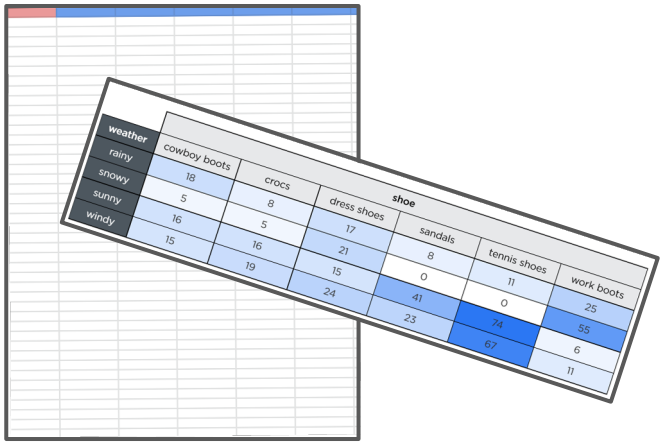
Level 4

Ultimate Shoe Recommender

Do This

- Navigate to Lesson 4 Level 4
- Run the app several times
  - See if you can get the app to recommend shoes that match the patterns we saw in the data
- Try to get the app to recommend each type of shoe

Data



weather	shoe					
	cowboy boots	crocs	dress shoes	sandals	tennis shoes	work boots
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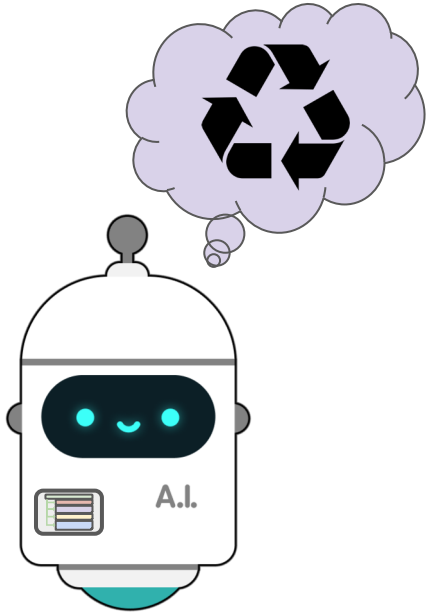
Model



Wrap Up

Writing Prompts:

If you could add another question to the shoe survey, what question would you ask?

Why do you think that question would be helpful in deciding a shoe?

Question of the Day - Revisited

What strategies do computer models use to make decisions?