Day 1

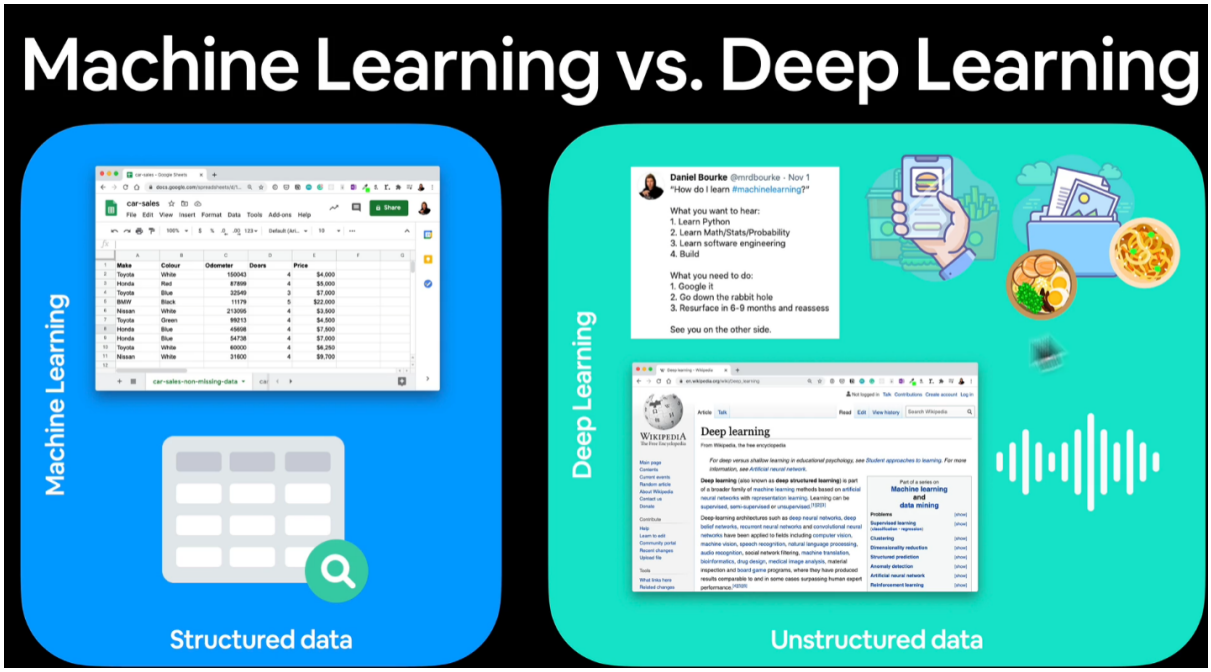
What deep learning is good for?

- Problems with long lists of rules
  - When the traditional approach fails, ML / DL may help
- Continually channging environments
  - DL can be helpful
- Discovering insights within large collections of data
  - can you imagine trying to hand-craft rules? Might not

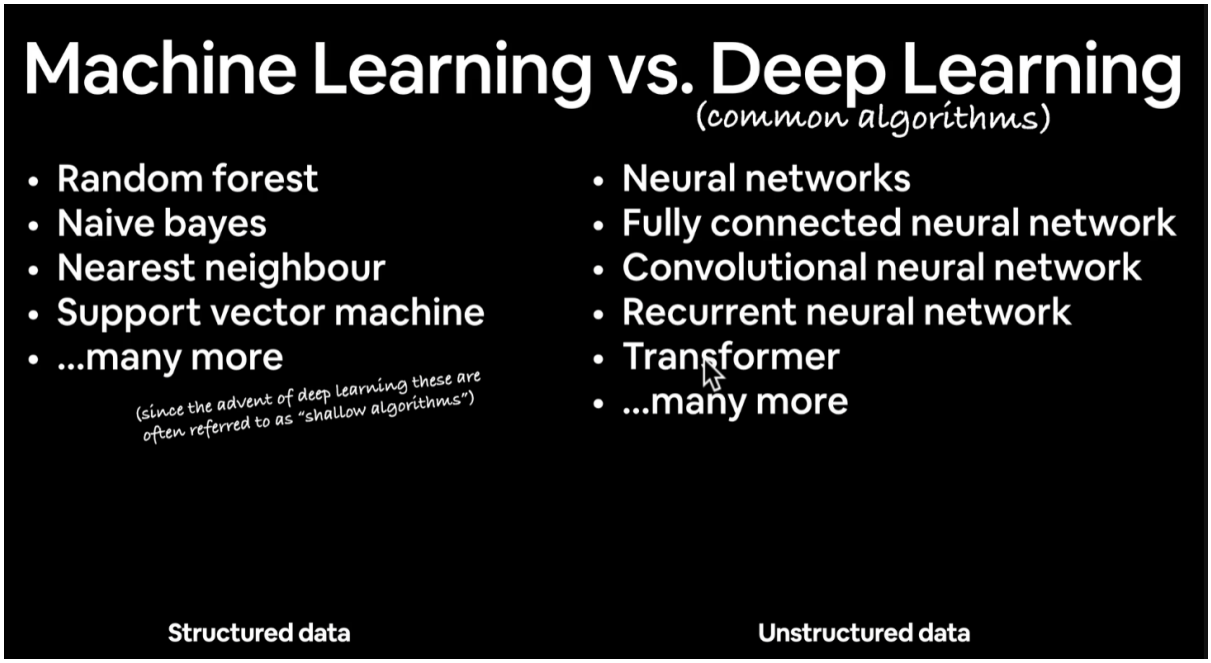
What deep learning is not typically good for?

- When you need to explain
  - the patterns learned by a deep learning model are typically uninterpretable by human
- When the traditional approach is a better option
  - if you can accomplish what you need with a simple rule-based system
- When errors are unacceptable
  - since the outputs of deep learning model aren’t always predictable
- When you don’t have much data
  - deep learning models usually require a fairly large amount of data
  - But we’ll learn how to handle small data-set

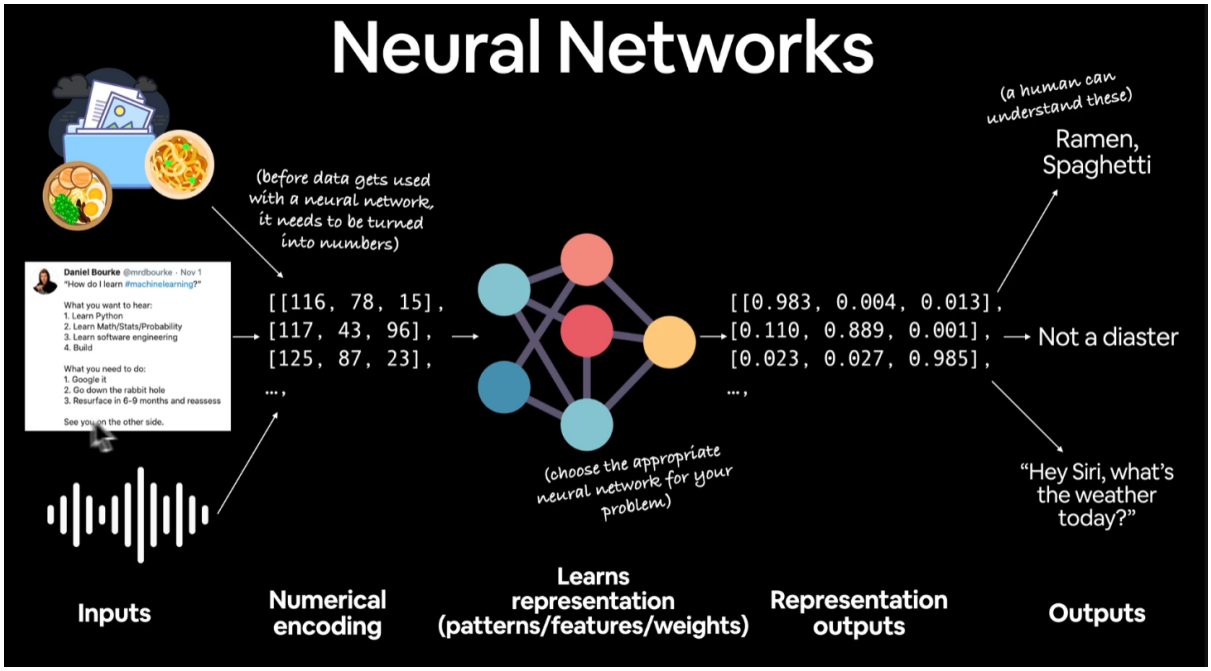
ML vs DL

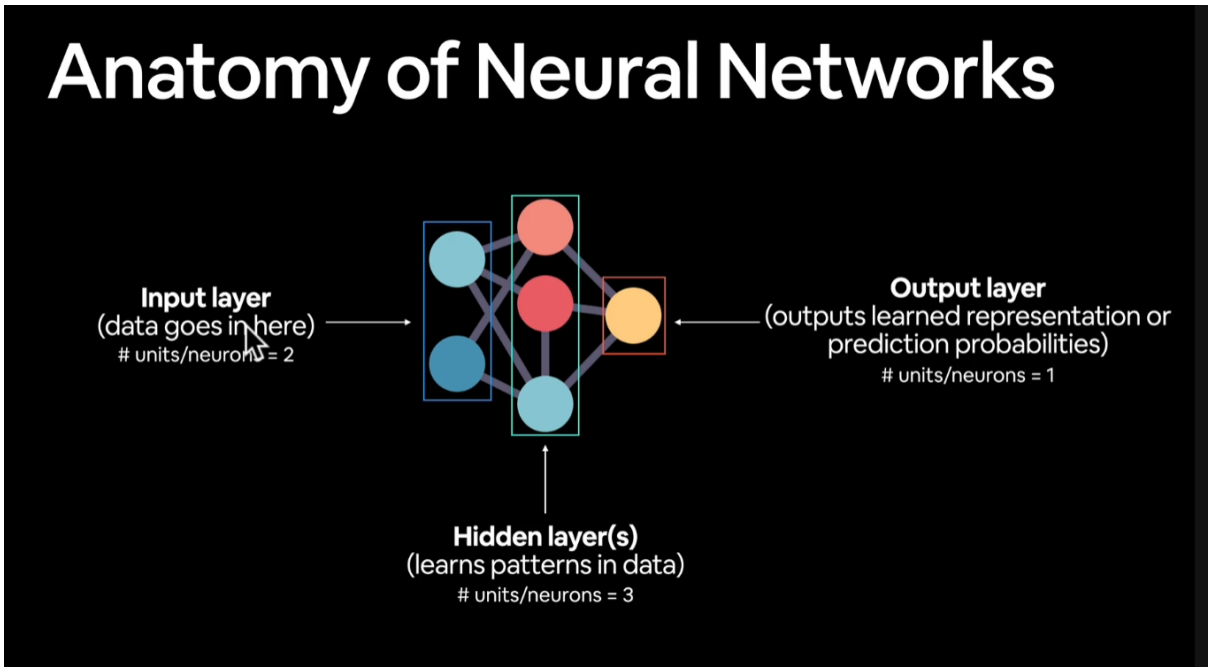


- Machine Learning needs Structured data such as row-data as excel
- Deep Learning might not need structured data

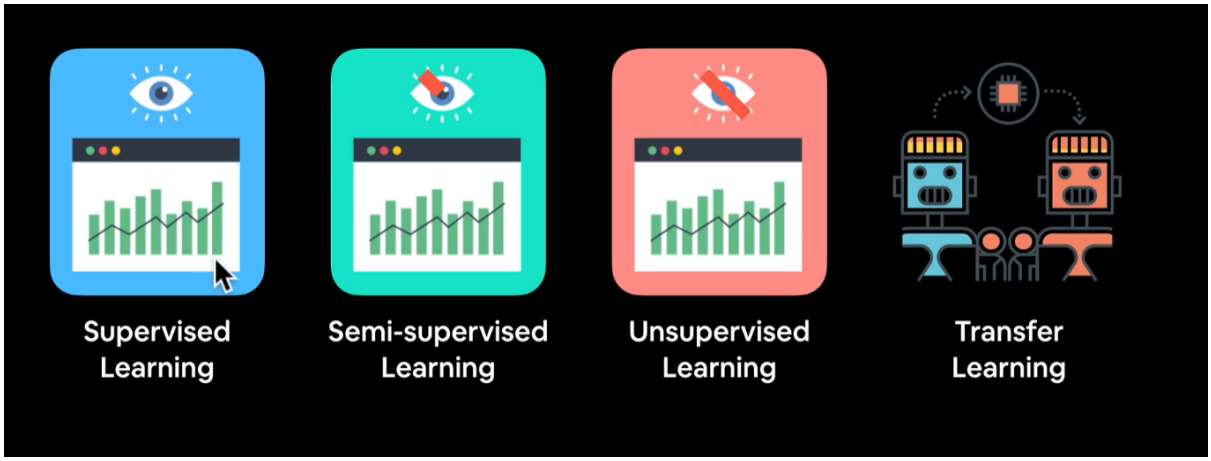


What are neural networks?





Types of Learning



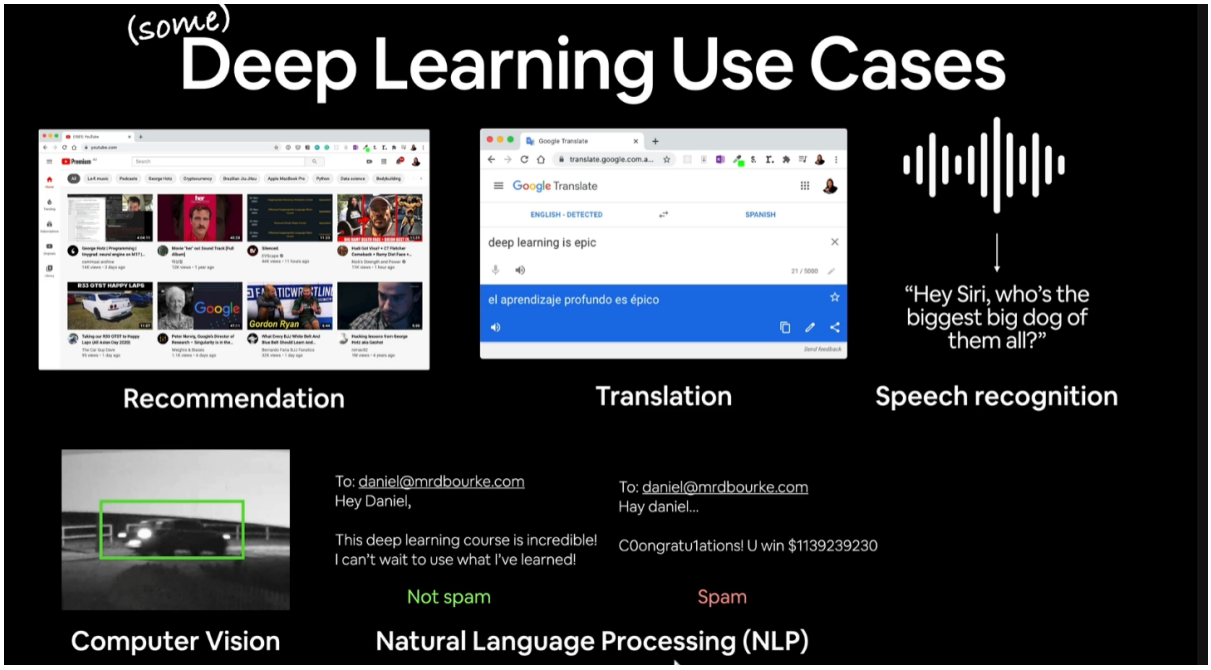
Supervised Learning : Data with all the labels

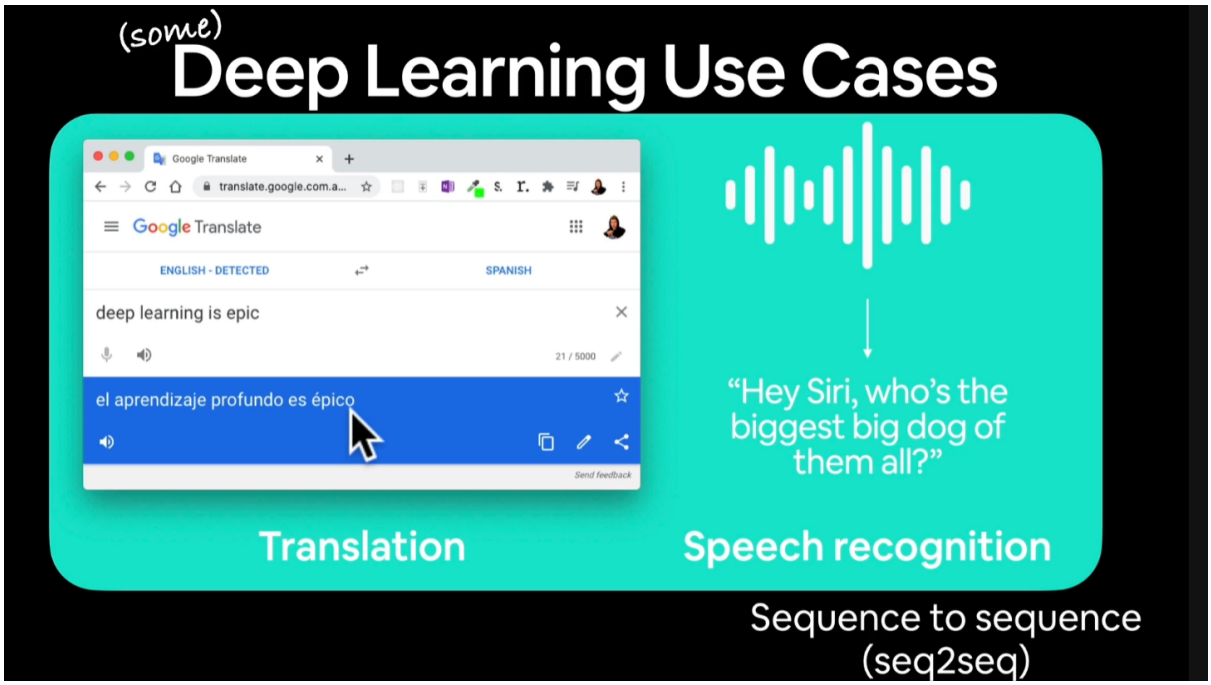
Semi-supervised : Data with some labeling

Unsupervised Learning : Data with no Label

Transfer Learning : Take one deep learning model and use it to another deep learning model

“Some” Deep Learning Uses





What is TensorFlow?

What is TensorFlow?

- End-to-end platform for machine learning
- Write fast deep learning code in Python/other accessible languages (able to run on a GPU/TPU)
- Able to access many pre-built deep learning models (TensorFlow Hub)
- Whole stack: preprocess data, model data, deploy model in your application
- Originally designed and used in-house by Google (now open-source)

Why TensorFlow?

Why TensorFlow?

Source: TensorFlow.org

What is Tensor?

In some numerical way to represent the information