

Lesson 4.2: Applications of Machine Learning

DISTRIBUTED COMPUTING WITH SPARK SQL

Applications of Machine Learning



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Slide 2: Welcome Back!



Welcome Back!

Examine some applications of machine learning

Slide 3: Learning Objectives



Learning Objectives

Identify new machine learning use cases

Understand how machine learning can address these problems

How Businesses Use Data Over Time

Early Stages

- May not use many statistics
- Summary statistics and key business metrics
- Little awareness or support for the value of data

Middle Stages

- Data starts to be seen as valuable
- Use data to highlight current business processes

Mature Stages

- Organization becomes increasingly data-driven
- Use data prescriptively to steer the organization in new directions
- Leads to discovering and addressing otherwise unknown customer segments

Slide 5: Applications of Machine Learning

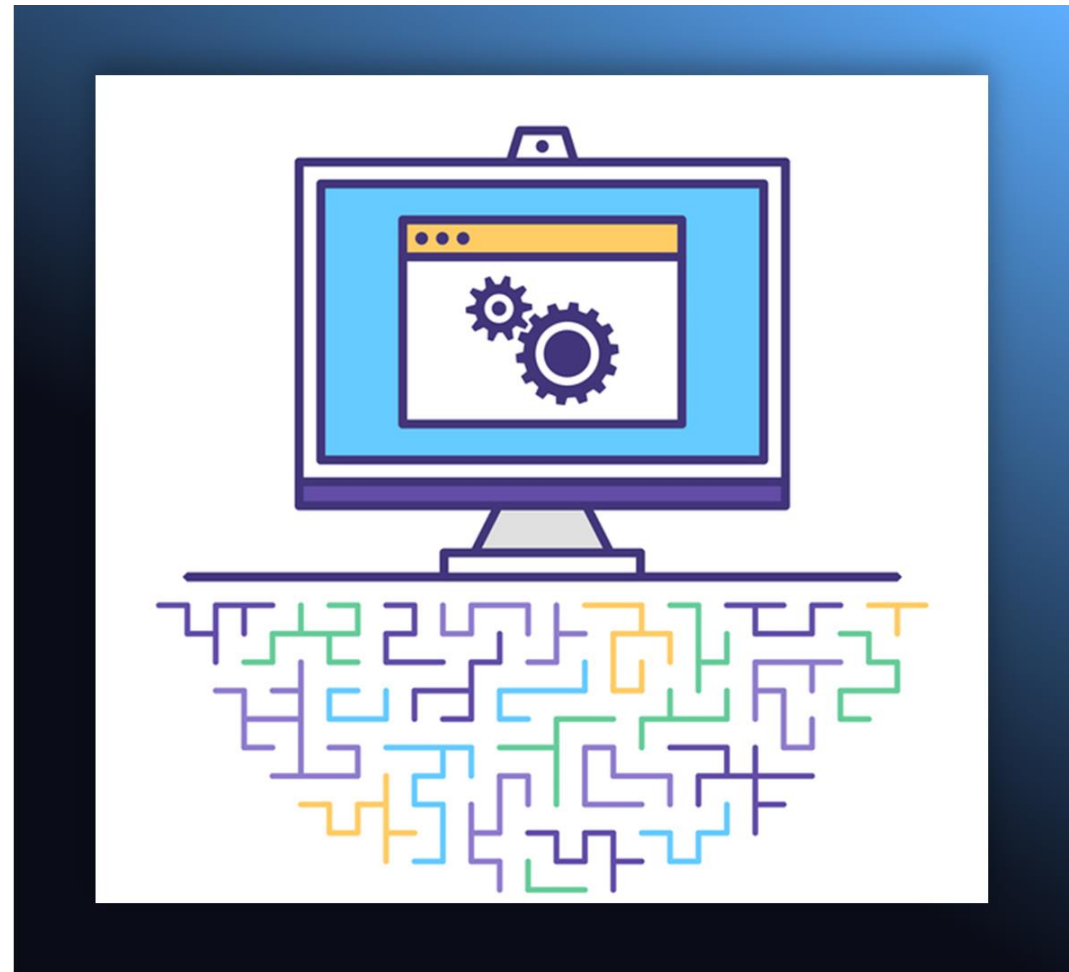
Applications of Machine Learning

Fraud Detection

A/B Testing

Image Recognition

Natural Language Processing

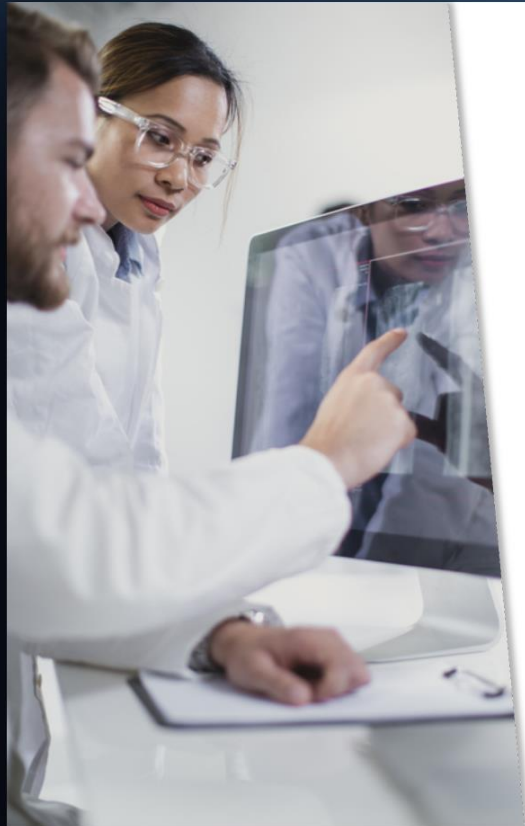


Slide 6: Fraud Detection in Real-Time



Fraud Detection in Real-Time

Slide 7: Natural Language Processing



Natural Language Processing

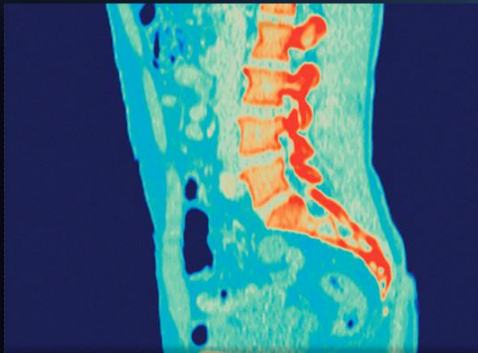
Classifying medical records

Chatbot sentiment analysis



Slide 8: Image Processing

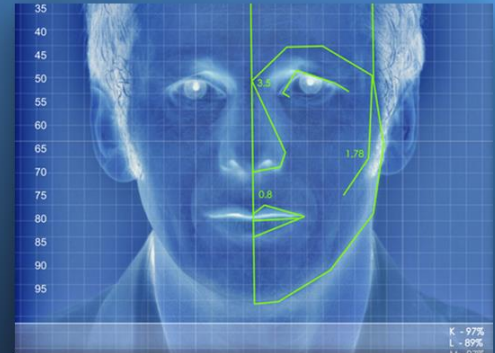
Image Processing



Medical images



Self-driving cars



Facial
recognition

Slide 9: Churn Analysis

Churn Analysis

Concern:
customers not
returning to site or
making purchases

Create attractive
incentives to bring
customers back to
your site

Slide 10: How Can We Approach Churn Analysis as a Data Problem

A photograph of a person's hands typing on a laptop keyboard. The laptop screen displays a website with various clothing items, including dresses and tops. A white rectangular text box is overlaid on the left side of the image, containing the text 'How Can We Approach Churn Analysis as a Data Problem?'. The background is slightly blurred, showing a desk with a pen and a small potted plant.

**How Can We
Approach Churn
Analysis as a
Data Problem?**

Slide 11: Define the Problem: What is Churn?



Define the Problem: What is Churn?

No purchases
within a time-
frame

No web visits for a
certain period of
time



Slide 12: Asking Predictive Questions

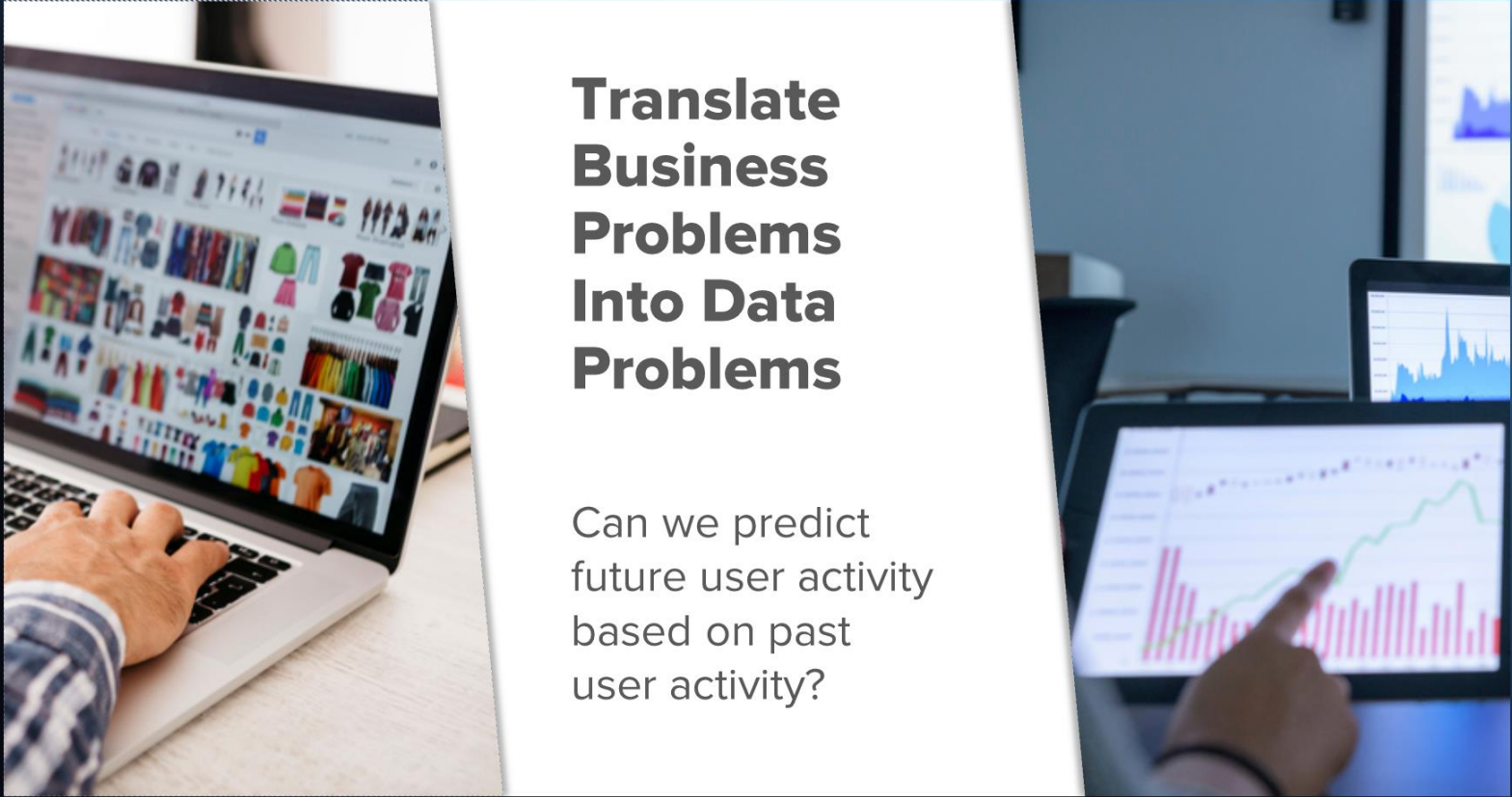


Asking Predictive Questions

- More visits to web site, the less likelihood of churn

- Long-term customers, less likely to churn

Slide 13: Translate Business Problems Into Data Problems



**Translate
Business
Problems
Into Data
Problems**

Can we predict
future user activity
based on past
user activity?

Slide 14: Look for strategically Significant Correlations



**Look for
Strategically
Significant
Correlations**

Slide 15: Coming Up



Coming Up

How machine learning and Spark advance
your understanding of data to meet more
complex and impactful data needs