Week 1: Part-time Data Science

Intro to Data Science

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Learning Objectives

By the end of this lecture, you'll have bragging rights for:

- Describing roles and components of a successful development environment

- Defining data science and the data science workflow

- Applying the data science workflow to solve a task

- Discussing common data science terminology and process

Data Science in the Real World

- Budget optimization for businesses

- Understanding consumer behavior for advertising purposes

- Improving diagnostic accuracy in healthcare

- Predicting the overall outcome in an election

- Sentiment classification from a Yelp review

Asking a Good Question

S pecific

M easurable

A ttainable

R eproducible

T ime-Bound

Common Questions Asked

- **Does X predict Y?**

- **Are there distinct groups in our data?**

- **What are the key components of our data?**

- **Is one of our observations weird?**

The Data Science Workflow

Frame

Prepare

Analyze

Interpret

Communicate

Develop a hypothesis-driven approach to your analysis

Select, import, explore, and clean your data

Structure, visualize, and complete your analysis

Make recommendations and business decisions from your data

Present insights from your data to different audiences

Frame

- **Identify the business/project objectives**

- **Identify an hypothesize the goals and criteria of success**

- **Create a set of questions to help identify the correct data set**

Prepare

- **Ensure that the data is clearly defined and structured**

- **Check and clean data formatting as needed**

Analyze

- **Explorative data analysis**

- **Create a predictive model**

Interprete

- **Develop recommendations and decisions based on your results**

Communicate

- **Share results of your analyses to stakeholders**

Example

a real estate company interested in using data science to determine the best properties to buy and resell. Specifically, your company would like to identify the characteristics of residential houses that estimate their sale price and the cost-effectiveness of doing renovations