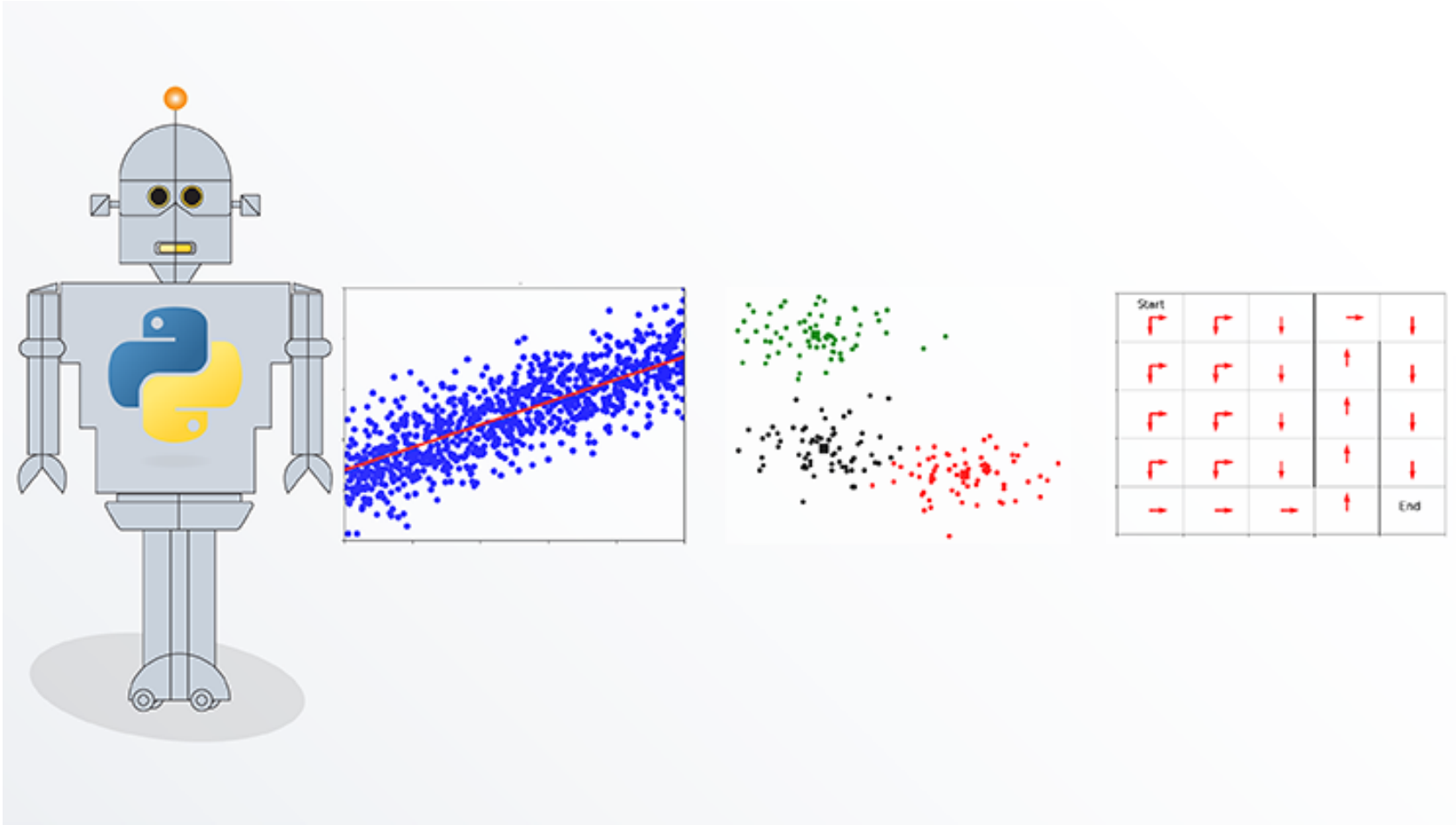


What is Machine Learning?

Chapter 1: Introduction



What is Machine Learning?

Definitions (adapted from Wikipedia page on Machine Learning)

- Machine Learning is the study of algorithms and statistical models that computer systems use to perform a specific task without using explicit instructions, relying on patterns and inference instead
- Machine Learning algorithms build a mathematical model based on training data in order to make predictions without being explicitly programmed for the task

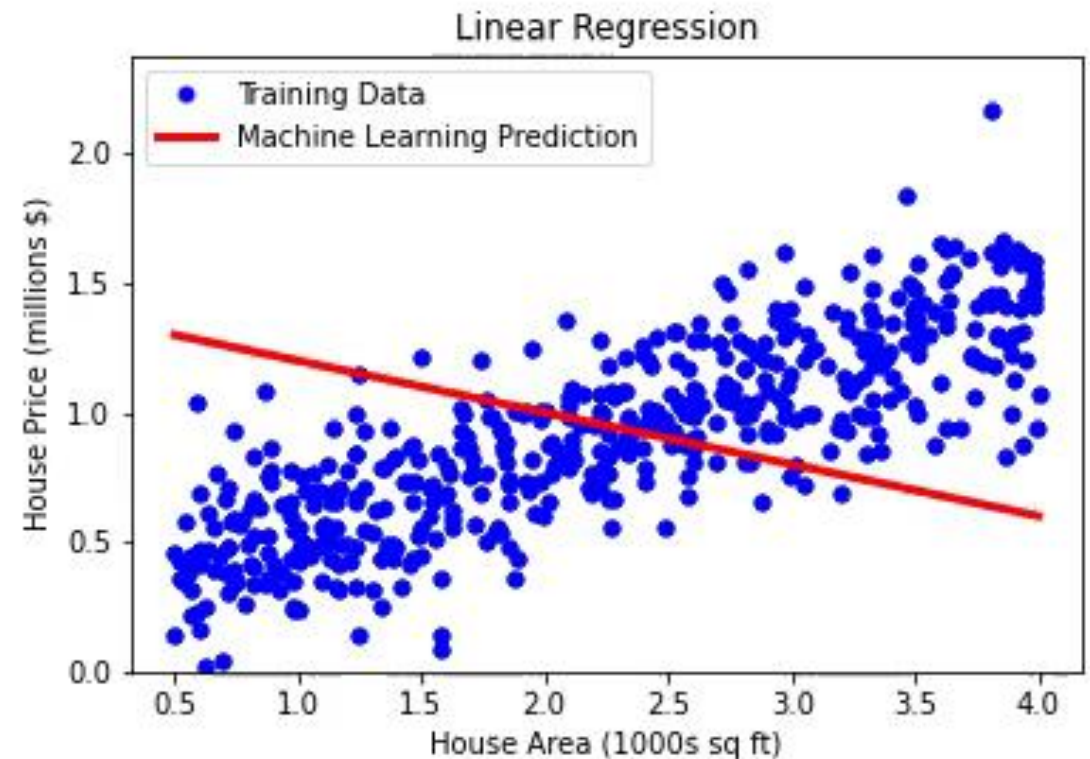
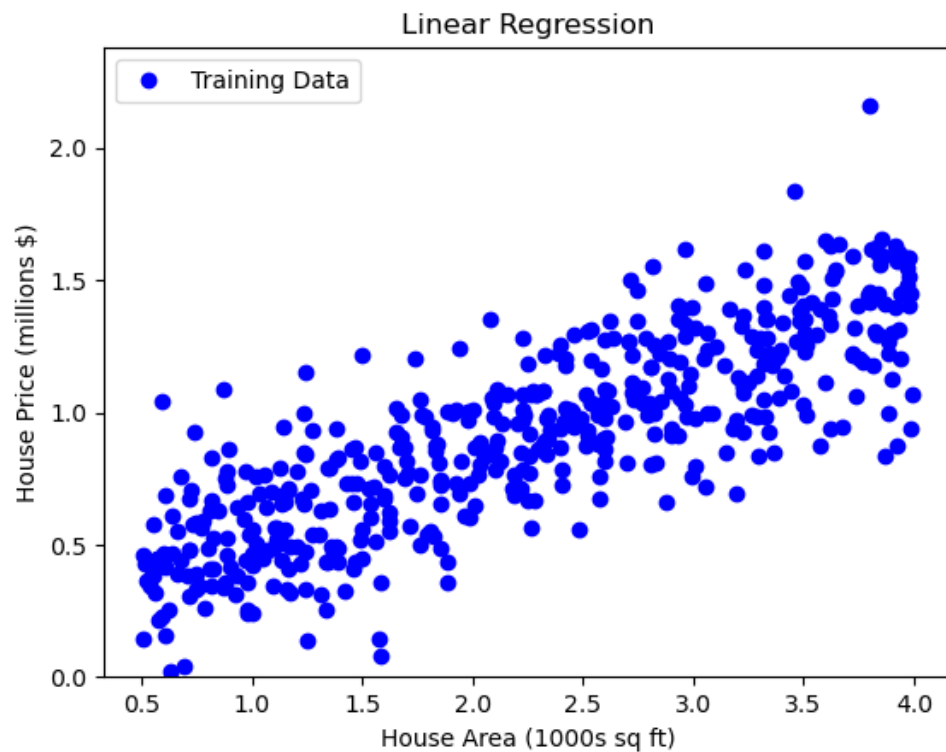
Machine Learning: Types

Three broad areas of machine learning:

- Supervised Machine Learning
 - Informally: Learn function that “fits” the data, then use for prediction
 - Applications: predicting house prices, spam filtering, image classification, language translation
- Unsupervised Machine Learning
 - Informally: Learn patterns in data
 - Applications: finding clusters, data mining, anomaly detection
- Reinforcement Learning
 - Informally: Learn strategies to maximize reward
 - Applications: game playing (tic-tac-toe, checkers, chess, go), industrial control

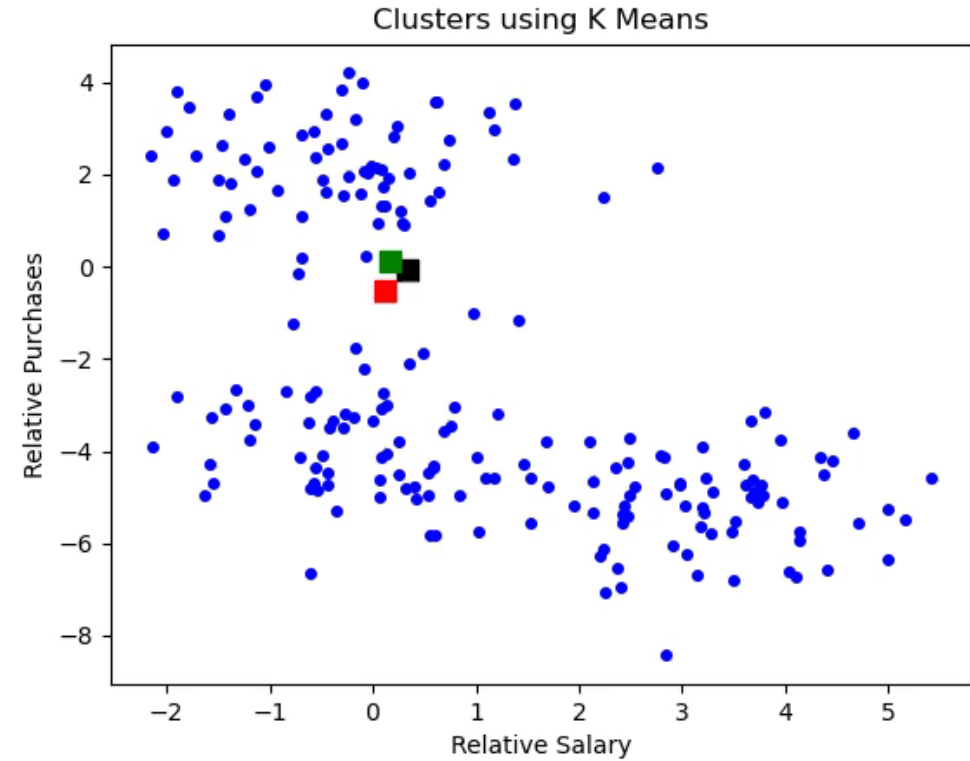
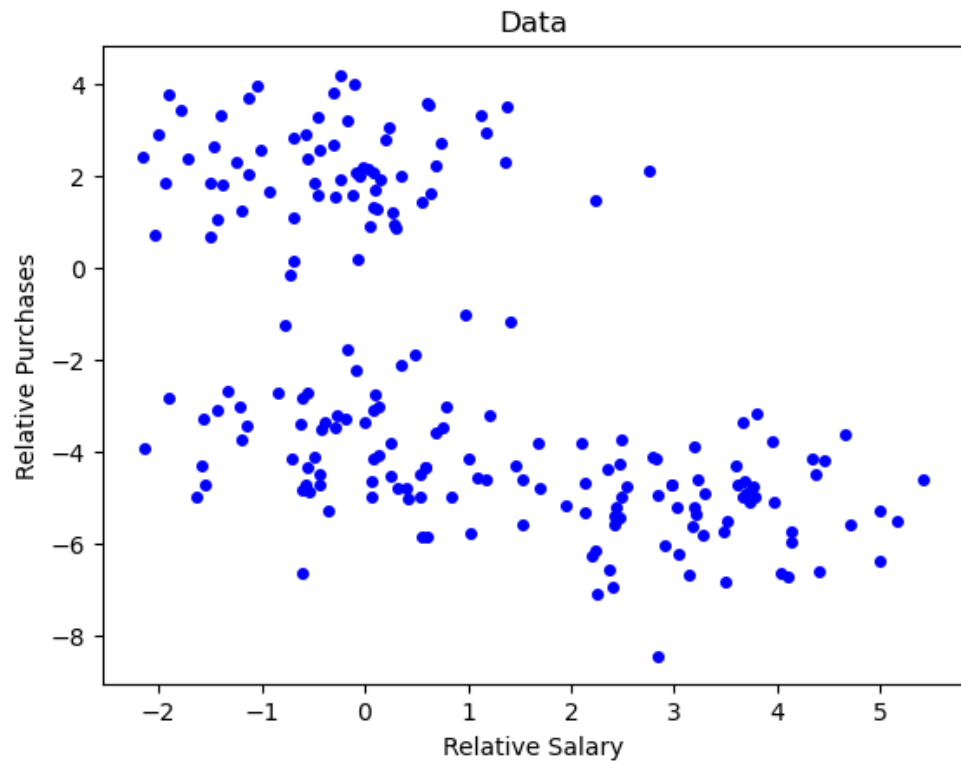
Supervised Learning: Example

- Example: Linear Regression for house price prediction



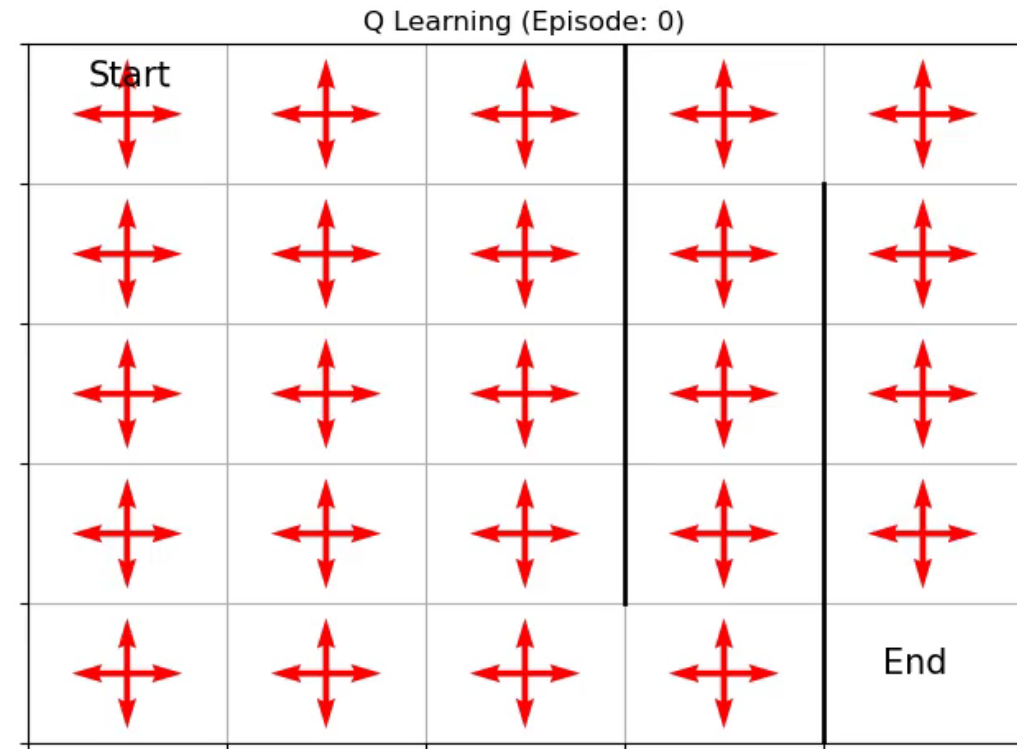
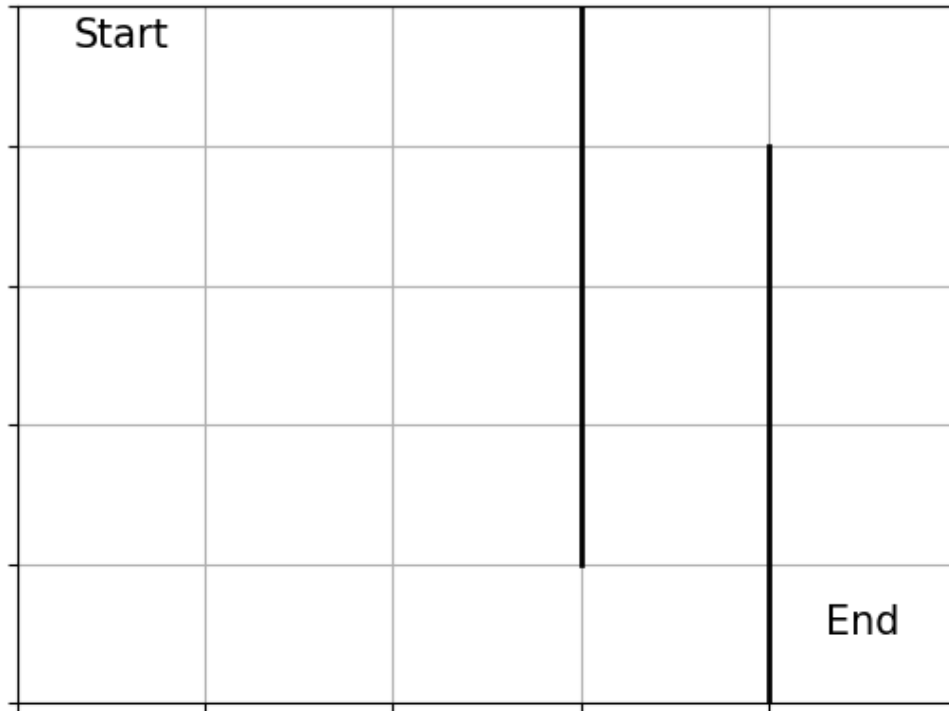
Unsupervised Learning: Example

- Example: Finding clusters in customer data using K means algorithm



Reinforcement Learning: Example

- Example: Find strategy to go through maze as quickly as possible using Q – Learning algorithm



Machine Learning: Learning Algorithms

- Learning Algorithms employ iterative approaches
 - Make an initial guess for solution (such as function, cluster, strategy) and then attempt to improve guess
- Systematic approach for improving guess
 - Learning algorithms based on mathematical foundations
 - Will give overview of algorithms and underlying math in next sections

What is in this Course?

This short course contains:

- A mostly (non-technical) overview of machine learning algorithms and the problems they are used to solve with examples using pictures, plots, and animations
- Demos of machine learning code in Python
- A list of resources for further study of machine learning

Course Resources

Located at: <https://github.com/satishchandrareddy/WhatisML>

The screenshot shows the GitHub repository page for `satishchandrareddy/WhatisML`. The page includes a navigation bar with links to Why GitHub?, Team, Enterprise, Explore, Marketplace, and Pricing. The repository name is displayed as `satishchandrareddy/WhatisML` with 1 Watch and 0 Stars. The repository is in the `master` branch, with 2 branches and 0 tags. The repository description states: "Join GitHub today. GitHub is home to over 50 million developers working together to host and review code, manage projects, and build software together." The repository contains three files: `Code` (2020.11.08, 3 days ago), `Presentations` (2020.11.11 Update, 2 minutes ago), and `Resources` (2020.11.11 Update, 2 minutes ago). The repository has 23 commits. The right sidebar shows the "About" section with the text "Resources for What is Machine Learning Course" and the "Releases" section with the text "No releases published".

← → ↻ 🔒 <https://github.com/satishchandrareddy/WhatisML> 🔍 ☆

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satishchandrareddy 2020.11.11 Update b00d215 2 minutes ago ⌚ 23 commits

Code	2020.11.08	3 days ago
Presentations	2020.11.11 Update	2 minutes ago
Resources	2020.11.11 Update	2 minutes ago

About

Resources for What is Machine Learning Course

Releases

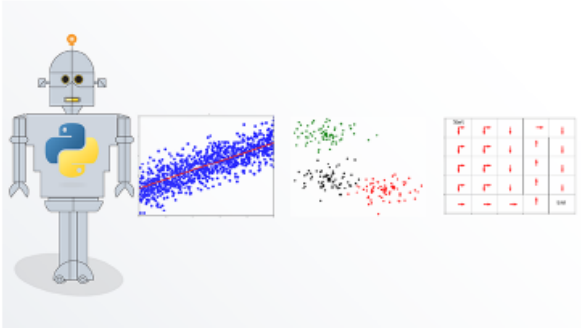
No releases published

Resources File

WhatisML\Resources\WhatisML_Resources_v1.0.pdf

Course: What is Machine Learning?

Useful Machine Learning Resources



Chapter 1: Introduction

Wikipedia page for Machine Learning:

https://en.wikipedia.org/wiki/Machine_learning

Course Github site:

<https://github.com/satishchandrareddy/WhatisML>

Chapter 2: Supervised Learning

Wikipedia page for Supervised Learning:

https://en.wikipedia.org/wiki/Supervised_learning

Course Outline

Chapter 1: Introduction

Chapter 2: Supervised Machine Learning

Chapter 3: Unsupervised Machine Learning

Chapter 4: Reinforcement Learning

Chapter 5: Demo of Python Codes

Chapter 6: Concluding Remarks and Useful Resources