

What is Machine Learning?

Chapter 5: Demo of Python Codes



```
22 def save_param(self):
23     param_layer = []
24     for count in range(self.nlayer):
25         param_layer.append(deepcopy(self.info[count]["param"]))
26     self.param.append(param_layer)
27
28 def get_param_list(self):
29     return self.param
30
31 def add_layer(self, nunit, activation):
32     if self.nlayer == 0:
33         nIn = self.nfeature
34     else:
35         nIn = self.info[self.nlayer-1]["nOut"]
36     linfo = {"nIn": nIn, "nOut": nunit, "activation": activation}
37     linfo["param"] = {"w": np.random.randn(nunit, nIn), "b": np.random.randn(nunit)}
38     linfo["param_der"] = {"w": np.zeros((nunit, nIn)), "b": np.zeros(nunit)}
39     linfo["optimizer"] = {"w": None, "b": None}
40     self.info.append(linfo)
41     self.nlayer += 1
```

Course Resources

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

The screenshot shows the GitHub repository page for `satishchandrareddy/WhatisML`. The page includes a dark navigation bar with the GitHub logo, links for 'Why GitHub?', 'Team', 'Enterprise', 'Explore', 'Marketplace', and 'Pricing', a search bar, and 'Sign in' and 'Sign up' buttons. Below the navigation bar, the repository name is displayed with 'Watch' (1) and 'Star' (0) buttons. A secondary navigation bar contains links for 'Code', 'Issues', 'Pull requests', 'Actions', 'Projects', 'Security', and 'Insights'. A large banner promotes joining GitHub today, stating it is home to over 50 million developers. Below the banner, the repository's branch status is shown as 'master' with 2 branches and 0 tags. A 'Go to file' button and a 'Code' button with a download icon are present. The repository's commit history is listed, showing a recent update by 'satishchandrareddy' on 2020.11.11. The 'About' section on the right describes the repository as 'Resources for What is Machine Learning Course'. The 'Releases' section indicates that no releases have been published.

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

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master 2 branches 0 tags Go to file Code

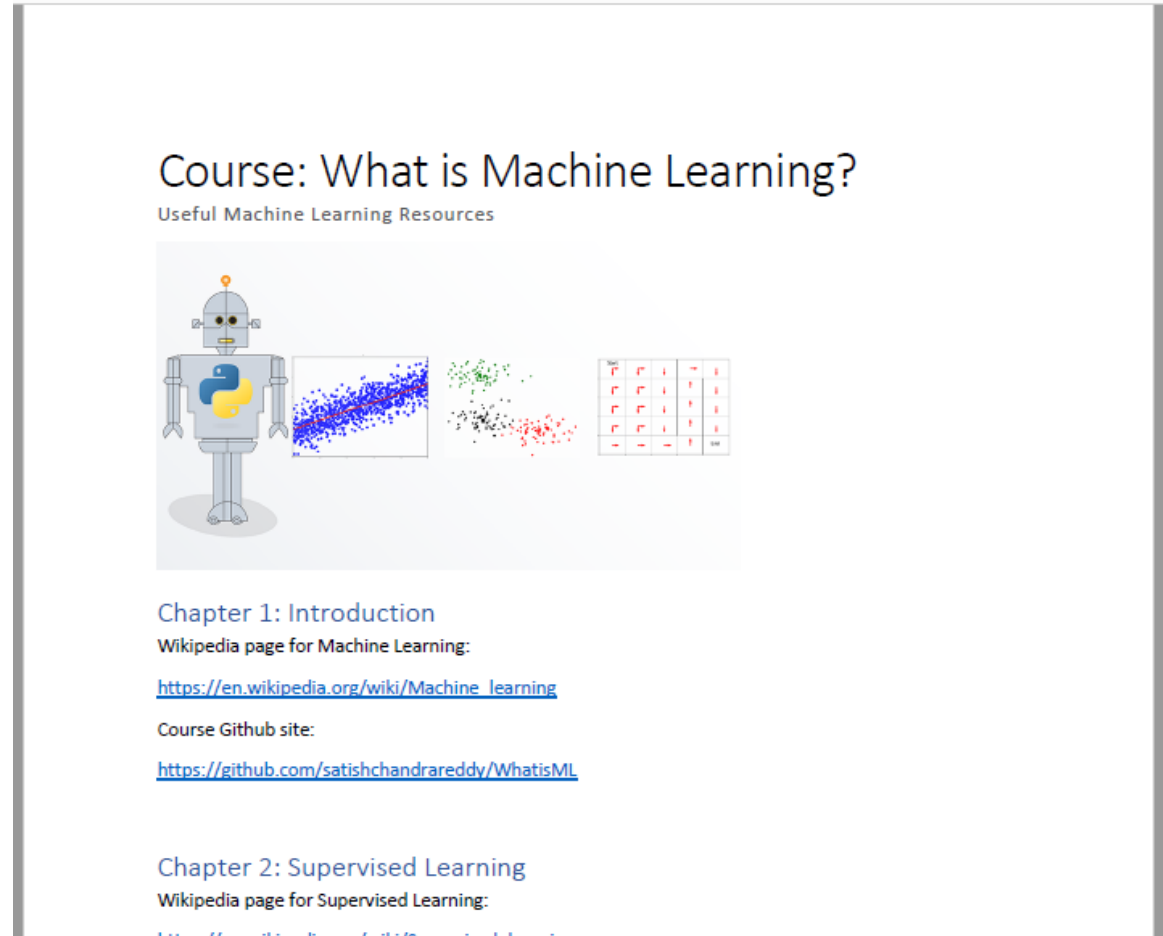
satishchandrareddy	2020.11.11 Update	b00d215	2 minutes ago	23 commits
Code	2020.11.08			3 days ago
Presentations	2020.11.11 Update			2 minutes ago
Resources	2020.11.11 Update			2 minutes ago

About
Resources for What is Machine Learning Course

Releases
No releases published

Resource File

WhatisML\Resources\WhatisML_Resources_v1.0.pdf



Options for Demo of Python Codes

Option	Approach	Details and Requirements
1	Google Colab	Run all demo programs in online notebooks using Google Colab: https://colab.research.google.com/notebooks/intro.ipynb Will provide links to individual notebooks Requirement: need Google account
2	Run on Local Machine using Python via Anaconda Platform	Run demo programs on your local machine Requirement: download Anaconda https://www.anaconda.com/
3	Run on Local Machine using Python	Run demo codes with Python on your machine (without Anaconda) Need recent versions of pandas, matplotlib, and numpy packages

Chapter 5.1: Linear Regression in Google Colab

Link to Notebook in Colab

- Access Linear Regression notebook via Resources link for this section
- Link also available in WhatisML_Resources.pdf file

Chapter 5.2: Binary Classification in Google Colab

Link to Notebook in Colab

- Access Linear Regression notebook via Resources link for this section
- Link also available in WhatisML_Resources.pdf file

Chapter 5.3: Multi-Class Classification in Google Colab

Link to Notebook in Colab

- Access Linear Regression notebook via Resources link for this section
- Link also available in WhatisML_Resources.pdf file

Chapter 5.4: MNIST Digits Classification in Google Colab

Link to Notebook in Colab

- Access Linear Regression notebook via Resources link for this section
- Link also available in WhatisML_Resources.pdf file

Chapter 5.5: K Means Clustering in Google Colab

Link to Notebook in Colab

- Access Linear Regression notebook via Resources link for this section
- Link also available in WhatisML_Resources.pdf file

Chapter 5.6: PCA in Google Colab

Link to Notebook in Colab

- Access Linear Regression notebook via Resources link for this section
- Link also available in WhatisML_Resources.pdf file

Chapter 5.7: K Bandit in Google Colab

Link to Notebook in Colab

- Access Linear Regression notebook via Resources link for this section
- Link also available in WhatisML_Resources.pdf file

Chapter 5.8: Maze Strategy in Google Colab

Link to Notebook in Colab

- Access Linear Regression notebook via Resources link for this section
- Link also available in WhatisML_Resources.pdf file

Chapter 5.9: Running on Local Machine using Anaconda Platform

Running Python Codes in Anaconda Prompt Window

- Assume Anaconda platform installed

<https://www.anaconda.com/>

- Download Course resources from Github site and unzip

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

- Open an Anaconda Prompt window
- Run drivers in:
 - WhatisML-master/Code/Supervised
 - WhatisML-master/Code/Unsupervised
 - WhatisML-master/Code/Reinforcement

Running Python Codes in Jupyter Notebook

Run notebooks on your local machine just like Google Colab

- Assume Anaconda platform installed

<https://www.anaconda.com/>

- Download Course resources from Github site and unzip

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

- Open Anaconda Navigator and Jupyter Notebook
- Run notebooks in:
 - WhatIsML-master/Code/Supervised
 - WhatIsML-master/Code/Unsupervised
 - WhatIsML-master/Code/Reinforcement