

Department of Computer Science

COLLEGE OF SCIENCE AND MATHEMATICS

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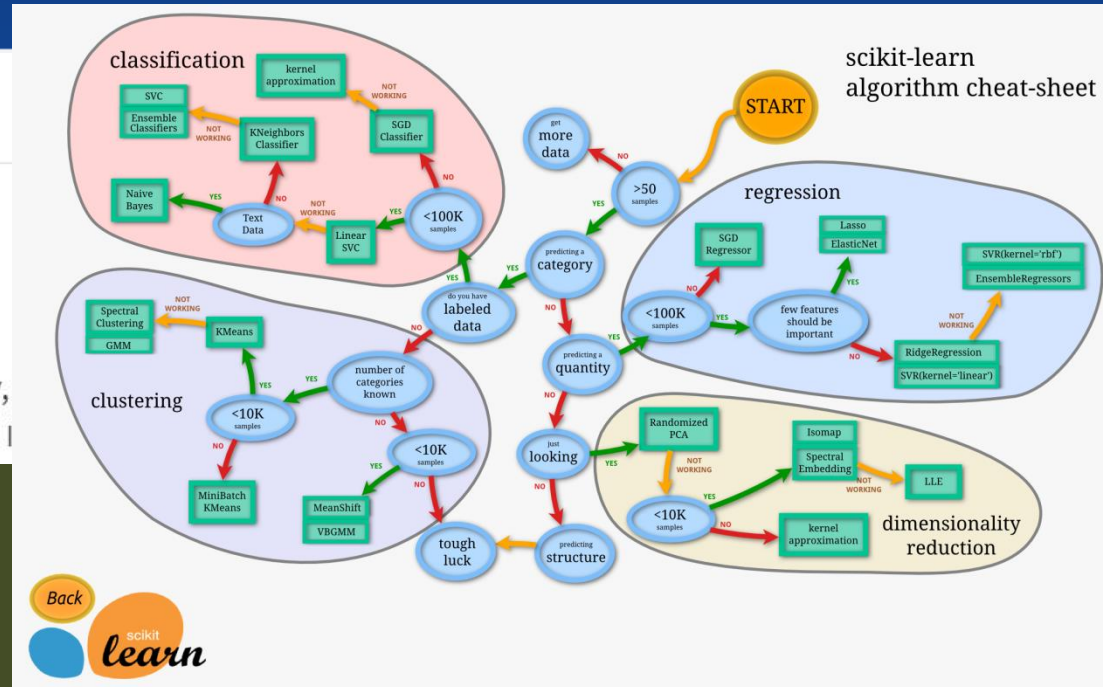
38 int Move(string& board, int dir){
39     int row, col;
40     LocBlank(board, row, col);
41     if ((dir==1 || dir == -3) && row > 0){
42         Swap(board, row, col, row-1, col);
43     }
44     else if ((dir == 2 || dir == -4) && col < MAXDIM-1){
45         Swap(board, row, col, row, col+1);
46     }
47     else if ((dir == 3 || dir == -1) && row < MAXDIM-1){
48         Swap(board, row, col, row+1, col);
49     }
50     else if ((dir == 4 || dir == -2) && col > 0 ){
51         Swap(board, row, col, row, col-1);
52     }
53     else {
54         return -1;
55     }
56     return 0;

```



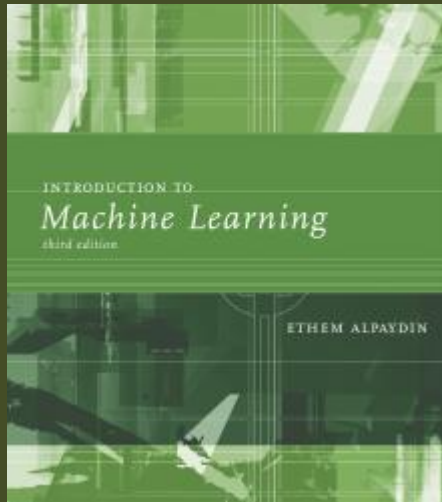
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WELCOME: MACHINE LEARNING

Spring, 2018



Lecture Slides for INTRODUCTION TO MACHINE LEARNING 3RD EDITION

ETHEM ALPAYDIN

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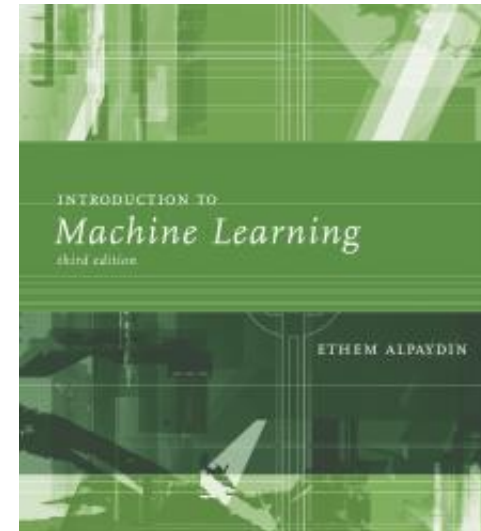
<http://www.cmpe.boun.edu.tr/~ethem/i2ml3e>

Textbook:

Introduction To Machine Learning

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- Need an Academic Roadmap
 - ▣ What do Researchers in Field currently view component keys.
- Need References to Key Underlying Concepts
 - ▣ How are these key components derived.
- Need to avoid being swamped.
 - ▣ Too much technical details prevents progress.



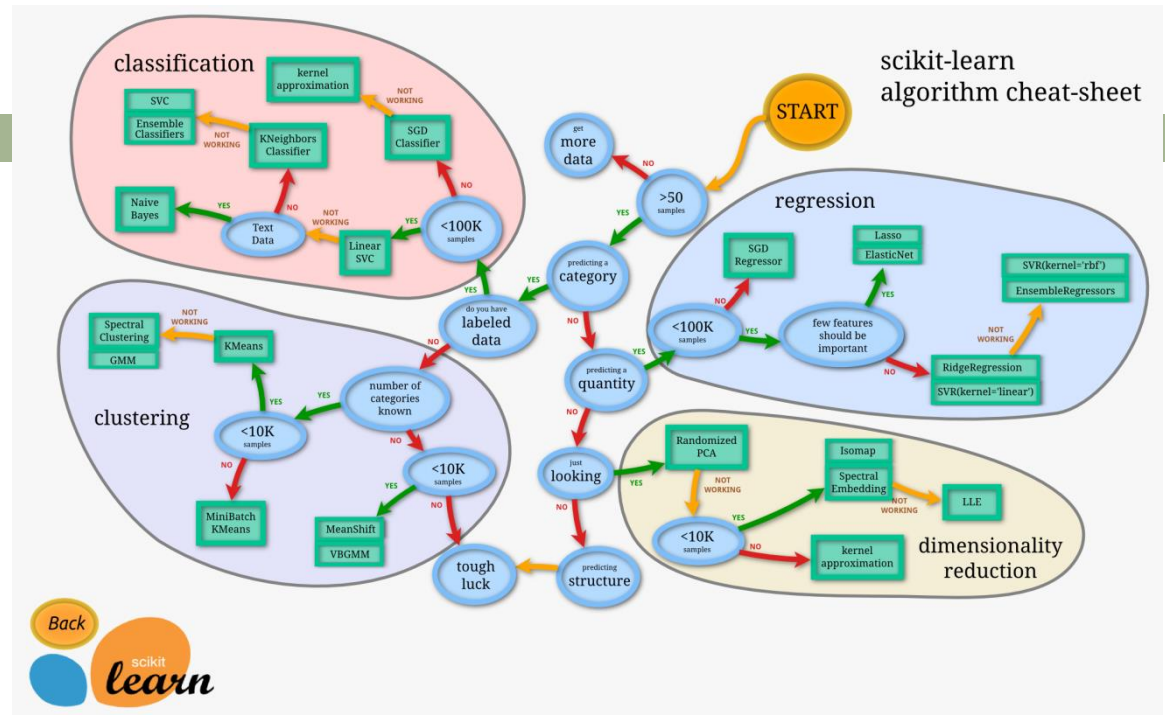
Machine Learning: Getting Going

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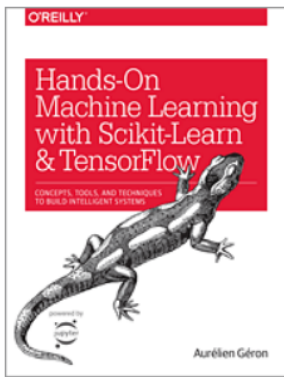
- Theory alone is difficult to engage.
- New practitioners need access routes.
- Gaining Intuition needs algorithm exploration.

Machine Learning Libraries

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- ❑ Need to combine theory with practice.
- ❑ Will be using Scikit-Learn w/ Python
- ❑ Need Help Here...!



Hands-On Machine Learning with Scikit-Learn and TensorFlow

Concepts, Tools, and Techniques to Build Intelligent Systems

By [Aurélien Géron](#)

Publisher: O'Reilly Media

Release Date: March 2017

Pages: 576

Graphics in this book are printed in black and white.

Through a series of recent breakthroughs, deep learning has boosted the entire field of machine learning. Now, even programmers who know close to nothing about this technology can use simple, efficient tools to implement programs capable of learning from data. This practical book shows you how.

By using concrete examples, minimal theory, and two production-ready Python frameworks—scikit-learn and TensorFlow—author Aurélien Géron helps you gain an intuitive understanding of the concepts and tools for building intelligent systems. You'll learn a range of techniques, starting with simple linear regression and progressing to deep neural networks. With exercises in each chapter to help you apply what you've learned, all you need is programming experience to get started.

- Explore the machine learning landscape, particularly neural nets
- Use scikit-learn to track an example machine-learning project end-to-end
- Explore several training models, including support vector machines, decision trees, random forests, and ensemble methods
- Use the TensorFlow library to build and train neural nets
- Dive into neural net architectures, including convolutional nets, recurrent nets, and deep reinforcement learning
- Learn techniques for training and scaling deep neural nets
- Apply practical code examples without acquiring excessive machine learning theory or algorithm details

SECOND BOOK

Practical Handbook

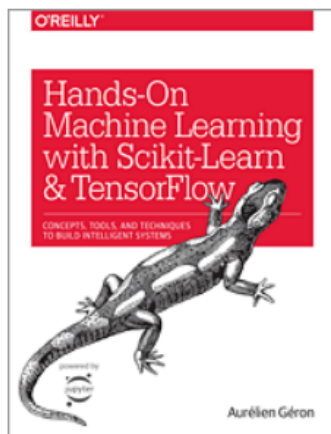
Hands-On Machine Learning...

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- We'll walk through second book along with theory material from Textbook.

Machine Learning Notebooks

This project aims at teaching you the fundamentals of Machine Learning in python. It contains the example code and solutions to the exercises in my O'Reilly book [Hands-on Machine Learning with Scikit-Learn and TensorFlow](#):



Simply open the [Jupyter](#) notebooks you are interested in:

- Using [jupyter.org's notebook viewer](#)
 - note: [github.com's notebook viewer](#) also works but it is slower and the math formulas are not displayed correctly,
- or by cloning this repository and running Jupyter locally. This option lets you play around with the code. In this case, follow the installation instructions below.

Machine Learning Practice

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- Utilize Teams!
- Classes require computer
 - Computers used for quizzes and tests.
- Follow second book Python Configuration
- Explore Machine Learning with Python in Jupyter Notebooks on GitHub.

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Use at least one letter, one numeral, and seven characters.

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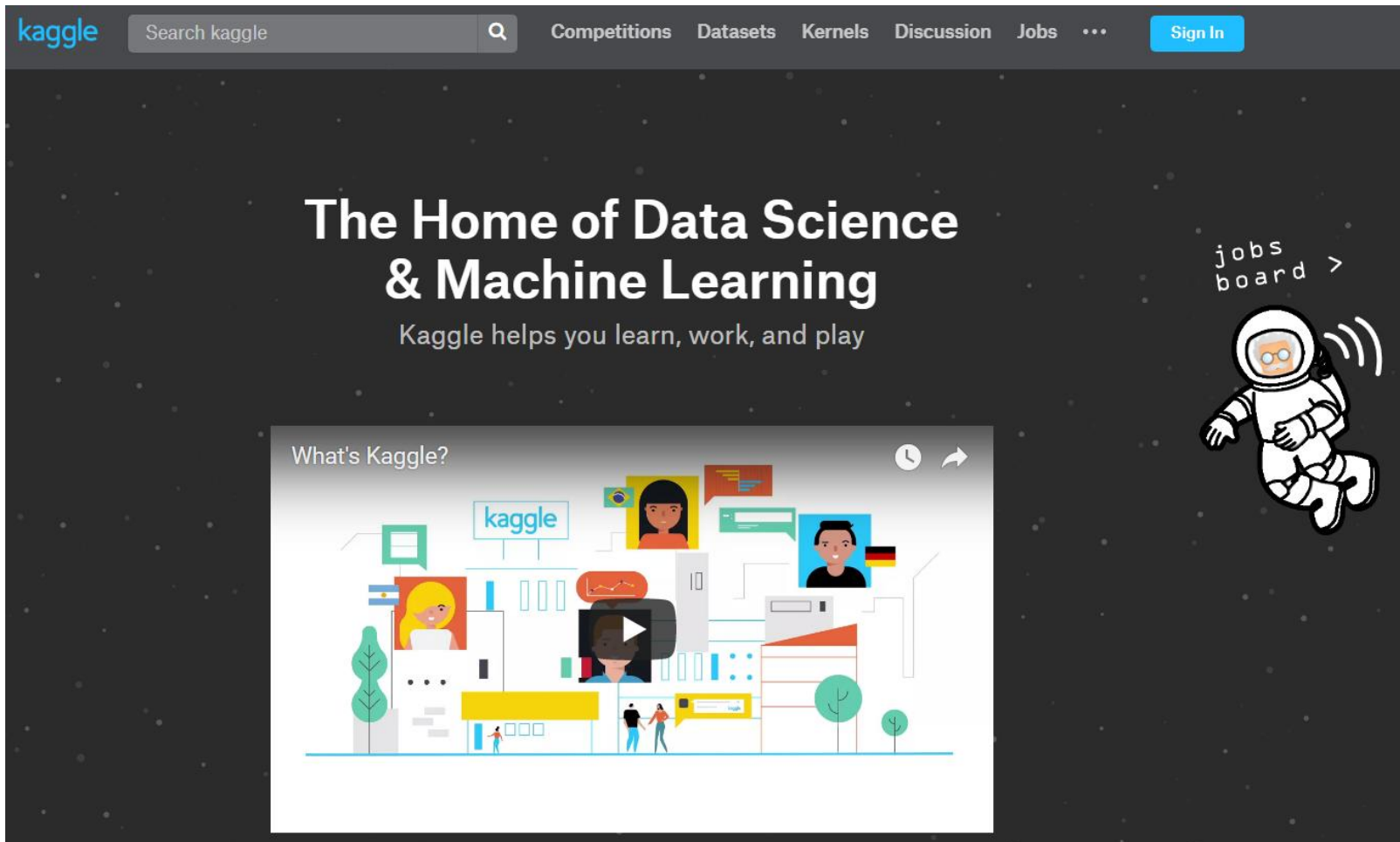
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- Everyone will use/create GitHub accounts.
- Teams will create Jupyter Notebooks to illustrate Machine Learning in Action.
- Datasets with Scikit Learn
- Datasets with Kaggle

Kaggle

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- Great resource for data science community



Grading:

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- Participation
 - ▣ Teams Formed
 - ▣ 1 team member must attend each class
 - ▣ Team reports in class
- Assignments
 - ▣ Jupyter Notebooks
 - ▣ Peer Reviews
- Quizzes
 - ▣ In Class – Computer Based
- Midterm
 - ▣ In Class – Computer Based
- Final
 - ▣ In Class – Computer Based