# Data Science and Machine Learning Resources

# Learn\_Data\_Science\_in\_3\_Months

#### Course Objective

This is the Curriculum for [Learn Data Science in 3 Months](https://youtu.be/9rDhY1P3YLA) by Siraj Raval on Youtube. After completing this course, start applying for jobs, doing contract work, start your own data science consulting group, or just keep on learning. Remember to believe in your ability to learn. You can learn data science, you will learn data science, and if you stick to it, eventually you will master it.

# Month 1 - Data AnalysisLearn\_Data\_Science\_in\_3\_Months

## Week 1 - Learn Python

* EdX <https://www.edx.org/course/introduction-python-data-science-2>
* Siraj Raval <https://www.youtube.com/watch?v=T5pRlIbr6gg&list=PL2-dafEMk2A6QKz1mrk1uIGfHkC1zZ6UU>

## Week 2 - Statistics & Probability

* KhanAcademy <https://www.khanacademy.org/math/statistics-probability>

## Week 3 Data Pre-processing, Data Visualization, Exploratory Data Analysis

* EdX <https://www.edx.org/course/introduction-to-computing-for-data-analysis>

## Week 4 Kaggle Project #1

* Try your best at a competition of your choice from [Kaggle](https://www.kaggle.com/competitions).
* Use [Kaggle Learn](https://www.kaggle.com/learn/overview) as a helpful guide

# Month 2 - Machine Learning

#### Math of Machine Learning Cheat Sheets

* [Statistics](http://web.mit.edu/~csvoss/Public/usabo/stats_handout.pdf)
* [Probability](https://static1.squarespace.com/static/54bf3241e4b0f0d81bf7ff36/t/55e9494fe4b011aed10e48e5/1441352015658/probability_cheatsheet.pdf)
* [Calculus](http://tutorial.math.lamar.edu/pdf/Calculus_Cheat_Sheet_All.pdf)
* [Linear Algebra](https://www.souravsengupta.com/cds2016/lectures/Savov_Notes.pdf)

## Week 1-2 - Algorithms & Machine Learning

* Columbia <https://courses.edx.org/courses/course-v1:ColumbiaX+DS102X+2T2018/course/>

## Week 3 - Deep Learning

* Part 1 and 2 of DL Book <https://www.deeplearningbook.org/>
* Siraj Raval <https://www.youtube.com/watch?v=vOppzHpvTiQ&list=PL2-dafEMk2A7YdKv4XfKpfbTH5z6rEEj3>

## Week 4 - Kaggle Project #2

* Try your best at a competition of your choice from [Kaggle](https://www.kaggle.com/competitions). Make sure to add great documentation to your github repository! Github is the new resume.

# Month 3 - Real-World Tools

## Week 1 Databases (SQL + NoSQL)

* Udacity <https://www.udacity.com/course/intro-to-relational-databases--ud197>
* EdX <https://www.edx.org/course/introduction-to-nosql-data-solutions-2>

## Week 2 Hadoop & Map Reduce + Spark

* Udacity <https://www.udacity.com/course/intro-to-hadoop-and-mapreduce--ud617>
* Spark Workshop <https://stanford.edu/~rezab/sparkclass/slides/itas_workshop.pdf>

## Week 3 Data Storytelling

* Edx <https://www.edx.org/course/analytics-storytelling-impact-1>
* Week 4 Kaggle Project #3
* Try your best at a competition of your choice from [Kaggle](https://www.kaggle.com/competitions).

**Source 2**

<https://www.theschool.ai/courses/move-37-course/>

## Curriculum

#### Markov Decision Processes1/7

#### Dynamic Programming0/9

#### Monte Carlo Methods0/9

#### Model Free Learning0/7

#### RL in Continuous Spaces0/8

#### Deep Reinforcement Learning0/8

#### Policy Based Methods0/6

#### Policy Gradient Methods0/9

#### Actor Critic Methods0/10

#### Multi Agent RL0/10

### Open Source Society University

bar_chart Path to a free self-taught education in **Data Science**!   
Curriculum

* [Linear Algebra](https://github.com/manikantans/data-science#linear-algebra)
* [Single Variable Calculus](https://github.com/manikantans/data-science#single-variable-calculus)
* [Multivariable Calculus](https://github.com/manikantans/data-science#multivariable-calculus)
* [Python](https://github.com/manikantans/data-science#python)
* [Probability and Statistics](https://github.com/manikantans/data-science#probability-and-statistics)
* [Introduction to Data Science](https://github.com/manikantans/data-science#introduction-to-data-science)
* [Machine Learning](https://github.com/manikantans/data-science#machine-learning)
* [Project](https://github.com/manikantans/data-science#project)
* [Convex Optimization](https://github.com/manikantans/data-science#convex-optimization)
* [Data Wrangling](https://github.com/manikantans/data-science#data-wrangling)
* [Big Data](https://github.com/manikantans/data-science#big-data)
* [Database](https://github.com/manikantans/data-science#database)
* [Deep Learning](https://github.com/manikantans/data-science#deep-learning)
* [Natural Language Processing](https://github.com/manikantans/data-science#natural-language-processing)
* [Capstone Project](https://github.com/manikantans/data-science#capstone-project)
* [Specializations](https://github.com/manikantans/data-science#specializations)

### Linear Algebra

| **Courses** |
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| [Linear Algebra - Foundations to Frontiers](https://www.edx.org/course/linear-algebra-foundations-frontiers-utaustinx-ut-5-04x#!) |
| [Applications of Linear Algebra Part 1](https://www.edx.org/course/applications-linear-algebra-part-1-davidsonx-d003x-1) |
| [Applications of Linear Algebra Part 2](https://www.edx.org/course/applications-linear-algebra-part-2-davidsonx-d003x-2) |

### Single Variable Calculus

| **Courses** |
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| [Calculus 1A: Differentiation](https://www.edx.org/course/calculus-1a-differentiation-mitx-18-01-1x) |
| [Calculus 1B: Integration](https://www.edx.org/course/calculus-1b-integration-mitx-18-01-2x) |
| [Calculus 1C: Coordinate Systems & Infinite Series](https://www.edx.org/course/calculus-1c-coordinate-systems-infinite-mitx-18-01-3x) |

### Multivariable Calculus

| **Courses** |
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| [MIT OCW Multivariable Calculus](http://ocw.mit.edu/courses/mathematics/18-02sc-multivariable-calculus-fall-2010/index.htm) |

### Python

| **Courses** |
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| [Introduction to Computer Science and Programming Using Python](https://www.edx.org/course/introduction-computer-science-mitx-6-00-1x-7) |
| [Introduction to Computational Thinking and Data Science](https://www.edx.org/course/introduction-computational-thinking-data-mitx-6-00-2x-3) |
| [Introduction to Python for Data Science](https://prod-edx-mktg-edit.edx.org/course/introduction-python-data-science-microsoft-dat208x-1) |
| [Programming with Python for Data Science](https://www.edx.org/course/programming-python-data-science-microsoft-dat210x) |

### Probability and Statistics

| **Courses** |
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| [Introduction to Probability](https://www.edx.org/course/introduction-probability-science-mitx-6-041x-1#.U3yb762SzIo) |
| [Statistical Reasoning](https://lagunita.stanford.edu/courses/OLI/StatReasoning/Open/about) |
| [Introduction to Statistics: Descriptive Statistics](https://www.edx.org/course/introduction-statistics-descriptive-uc-berkeleyx-stat2-1x) |
| [Introduction to Statistics: Probability](https://www.edx.org/course/introduction-statistics-probability-uc-berkeleyx-stat2-2x) |
| [Introduction to Statistics: Inference](https://www.edx.org/course/introduction-statistics-inference-uc-berkeleyx-stat2-3x) |

### Introduction to Data Science

| **Courses** |
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| [Introduction to Data Science](https://www.coursera.org/course/datasci) |
| [Data Science - CS109 from Harvard](http://cs109.github.io/2015/) |
| [The Analytics Edge](https://www.edx.org/course/analytics-edge-mitx-15-071x-2) |

### Machine Learning

| **Courses** |
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| [Learning From Data (Introductory Machine Learning)](https://www.edx.org/course/learning-data-introductory-machine-caltechx-cs1156x) [[caltech]](http://work.caltech.edu/lectures.html) |
| [Statistical Learning](https://lagunita.stanford.edu/courses/HumanitiesSciences/StatLearning/Winter2016/about) |
| [Stanford's Machine Learning Course](https://www.coursera.org/learn/machine-learning) |

### Project

Complete Kaggle's Getting Started and Playground Competitions

### Convex Optimization

| **Courses** |
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| [Convex Optimization](https://lagunita.stanford.edu/courses/Engineering/CVX101/Winter2014/about) |

### Data Wrangling

| **Courses** |
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| [Data Wrangling with MongoDB](https://www.udacity.com/course/data-wrangling-with-mongodb--ud032) |

### Big Data

| **Courses** |
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| [Intro to Hadoop and MapReduce](https://www.udacity.com/course/intro-to-hadoop-and-mapreduce--ud617) |
| [Deploying a Hadoop Cluster](https://www.udacity.com/course/deploying-a-hadoop-cluster--ud1000) |

### Database

| **Courses** |
| --- |
| [Stanford's Database course](https://lagunita.stanford.edu/courses/DB/2014/SelfPaced/about) |

### Natural Language Processing

| **Courses** |
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| [Deep Learning for Natural Language Processing](http://cs224d.stanford.edu/) |

### Deep Learning

| **Courses** |
| --- |
| [Deep Learning](https://www.udacity.com/course/deep-learning--ud730) |

### Capstone Project

* Participate in Kaggle competition
* List down other ideas

**4. Learn Faster with Flash Cards**

<https://www.brainscape.com/packs/microsoft-data-science-7987841>

<https://www.brainscape.com/subjects/data-science>

**5.Ebooks**

<https://leanpub.com/>