**Date:** 20200206

**Lesson:** Linear Regression using Scikit-Learn and others state of the art Python Libraries

**Objective:** Show students how to formulate a linear regression problem in a pythonic way. Go over the data science principles when creating a machine learning model. Students get familiarized with Python libraries used to do data science.

**Materials:** Laptop, Python 3+, Anaconda, Scikit-Learn, Pandas, Numpy, Seaborn, Matplotlib, curiosity and thirst to learn.

**Procedure:**

1. Ask students their Python skills from none, beginner, intermediate, expert. Ask students for programming skills other languages than Python. If one student has none, explain what a list is, a tuple, a set, a string, and how to create functions. Time: 5-15 minutes.
2. Start the lesson and go over Anaconda and why we should use Jupyter Lab. Give students 5 minutes to briefly read the PEP8 guidelines. Explain the importance of seeding the number generator. Time: 10 minutes.
3. Go over section from the Notebook by explaining each step of the process and other possible functionalities from the libraries that may be applicable to similar problems. For each step ask the class for their opinion and go over the practice. Time: 100-120 minutes.
4. Define the problem, 3-5 minutes guided, 5 minutes practice
5. Feature Engineering, 20 minutes guided, 25 minutes practice
6. Train Linear Regression Model, 5-10 minutes guided, 15 minutes practice
7. Tune Linear Regression Model, 15 minutes guided, 15 minutes practice
8. Test Regression Model, 5-10 minutes, 15 minutes practice
9. Re-cap by doing the Extra using SVM, student will apply what they have learned. Time: 5-10 minutes.
10. Ask the student to summarized what they have learned today. Time: 5 minutes.

**Considerations:**

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| Early Finishers |  |
| Anticipated Problems |  |
| Special Accommodations |  |

**Final Thoughts:**