Concise Cheat Sheets of Machine Learning with Python (and Maths)

Machine learning is difficult for beginners. As well as libraries for Machine Learning in python are difficult to understand.

Over the past few weeks, I have been collecting Machine Learning cheat sheets from different sources and to make things more interesting and give context, I added excerpts for each major topic.

If you are just getting started with Machine Learning or Data Science, you'll richly benefit from resources compiled from our recent publications;

> The Best Machine Learning Courses on the Internet
> Learn Math for Machine Learning from the World-Class Educators.
> Machine Learning with Python

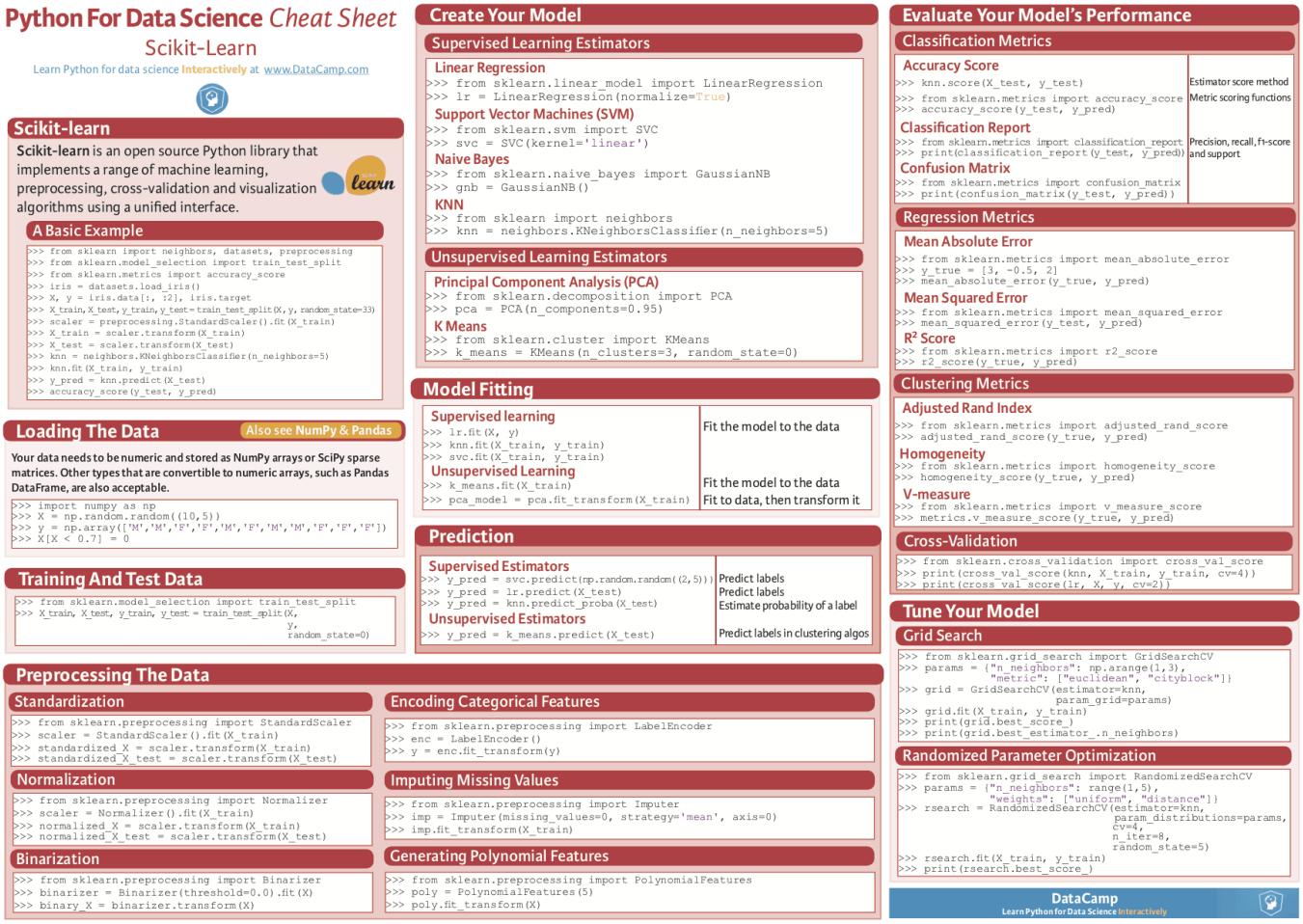
The Best Machine Learning Cheat Sheets

Here's a curated a list of Machine Learning Cheat Sheets and most commonly used MLear Libraries in Python. You'll be able to download them with ease and grasp the fundamentals for long-term benefits.

---

1. Scikit-Learn Cheat Sheet: Python Machine Learning

This scikit-learn cheat sheet will introduce you to the basic steps that you need to go through to implement machine learning algorithms successfully.

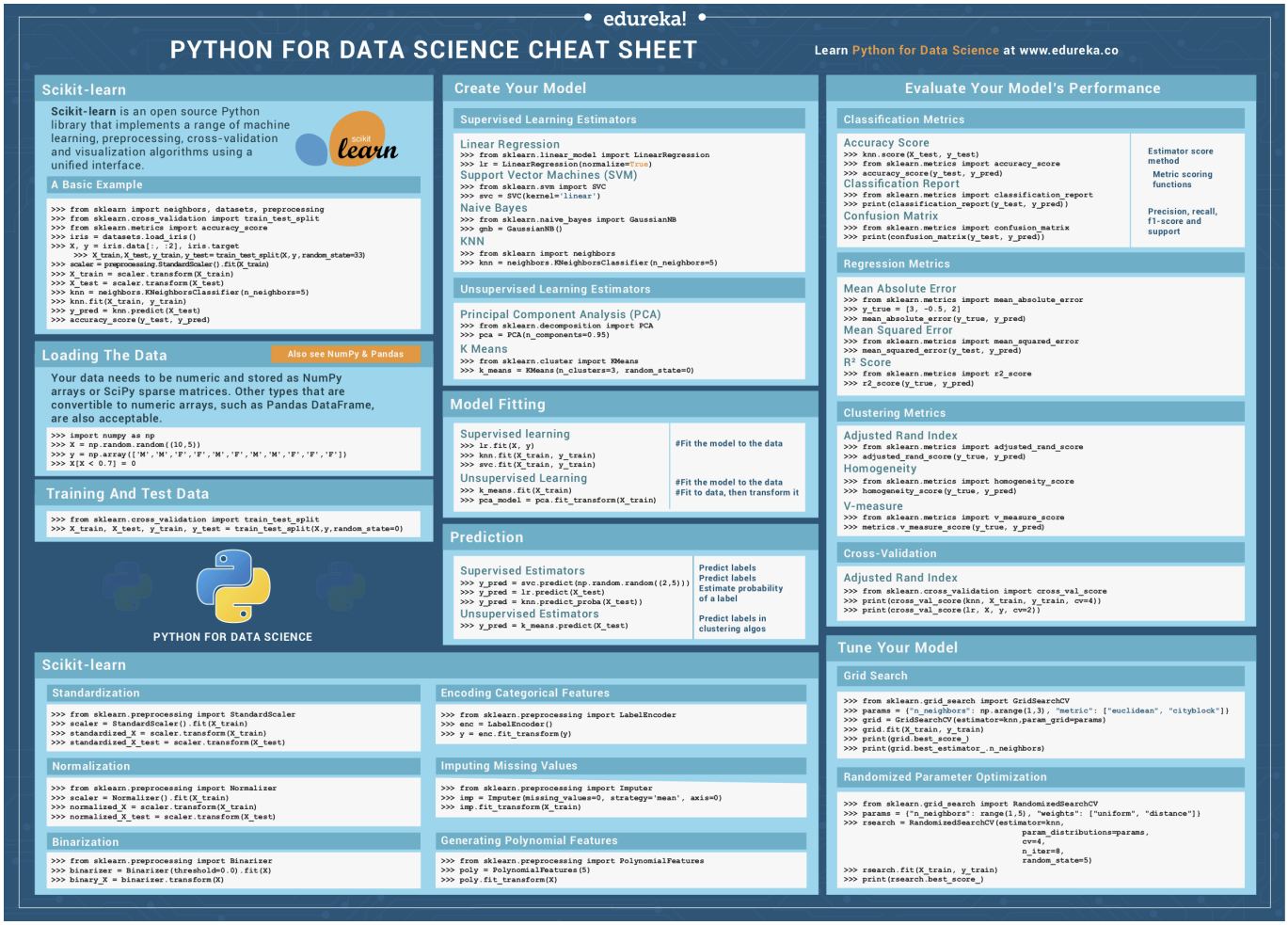


You can Download Pdf here

---

2. Python Cheat Sheet for Scikit-learn

This scikit-learn cheat sheet is designed for the one who has already started learning about the Python package but wants a handy reference sheet.

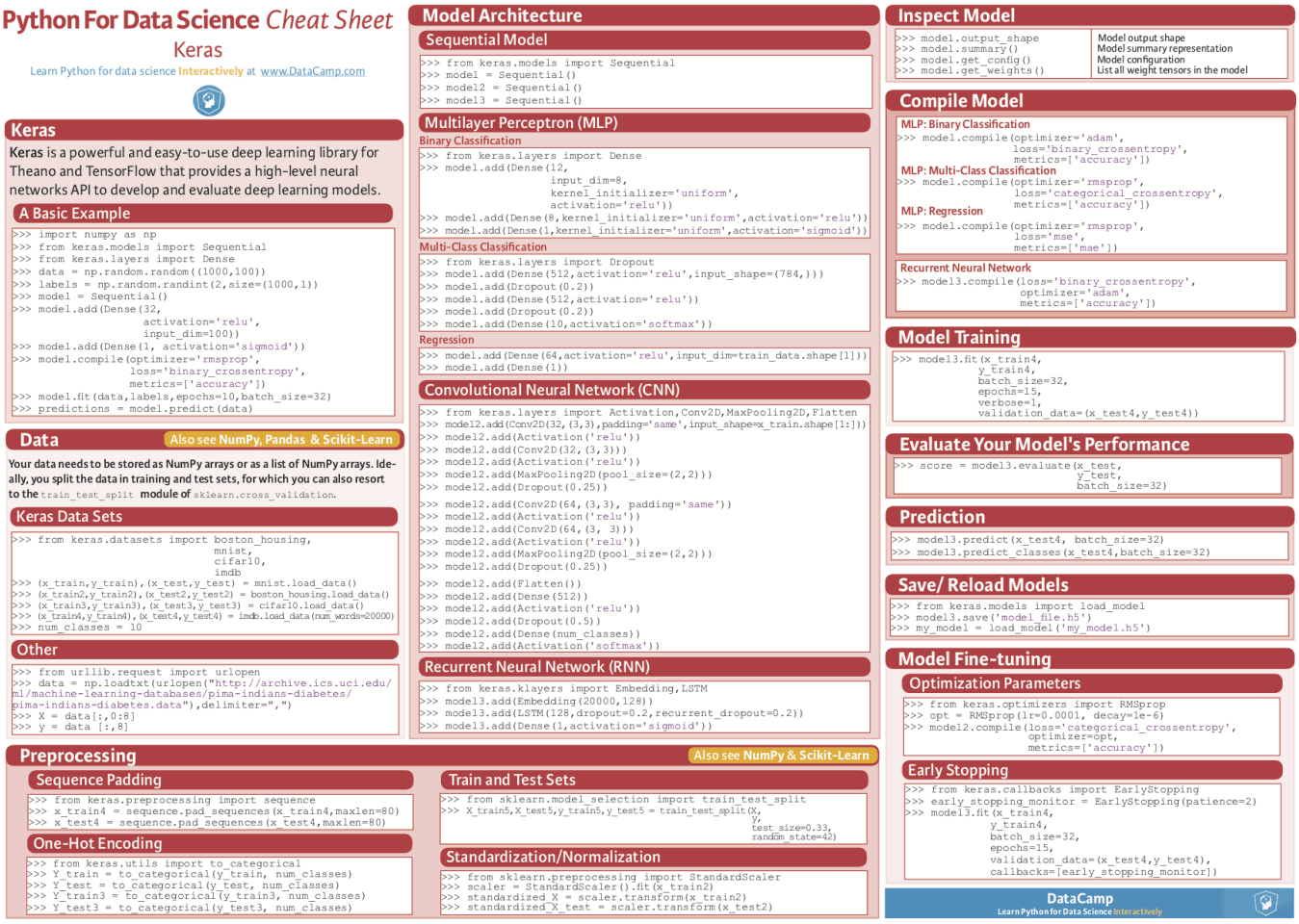


You can Download Pdf here

---

3. Keras Cheat Sheet: Neural Networks in Python

This Keras Cheat Sheet will boost your journey with deep learning in Python: you'll have pre-processed, created, validated and tuned your deep learning models in no time thanks to the code examples!

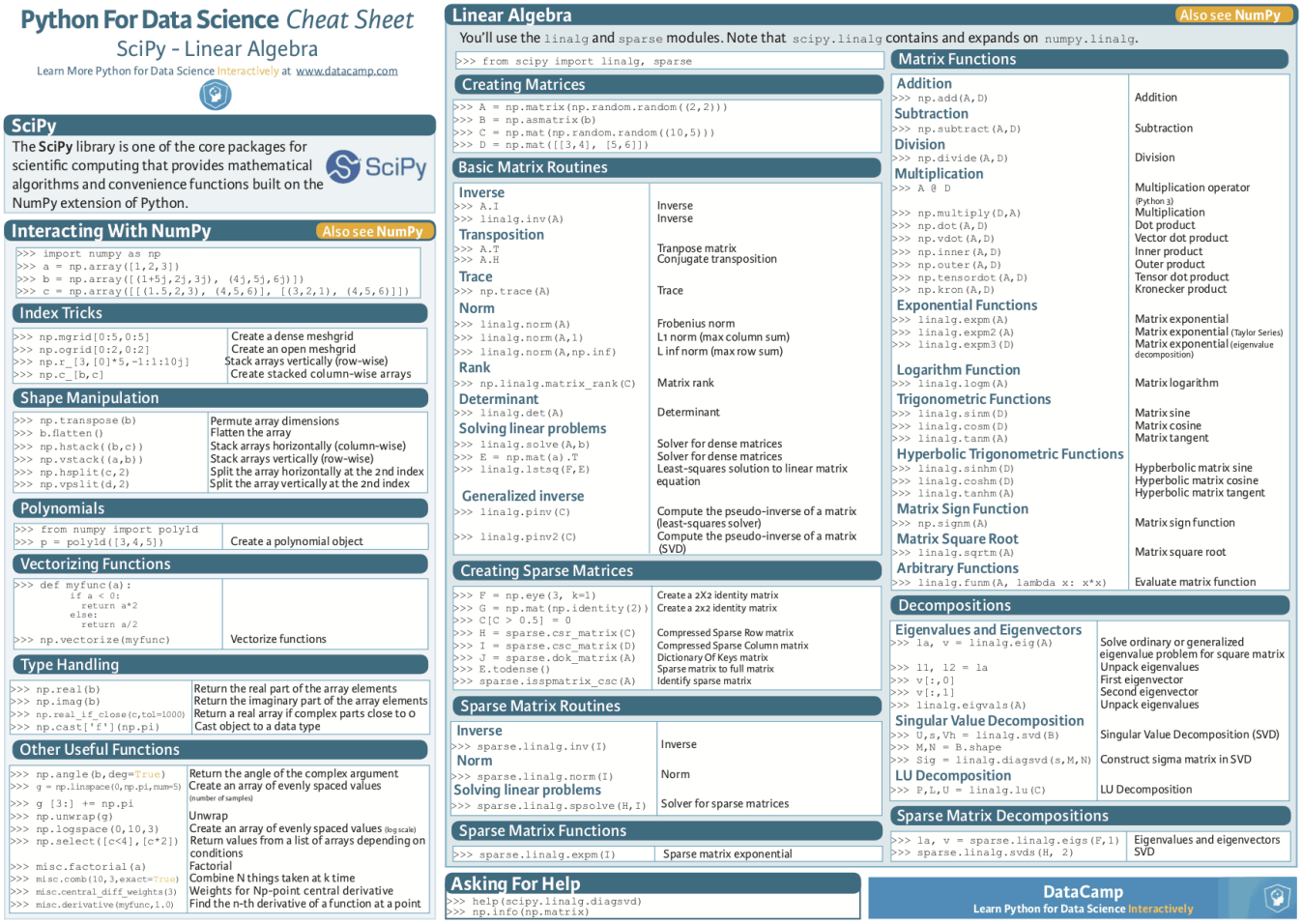


You can Download Pdf here

---

4. Python SciPy Cheat Sheet

This SciPy cheat sheet covers the basics of linear algebra that you need to get started and learn how you can use it to interact with NumPy, and goes on to summarize important topics in linear algebra for Machine Learning and Data Science.



You can Download Pdf here

~~5.~~ Theano Cheat Sheet

Theano is the powerful deep learning library in python and this Cheat Sheet includes the most common ways to implement high-level neural networks API to develop and evaluate machine learning models. *Download PDF Version using the link below for the complete set of Theano Cheat Sheet.*

Theano cheatsheet

(for detailed information on Theano see: http://deeplearning.net/software/theano)

Imports:

- `import theano` #main module
- `from theano import tensor as T` #variables & vector/matrix/tensor operations

Symbolic variables

- `X = T.matrix()`
- scalar, vector, matrix, tensor, etc.
- Type can be specified by using i/f/d for integer/float32/double: `X = T.ivector()`

Operations with symbolic variables

- Basic elementwise operations: +, -, *, /, **, etc.
- Dot product: `T.dot(A, B)` or `A.dot(B)`
- Aggregations: `T.min()`, `T.max()`, `T.mean()`, `T.sum()`, etc.
    - axis: only aggregate along the specified dimension
        - Maximum per column of matrix A: `T.max(A, axis=0)`
        - Sum of rows of matrix A: `T.sum(A, axis=1)`
- Reshaping
    - `A.reshape((10, 1))`, `A.reshape((10))`, `A.reshape((2,5))`, etc.
    - `A.dimshuffle((1,0))`, `A.dimshuffle(('x', 0))`, etc.
        - Use already existing dimension indeces and use 'x' for a new broadcastable dimension (e.g. ('x', 0) creates a matrix row (2D) from a 1D vector))
    - `A.T` #transpose
- Subtensor operators
    - Indexing as in numpy (Might be slow on GPU! Indexing 2D matrices by row is fast.)
    - Slicing similar to numpy
    - `T.set_subtensor(subtensor, value)`
    - `T.inc_subtensor(subtensor, inc)`

Shared variables

- Variables with persistent value
- Ideal for model parameters
- `w = theano.shared(np.random.rand(100).astype('float32'))`
    - Initialized with numpy arrays (determines shape, size, type and starting values)
        - In the example above: a vector of 100 float32 values
    - Optional name parameter
- Can be used as a variable in symbolic expressions
- Any operation with shared variables results in a symbolic experession/variable
- `W.get_value()`, `W.set_value(new_value)`
    - Getting/setting the value of a symbolic variable
    - Use only when necessary
    - borrow parameter

You can Download Pdf here

Thanks for making it to the end

Share & Learn! If you liked this article, i've got a few practical reads for you. One about the Best TensorFlow Courses and One about the Best Deep Learning Courses on the Internet.

Also, don't miss out on our collection of best available data-centric Python Cheat Sheets or give these Python Podcasts a listen to build functional knowledge in Python.

I've also got this Data Science newsletter that you might be into. I send a tiny email once or twice every quarter with some useful resource I've found.

Don't worry, I hate spam as much as you. Feel free to subscribe.