Recommended Reading

Below are resources we recommend examining at least in part before you start the AI4ESS summer school or afterward if you want more in-depth explanations of some of the machine learning concepts from the school.

JupyterLab

JupyterLab Documentation (link): The official manual for using JupyterLab. Contains overview and more in-depth documentation.

Scipy 2019 Getting Started with Jupyterlab Tutorial (video, code): A long dive into using JupyterLab with guided examples.

Google Colab (link): Introductory tutorial notebook for Google Colab, a free online implementation of Jupyter that comes with GPU access.

Beginning Machine Learning

Python Data Science Handbook (link): This book, available both freely online and for purchase, provides overviews of scientific python tools and guides for different data science and machine learning tasks. Each chapter can be interactively run as a Google Colab notebook or can be downloaded on github and run locally.

AMS Short Course on Machine Learning in Python for Environmental Science Problems (2019, 2020): A series of Jupyter notebooks introducing the machine learning pipeline from preprocessing through interpretation with an environmental science context.

An Introduction to Statistical Learning (link): An introductory textbook on the principles behind machine learning for linear and polynomial regression models and decision trees.

Stanford CS230 Deep Learning Course (link): Slides from Andrew Ng's introductory deep learning course.

Stanford CS231n Convolutional Neural Networks Course (link): Fei Fei Li's course notes on neural networks and convolutional neural networks with many great explanatory visualizations.

Advanced Machine Learning

The Elements of Statistical Learning (link): Textbook that provides a well-explained theoretical foundation for many common machine learning algorithms.

Deep Learning (link): Comprehensive textbook on the foundations of deep learning and different forms of it.

Interpretable Machine Learning ([link](#)): A textbook on methods for interpreting a range of machine learning and deep learning models.

Deep Learning with Python ([book](#), [notebooks](#))*:* Textbook and companion jupyter notebooks explaining deep learning concepts from Francois Chollet, the creator of Keras.

Distill ([link](#)): Web journal with visual explainer articles for different deep learning concepts.