**Intro to Machine Learning - Course Syllabus**

|  |  |
| --- | --- |
| **Registration** | fredhutch.io |
| **Class Meetings** | Thursdays 4-5pm from April 19th – June 7th |
| **Location** | M5-C813 |
| **Instructors** | Stuart Greenlee, [sgreenle@fredhutch.org](mailto:sgreenle@fredhutch.org)  Evan Carl, [ecarl@fredhutch.org](mailto:ecarl@fredhutch.org) |

**Learning objectives:**

On completion of this course students will gain a high-level understanding for what machine learning is and why it is so powerful as well as the following objectives:

* Learn the differences between regression and classification models
* Understand the importance of model accuracy and optimization
* Have a general understanding of different machine learning techniques
* Different techniques for feature selection

**Materials:**

Textbook – Introduction to Machine Learning (free pdf: <http://www-bcf.usc.edu/~gareth/ISL/ISLR%20First%20Printing.pdf>)

**Attendance and grading:**

Students are expected to attend scheduled meetings in real-time wherever possible. However, because we know that working professionals require flexibility the policy will be that students attend a minimum of 6 of the 8 week course or get express permission from the instructor.

**Prerequisites:**

Students should have exposure to basic statistics, such as the formula used to calculate the standard deviation of a continuous variable. Without this knowledge, it might be tough to keep up, but we will be keeping things as simple as possible so that everyone can learn something. The course is really meant for anyone with some exposure to data analytics, data engineering, biostatistics, or any hard science that deals with the capture and dissemination of information.

**Schedule:**

|  |  |  |
| --- | --- | --- |
|  | **TOPICS** | **INSTRUCTOR** |
| **WEEK 1** | Introductions, Foundations, and Basics | Stuart |
| **WEEK 2** | Model Accuracy | Stuart |
| **WEEK 3** | Regression | Stuart |
| **WEEK 4** | Regression Pt. 2 / Classification | Evan / Stuart |
| **WEEK 5** | Classification Pt. 2 | Evan |
| **WEEK 6** | Cross Validation | Stuart |
| **WEEK 7** | Tree based methods / Ensemble methods | Evan |
| **WEEK 8** | Neural Networks / Deep Learning | Evan |

**Help and support:**

The course instructors will be available via e-mail to assist with assignment, R-lab, or other course questions. Additional in person or online appointments can be scheduled ahead of time.