

Computing Workshop: Software Syllabus

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Website: <http://computing-workshop.com/>

Location: B21, 651 rue Sherbrooke Ouest (Northeast corner of University street)

Time: Monday from 2:00PM to 4:00pm on

- October 29,
- November 5, 12, 19, 26, and
- December 3.

Goal: At the end of the workshop, participants will also be able to modify and implement: decision tree, k-nearest neighbour, and neural network classification algorithms using the Python library scikit learn.

Description

Computing Workshop: Software Unit is one of two units in Computing Workshop that focuses on the software side of computers. This unit focuses on machine learning, a field of computer science that allows computer to “learn”. This means improving a computers performance on a given task without hardcoding the software. Using Python libraries to understand and implement these algorithms, participants will interact with pre-existing machine learning libraries, modify them, and eventually create their own algorithms!

Rationale

We created this workshop to provide anyone interested in machine learning with a guided first step into the subject. Machine learning is a highly popular field of computer science, and for good reason. It has very practical uses in a wide range of fields, from financial market analysis, to agriculture, to art history to name a few of the many of disciplines that machine learning applies to. This workshop aims to provide participants with little to no coding background with a solid introduction to machine learning using hands on activities, laying the foundation for further exploration of the topic.

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Lesson sequence

0. Intro to machine learning
1. K-nearest neighbour and algorithms
2. Python and decision trees
3. Neural networks
4. Machine learning lab
5. Other kinds of machine learning and conclusion

Learning goals

By the end of the workshop, participants will be able to:

- justify the use of a particular machine learning algorithm to solve a problem;
- implement the machine learning algorithms covered in the workshop using scikit learn;
- describe at a high level of a function of the machine learning algorithms covered in the workshop;
- find and interact with machine learning repositories and library documentation;
- use python functions, data structures, and control flow to implement machine learning algorithms.