Prerequisites Hackathon

Here is a list with software that could be useful/is essential.

Slack

Invitations to the Hackathon Slack will be sent to the same email you used to register for the event. Please be sure to keep an eye on it during the event for important announcements, instructions to submit your project, project ideas, as well as to communicate with mentors and organizers. You can download the Slack Desktop app at https://slack.com/downloads/, so you stay even more up-to-date.

Hackhub

Projects will be submitted this year using Hackhub. A link to this will be sent out during the event, so watch your inbox!

Intro to Arduino

For this workshop, no experience with programming microelectronics is needed. Basic hardware will be provided and shared between participants if the supply exceeds the demand.

The Arduino platform https://www.arduino.cc/ is well-documented with plenty of resources for projects. To program applications you will need the Arduino IDE installed on your laptop. Alternatively, you may run the software in a web browser. Both options can be accessed at https://www.arduino.cc/en/Main/Software.

Intro to Python/Jupyter notebook/Machine Learning

For these workshops, coding knowledge is optional. We ask you to prepare by installing the following elements on your laptop.

- Environment
- Python 3
- Python packages
    - **numpy** & **scipy**: scientific computing
    - **pandas**[1]: smooth handling of labeled data
    - **jupyter**[2]: web-app for interactive coding
    - **matplotlib**[3]: plotting software
    - **scikit-learn**: starter package for machine learning

Looks complicated? Do not despair ANACONDA DOES IT FOR YOU! Anaconda automatically set ups a Python environment and includes Python 3, the above packages and many others. This

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[1] **PAN**el **DA**ta
[2] **JU**lia **PYT**hon **R**
[3] **MAT**lab **PLOT**ting **LIB**rary

eliminates the need to download each package independently, and to juggle with virtual environments.

First, choose the right Python 3 Installation for your operating system

- Windows https://www.anaconda.com/download/#windows
- MacOS https://www.anaconda.com/download/#macos
- Linux https://www.anaconda.com/download/#linux

and follow the steps as described in https://conda.io/docs/user-guide/install/index.html.

To check your Anaconda installation, go to *terminal* (MacOS), *command prompt* (Windows) or *shell* (Linux), and enter

python -V; conda –V

which should return something along the lines of

python 3.7
conda 4.5.11

You should now install each of the aforementioned packages (they are already downloaded with Anaconda) by simply entering in the *terminal/command prompt/shell*

conda install [package-name]
or alternatively (if you don't like conda)
pip install [package-name]

Here *[package-name]* is to be replaced by the name of the appropriate Python package.

Fourth, and last, we ask you to download the Jupyter-notebook from **[location of workshop files]**. Move them to your *Hackathon2018* folder, go to this folder in the terminal and type

jupyter-notebook

The Jupyter environment must now have appeared as a tab in the browser. When you click on the *.ipynb* file for the Python workshop, you can during the presentation *Shift-Enter* together with the presenter to not miss a beat and intermittently clarify variables, do simple calculations, and practise functions.

If something is not working, trouble-shoot by Googling your error, ask your peers or shoot us an e-mail at hackathon@physics.mcgill.ca.