Instructor
Ka Yi NG (email: kn15@columbia.edu)
Office hours: by appointment

Teaching Assistant
Erica Choi (email: ic2503@columbia.edu)
Office hours: TBD

Class schedule
Section 001: Thursday 5:35pm – 6:35pm
Section 002: Thursday 6:45pm – 7:45pm

Course Syllabus

Description
This course is an optional companion lab course for GR5242 Advanced Machine Learning. The aim of this course is to help students acquire the basic computational skills in Tensorflow and Python to implement machine learning models. Lab class materials will be aligned closely with the topics covered in GR5242. Google Colab will be used as the main tools for the hands-on lab exercises.

Open to GR5242 students only.

Prerequisites
Some familiarity with python is assumed, but we will begin the class with a tutorial on 'Python for machine learning'.

Textbooks
O'Reilly
ISBN: 978-1492032649

Grading Policy
There will be 5-6 homework assignments in total. Student with an average grade of 70% or higher will receive a Pass in this course.

Academic integrity
Students are expected to truthfully represent their course participation and submit their own work. They should adhere to the GSAS policy on Academic integrity and Responsible Conduct of Research.

Course outline (subject to change)

Students are expected to use their own laptops to run their own Python code during the classes.

- Python overview (Python IDE, basic programming features, data structures, functions, classes)
- Data generation and visualization (numpy, pandas, matplotlib)
- Supervised learning with scikit-learn
- TensorFlow basics
- Keras APIs and Tensorboard visualization
- Data preprocessing
- Convolutional neural networks
- Reinforcement learning
- Natural language processing
- Representation learning