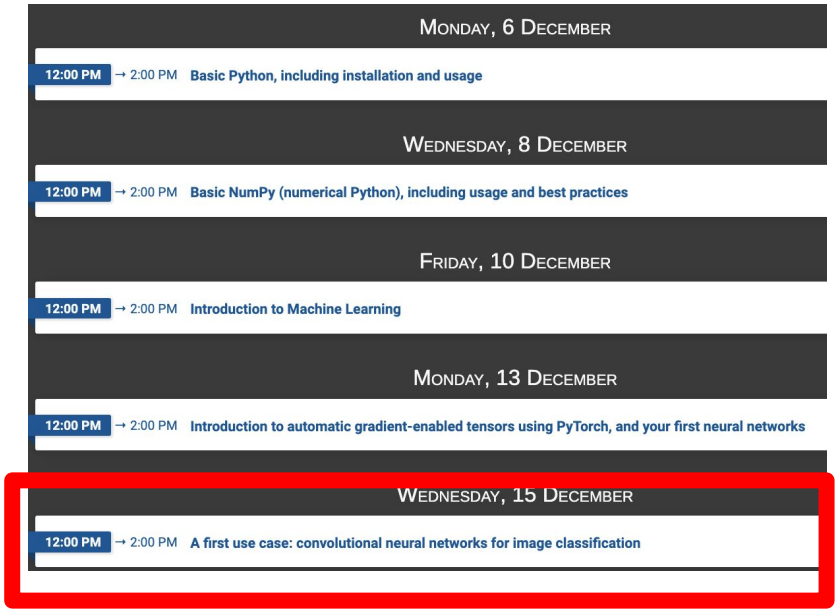
Machine Learning and AI for Scientists Tutorial (MAST) Series

December 15, 2021

Brookhaven National Laboratory

Welcome to the MAST Beginner Tutorials!

- The beginner series is designed for people with little experience in machine learning and Python.
- During the talks, please use chat for your questions.
- Please keep your microphone muted.
- At the end of the talk, we welcome verbal questions/discussion



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What is MAST?

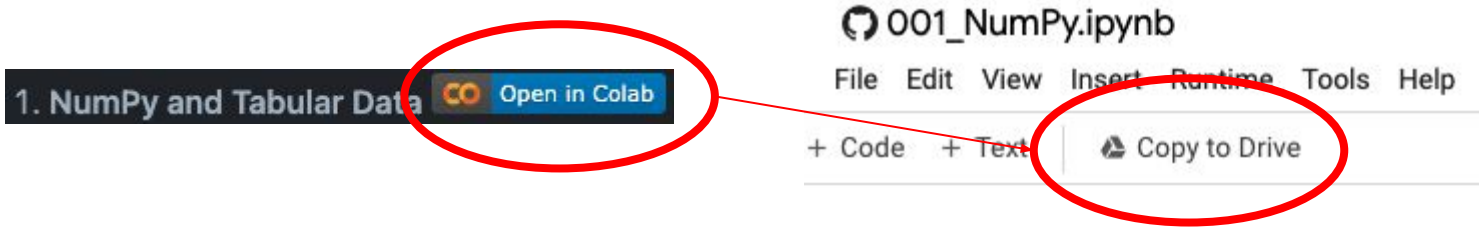
- **M**achine learning and **A**I for **S**cientists **T**utorials
  - December 6-15: beginner series
  - Up next (Early 2022): intermediate series
  - Later (June 2022): Nvidia AI bootcamp (advanced series)
- Part of the Center for Computing Sciences Education and Support (CCSES) led by Nick D'Imperio at the Computational Science Initiative (CSI)
  - Goal: leveraging BNL AI/ML expertise for collaborations and education within BNL and external parties
- Also part of the lab-wide AI/ML Working Group

Goals of the beginner series

- You will perhaps start thinking about Python differently than you might have before: e.g., best practices in Python and how they apply to data science and machine learning.
- You will learn what machine learning *is*, and the types of problems it can be applied to.
- You'll understand the basics of the PyTorch automatic gradient (auto-grad) engine.
- Finally, you will see and understand a classic example: using convolutional neural networks to classify images.

Resources

- Tutorial notebooks can be found on Github
  - https://github.com/x94carbone/AIML-tutorials (see **`master`** branch)
- You can use Google Colab to open the notebooks directly



- Please use Slack for any questions, comments or discussion after the presentations
- Future resources: “office hours” for ML/AI consulting and collaborations (still developing)

Today's speaker: Sandeep Mittal

- PhD in computer science from State University of New york Binghamton, 2020
- Postdoc, Machine Learning and Computations Group at CSI
- Current research focus on scientific machine learning, and machine learning on edge devices (e.g. field programmable gate arrays and application specific integrated circuits)