

DeepRob

Discussion 1

Intro to Python, Pytorch and Colab

University of Michigan and University of Minnesota



Today's Agenda

- Administrative Announcements
- Introduction to Project 0
- Project 0 development demo
- Troubleshooting

Enrollment

- Additional class permissions being issued
- Both sections (498 & 599)
- If you don't receive a class permission by next Tuesday's lecture, contact Anthony and Prof. Jenkins

Discussion Forum

- [Ed Stem](#) available for course discussion and questions
- Forum is shared across UMich and UMinn students
- Participation and use is not required
- Opt-in using [this Google form](#)
- **Discussion of quizzes and verbatim code must be private**

Today's Agenda

- Course Announcements
- Introduction to Project 0
- Project 0 development demo
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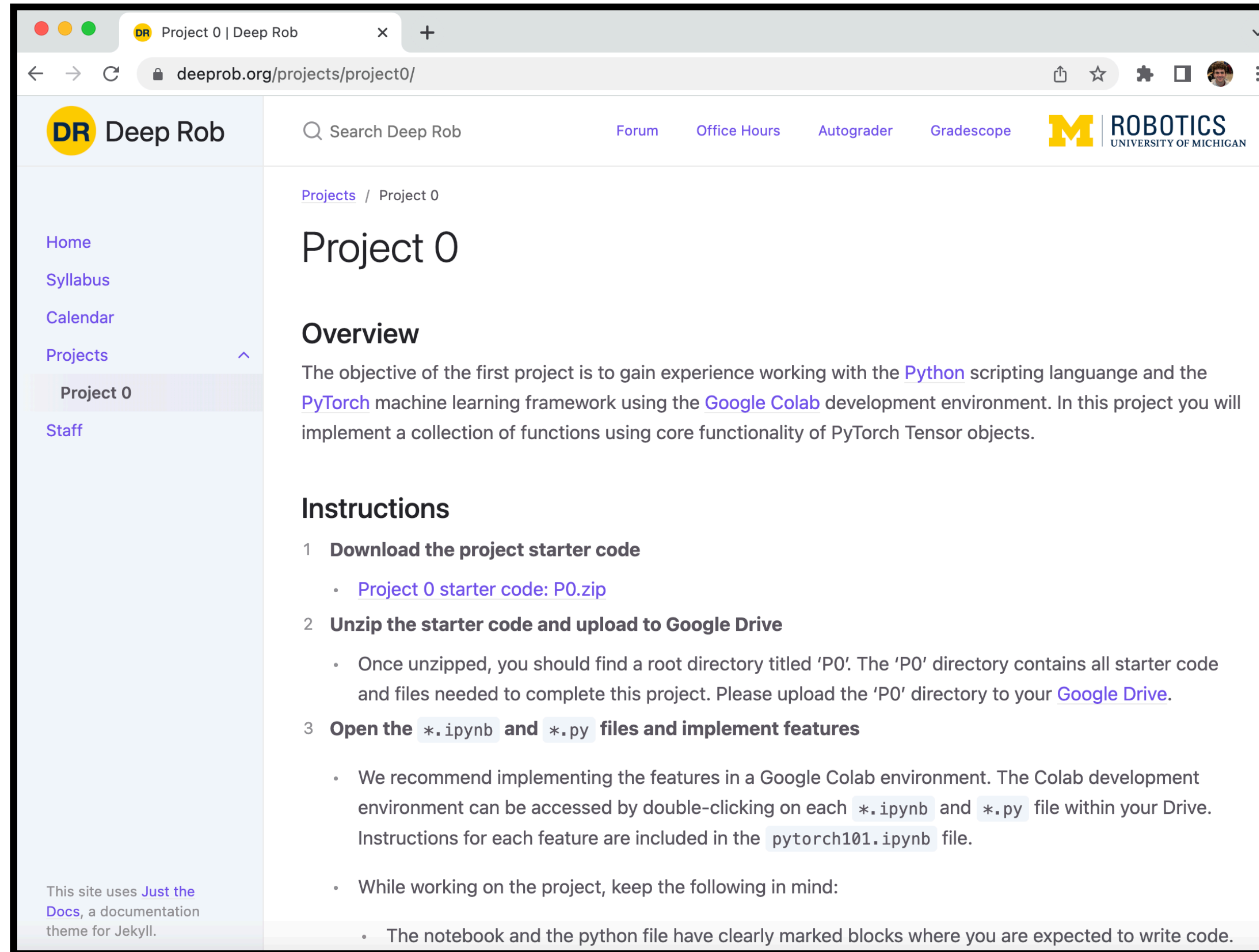
Project 0—Introduction

- Objective
 - Gain experience working with Python, PyTorch and Google Colab
- You will implement a collection of functions using PyTorch Tensor objects

Project 0—Logistics

- Instructions and code available on the website
- Here: deeprob.org/projects/project0/
- Uses Python, PyTorch and Google Colab
- Introduction to PyTorch Tensors
- **Due next Thursday, January 12th 11:59 PM EST**

Project 0—Instructions



The screenshot shows a web browser window with the URL `deeprob.org/projects/project0/`. The page features a sidebar on the left with navigation links: Home, Syllabus, Calendar, Projects (selected), Project 0, and Staff. The main content area is titled "Project 0" and includes an "Overview" section explaining the project's objective: to gain experience with Python, PyTorch, and Google Colab. Below this is an "Instructions" section with three numbered steps: 1. Download the project starter code (link to P0.zip), 2. Unzip the starter code and upload to Google Drive (instructions on where to upload), and 3. Open the *.ipynb and *.py files and implement features (instructions on how to use Google Colab and a reminder to keep certain blocks in mind). The footer of the page notes that the site uses Just the Docs theme for Jekyll.

DR Deep Rob

Search Deep Rob

Forum Office Hours Autograder Gradescope

ROBOTICS
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Projects / Project 0

Project 0

Overview

The objective of the first project is to gain experience working with the [Python](#) scripting language and the [PyTorch](#) machine learning framework using the [Google Colab](#) development environment. In this project you will implement a collection of functions using core functionality of PyTorch Tensor objects.

Instructions

- Download the project starter code**
 - [Project 0 starter code: P0.zip](#)
- Unzip the starter code and upload to Google Drive**
 - Once unzipped, you should find a root directory titled 'P0'. The 'P0' directory contains all starter code and files needed to complete this project. Please upload the 'P0' directory to your [Google Drive](#).
- Open the `*.ipynb` and `*.py` files and implement features**
 - We recommend implementing the features in a Google Colab environment. The Colab development environment can be accessed by double-clicking on each `*.ipynb` and `*.py` file within your Drive. Instructions for each feature are included in the `pytorch101.ipynb` file.
 - While working on the project, keep the following in mind:
 - The notebook and the python file have clearly marked blocks where you are expected to write code.

This site uses [Just the Docs](#), a documentation theme for Jekyll.

Project 0—Instructions

1. Download the project starter code
2. Unzip the starter code and upload to Google Drive
3. Open the *.ipynb and *.py files and implement features
4. Submit your implementation for Autograder feedback
5. Download final implementation
6. Submit your python and notebook files for grading

Project 0—Development Env.

- Course projects will be implemented on Google Colab
 - A cloud computing service
 - Requires minimal setup
 - Access to GPU resources

Project 0—Development Demo

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Google Colab Setup

Introduction

Python 3

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Floating point division by default

No xrange

PyTorch

Tensor Basics

Creating and Accessing tensors

Tensor constructors

Datatypes

Tensor indexing

Slice indexing

Integer tensor indexing

Boolean tensor indexing

Reshaping operations

View

+ Code + Text

Connect Editing

ROB 498-002/599-009 Project 0-1: PyTorch 101

Before we start, please put your name and UMID in following format

: Firstname LASTNAME, #00000000 // e.g.) Anthony OPIPARI, #12345678

Your Answer:

Your NAME, #XXXXXXXX

Setup Code

Before getting started we need to run some boilerplate code to set up our environment. You'll need to rerun this setup code each time you start the notebook.

First, run this cell load the [autoreload](#) extension. This allows us to edit .py source files, and re-import them into the notebook for a seamless editing and debugging experience.

```
[ ] %load_ext autoreload
    %autoreload 2
```

The autoreload extension is already loaded. To reload it, use:

```
%reload_ext autoreload
```




Autograder

Autograder

autograder.io/web/project/1882

Autograder - ROB 599 Winter 2023 - Project 0

SubmitMy SubmissionsStudent Lookup

Due on **January 12, 2023, 11:59 PM EST** (6 days 8 hours)

Student

topipari@umich.edu

0/2 submissions used today.

2 late day tokens remaining.

What files should I submit?

Drop files here

- or -

Choose files to upload

