WEBINAR

Get ready to teach ROBOTICS remotely in Fall 2020

RICARDO TÉLLEZ

LIVE • Aug 06, 2020 at 7pm CEST

The Construct

For ROS Developers

WWW.THECONSTRUCT.AI

Who is this webinar for

* Professors/Teachers/Teacher assistants of undergrads/graduate students of robotics

* You need to prepare robotics course for FALL 2020

* You are searching for remote robotics teaching solution due to COVID-19

What do I mean by teaching robotics?

* Robot action and perception
* Arm Kinematics
* Mobile Robots Kinematics
* Robot Dynamics
* Motion Planning and Control
* Robot Navigation
* Computer Vision
* ROS

I do not mean

I do mean

ROS and Robot Navigation Teacher at La Salle Univ. Barcelona

Ricardo Tellez, PhD

WHAT WE WILL LEARN

For teaching robotics remotely you need

* **Teach the theory**
* **Provide some practice**
* **Provide off-hours support**
* **Evaluate students**
* Hands-on: Connect to the real robot

Stay with me to do a live demo of remote real robots

The Construct | For Campus

Get Ready to Teach Robotics Remotely in the Fall of 2020

Teaching the theory

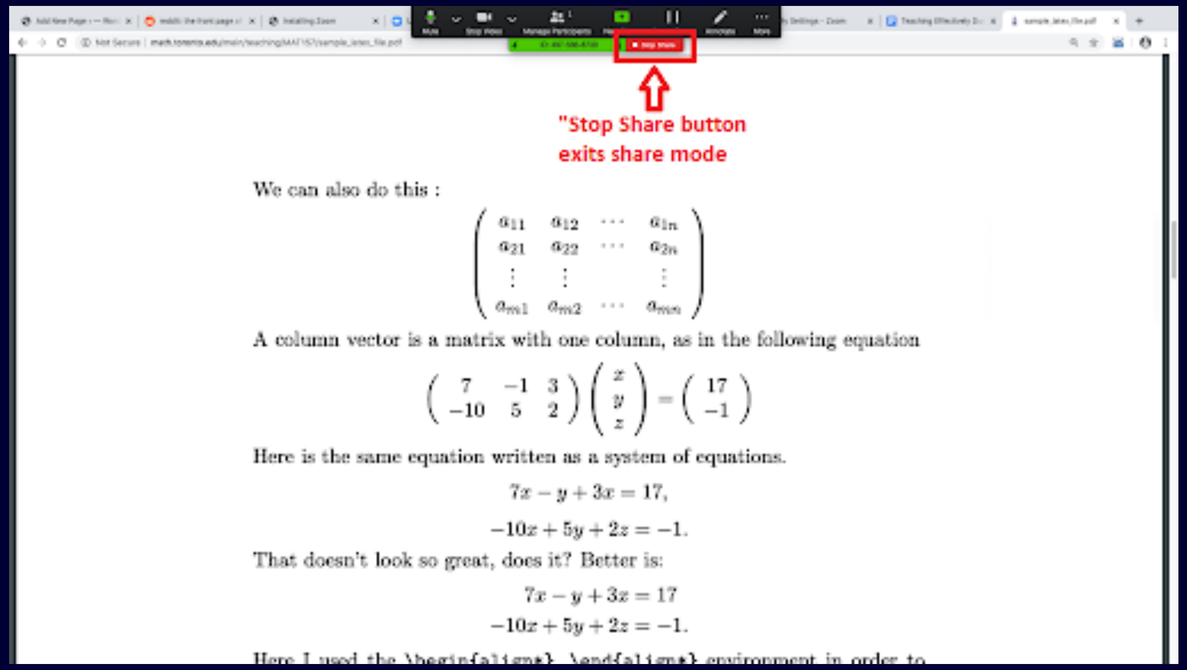
RICARDO TELLEZ

The Construct | For Campus

For teaching theory **remotely** you need

* **Your teaching material (slides)**
* **A platform to deliver and communicate with students in real time**
    * **Must allow:**
        * **Sharing Screen (teacher & student)**
        * **Live Chat (mic & written)**

Example: Zoom



https://youtu.be/JIRf1UH8ENw

The Construct | For Campus

Get Ready to Teach Robotics Remotely in the Fall of 2020

Providing Practice

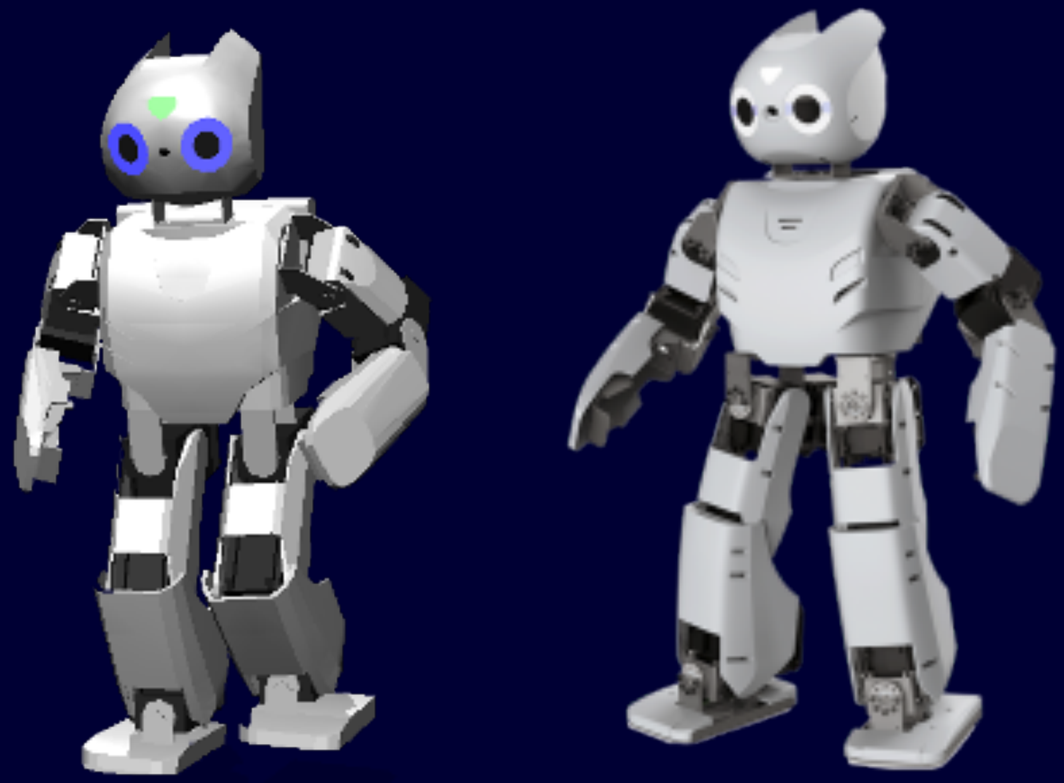
RICARDO TELLEZ

The Construct | For Campus

Two ways to provide practice

*** With simulated robots**

*** With real robots**



Simulated robots: use ROS + Gazebo

* Install ROS on students' computer

http://wiki.ros.org/ROS/Installation

ROS Installation Options

There is more than one ROS distribution supported at a time. Some are older releases with long term support, making them more stable, while others are newer with shorter support life times, but with binaries for more recent platforms and more recent versions of the ROS packages that make them up. See the Distributions page for more details. We recommend one of the versions below:

ROS Kinetic Kame
Released May, 2016
LTS, supported until April, 2021
This version isn't recommended for new installs.

ROS Melodic Morenia
Released May, 2018
LTS, supported until May, 2023
Recommended for Ubuntu 18.04

ROS Noetic Ninjemys
Released May, 2020
Latest LTS, supported until May, 2025
Recommended for Ubuntu 20.04

The Construct | For Campus

Simulated robots: use ROS + Gazebo

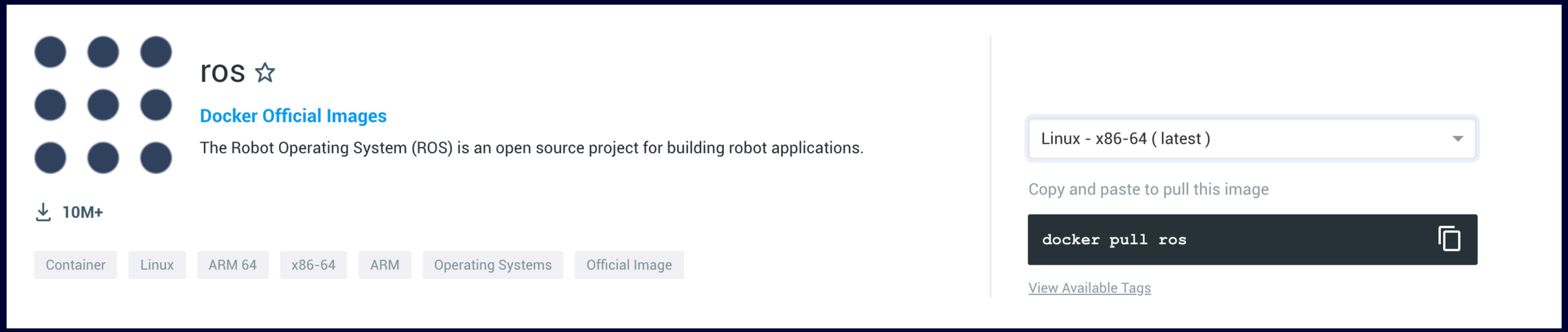
*** Provide a Virtual Machine with ROS**

https://youtu.be/59F6Jake_48

Simulated robots: use ROS + Gazebo

* Provide a docker with ROS

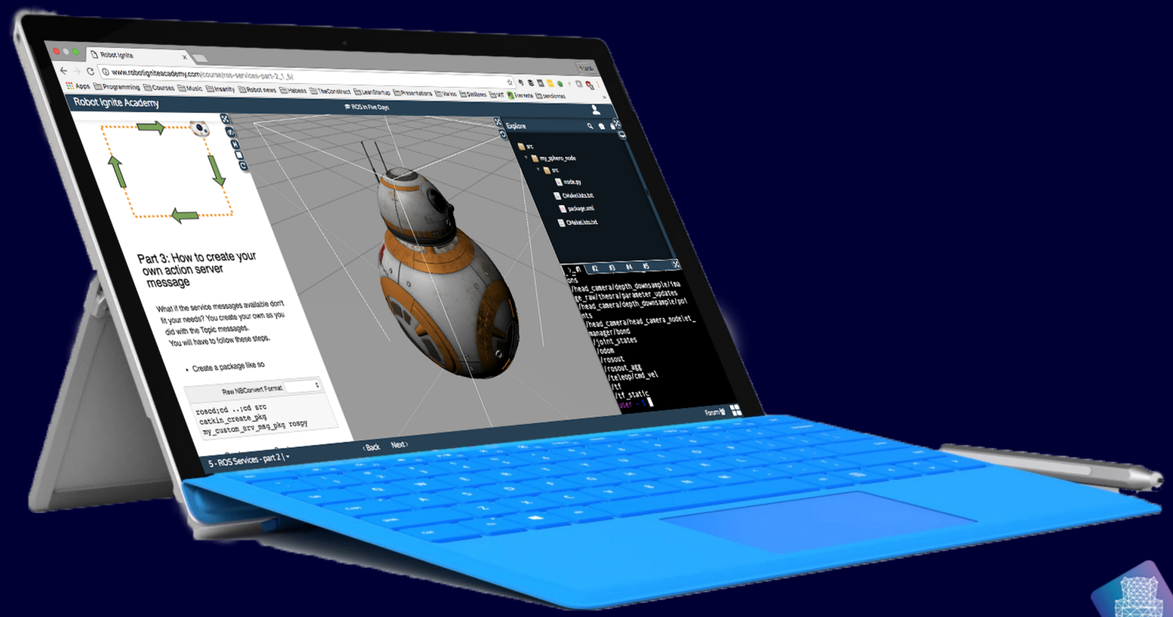
https://hub.docker.com/_/ros/



Simulated robots: use ROS + Gazebo

* Use a web based environment

http://robotignite.academy



The Construct | For Campus

Simulated robots: use ROS + Gazebo

*** Use a web based environment**

http://robotignite.academy

Book a demo meeting here

https://bit.ly/2XxPox5

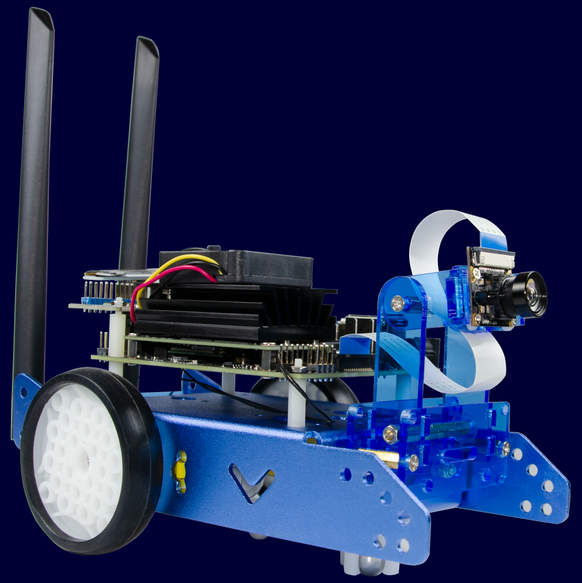
The Construct | For Campus

Real robots: use ROS based robots

*** Provide real robot to each student (around 200$)**

Base system (110$) : https://amzn.to/2DBpDov

Additions for Jetbot (110$): https://amzn.to/2XwJT1G



The Construct | For Campus

Real robots: use ROS based robots

* Provide remote robot lab

The Construct | For Campus

Real robots: use ROS based robots

* Provide remote robot lab

1. Have a robot with internet access
2. Install a server in the robot
3. Add external camera
4. Connect to it from ROSDS

HOW TO SETUP:

https://youtu.be/fzogfWRamDI

The Construct | For Campus

Get Ready to Teach Robotics Remotely in the Fall of 2020

Off-hours Support

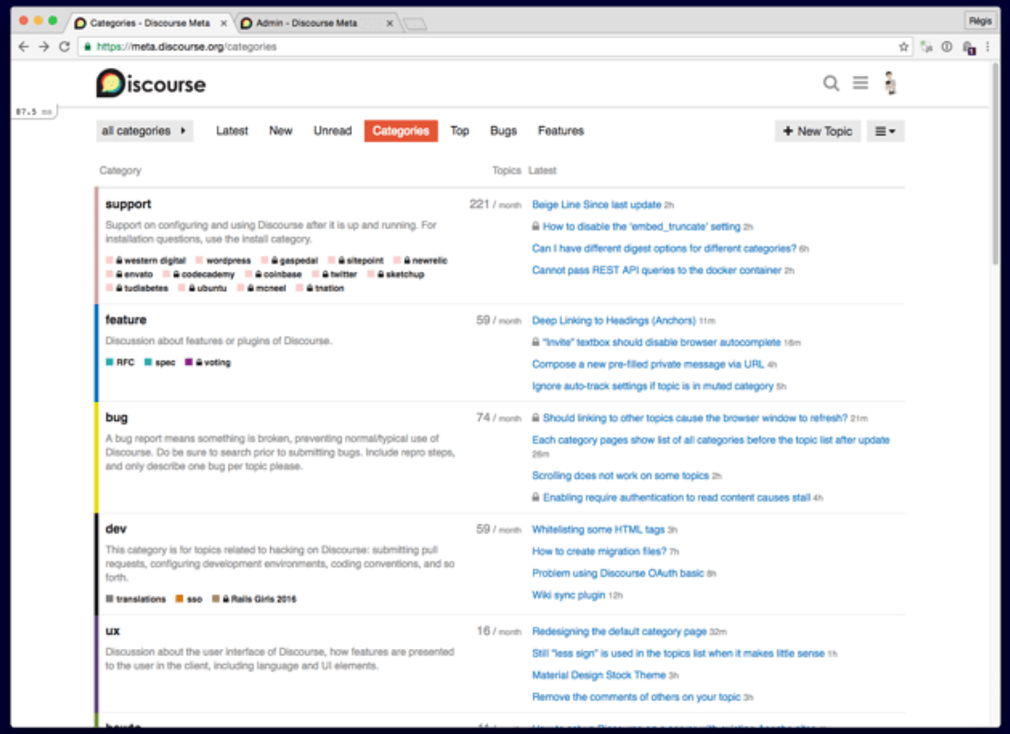
RICARDO TELLEZ

The Construct | For Campus

Provide a Forum for Q&A

* Use the one provided by the University

* Or install a Discourse: https://bit.ly/2C7vuS2



Get Ready to Teach Robotics Remotely in the Fall of 2020

Evaluation of students

RICARDO TELLEZ

The Construct | For Campus

Exams based on doing ROS code

* They must apply their knowledge

* Easy to detect when they copy

Get Ready to Teach Robotics Remotely in the Fall of 2020

Conclusions

RICARDO TELLEZ

The Construct | For Campus

Start getting ready!

* We are going to need to do that for the next semesters

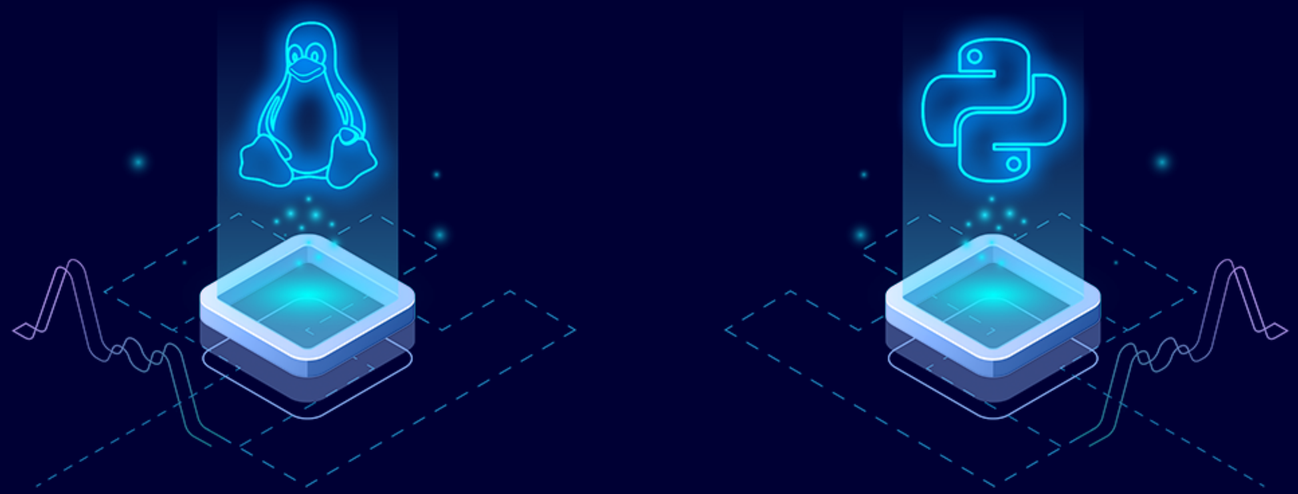
The Construct | For Campus

Start getting ready!

* Free Online Courses to start:

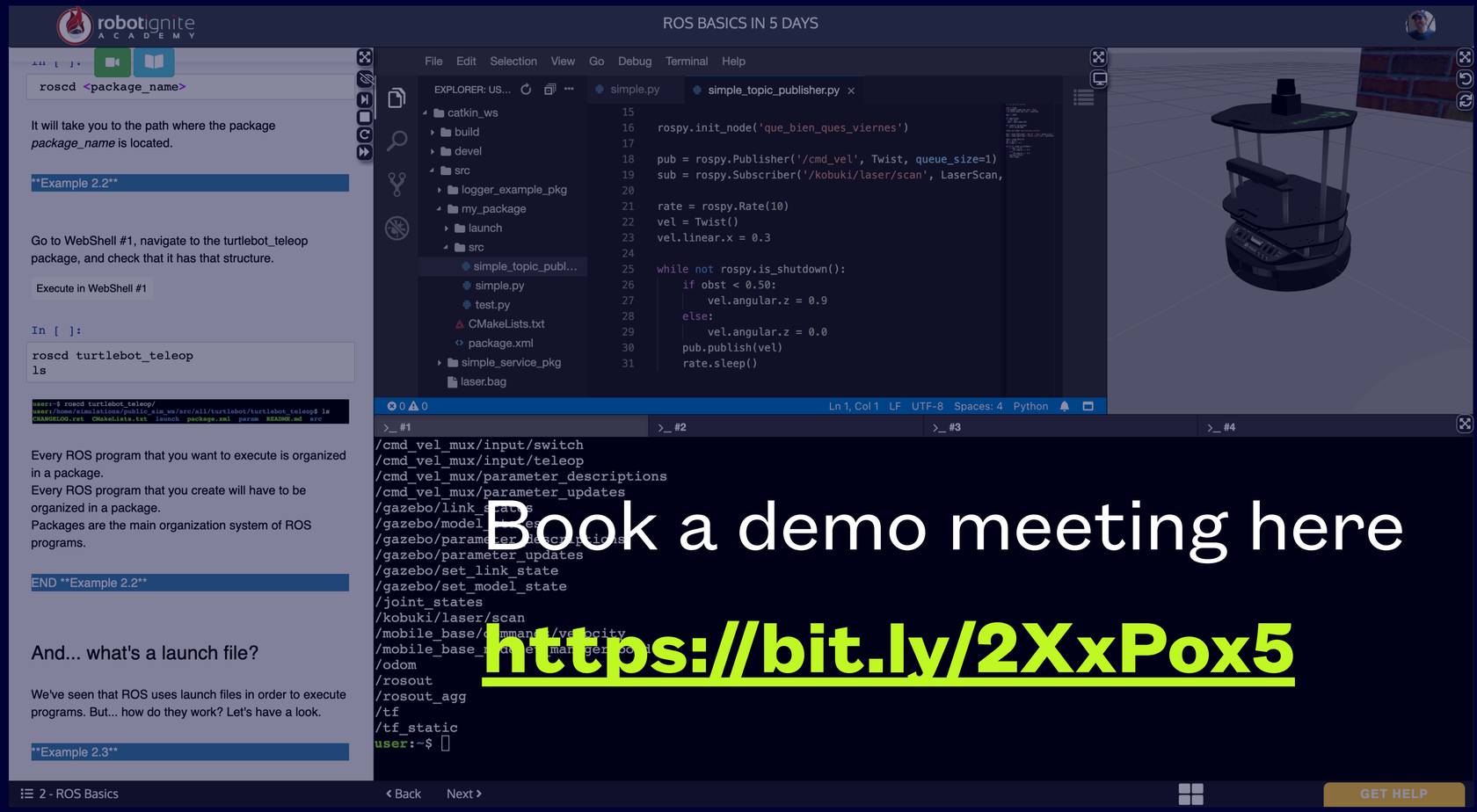
1. Linux for Robotics: https://bit.ly/2PACycJ

2. Python for Robotics: https://bit.ly/3gzPKdR



The Construct | For Campus

Start getting ready!



Book a demo meeting here

https://bit.ly/2XxPox5

The Construct | For Campus

Get Ready to Teach Robotics Remotely in the Fall of 2020

Q&A

RICARDO TELLEZ

The Construct | For Campus