Quick Start Guide

NVIDIA/Cal Poly Robotics Teaching Kit with 'Jet'

Introduction

This guide introduces you to the main teaching content of the Robotics Teaching Kit with 'Jet' and provides basic instructions on accessing other features of the kit.

NVIDIA co-developed the Robotics Teaching Kit with 'Jet' with academia for a variety of robotics-related academic disciplines. This comprehensive package contains everything you need to teach a full-term multidisciplinary robotics course.

The Robotics Teaching Kit with 'Jet' covers introductory and advanced robotics concepts such as sensors, computer vision, machine learning, robot localization, and control.

All materials are provided in electronic form for ease of use, either as-is or with your own modifications to meet the needs of your particular course.

You can view a list of Teaching Kit modules in the *Syllabus.pdf* file contained in this package.

'Jet' Kit Bundle and Build of Materials (BOM)

All kit material targets the NVIDIA Tegra-based Jetson TX and TK embedded computing platforms and the 'Jet' robot. ***The TX1 'Jet Robot Kit is available for purchase at an educational discount through Servocity***. Note that he TK1 'Jet' Robot Kit has recently been discontinued by Servocity. The Jetson TX2 should port easily to all TX1 materials. The Bitbucket repository contains more details on the individual parts and how to order them individually.

The Teaching Kit material can be ported to support other, similar robotics platforms as well.

NOTE: *You should have received an email invitation to the Teaching Kit's private Bitbucket repository that contains the most recent versions of the lab solutions and BOMs. Please contact NVDLI@nvidia.com if you have not yet received this email invitation or if it has expired.*

Additional Requirements

A host computer running Ubuntu Linux is required to run the NVIDIA JetPack installer. The JetPack installer will connect to the Jetson TX/TK over a micro USB cable. In addition, a router is needed to connect to the Jetson board once the OS has been installed.

Robotics Teaching Kit with 'Jet' Content

Syllabus

Syllabus.pdf outlines the module organization, including the content and associated file names, as well as the suggested online DLI content for each module. ***The suggested DLI course at the end of the syllabus will typically take students around 6 hours, and offers project-based assessment and official DLI student certification.***

Lecture slides

The lecture slides are included in PowerPoint (.ppt) format to supplement in-class lectures.

Questions/answers (Q/A) sets

Students should be able to answer these questions based on the information in the module slides. Each question is multiple-choice and includes a rationale for the correct answer.

Labs/solutions

The labs/solutions are designed to be one- to two-week hands-on programming assignments for students, and come as .pdf and Word files. Each lab begins with a description of the lab objectives and prerequisites. In most cases, the labs present pseudo-code and/or a solution code template as a starting point.

Although we including lab solution code in the Teaching Kit .zip download, the most recent versions of the labs are located in the Bitbucket repository linked from each lab.

Project Assignments

Projects assignments are designed to be open-ended, multidisciplinary, final semester projects that should take 3-4 weeks to complete. They are not tied to any particular modules because they are open-ended and cover any number of module topics The purpose of a project assignment is to apply multidisciplinary robotics concepts to a more substantial piece of code than possible in the labs. Please see *project_motivate_rubric.pdf* for more details and a sample example grading rubric. The next Teaching Kit release will provide working solutions to the project assignments.

NVIDIA Deep Learning Institute (DLI) Online Courses and Certification

The NVIDIA Robotics Teaching Kit with 'Jet' includes access to **free** online DLI courses and electives – **a value of up to $180 per person per course**. DLI training reinforces deep learning concepts presented in the Teaching Kits and teaches students how to apply those concepts to end-to-end projects. Through built-in assessments, students can earn certifications that prove subject matter competency and can be leveraged for professional career growth. Each course presents a self-paced learning environment with access to a GPU-accelerated workstation in the cloud. All you need is a web browser and Internet connection to get started.

The recommended course (with certification) for students learning through the Robotics Teaching Kit with 'Jet' is Fundamentals of Deep Learning for Computer Vision.

Syllabus.pdf suggests students take this full-day course upon near-completion of your university semester course. It also suggests shorter electives that can be used as labs throughout your university course.

T*o enable these or any other courses/electives for your students, please send your developer.nvidia.com account email address to NVDLI@nvidia.com with the subject line "Robotics Teaching Kit DLI Online Course Access". You will then receive information about how to give free access to your students.*

Detailed descriptions of all available DLI courses and electives can be found at www.nvidia.com/dli.

About the NVIDIA Deep Learning Institute (DLI)

The NVIDIA Deep Learning Institute (DLI) offers hands-on training for developers, data scientists, and researchers looking to solve challenging problems with deep learning and accelerated computing. Through built-in assessments, students can earn certifications that prove subject matter competency and can be leveraged for professional career growth.

Become a DLI Certified University Ambassador

Join the University Ambassador Program to teach DLI courses at your university to students, faculty, and researchers at no cost. Educators can apply at www.nvidia.com/dli.

Attend Instructor-led Training

In addition to online, self-paced courses, DLI offers all fundamentals and industry-specific courses as in-person workshops led by DLI-certified instructors. View upcoming workshops near you at www.nvidia.com/dli.

Want to schedule training for your school? Request an onsite workshop at your university at www.nvidia.com/requestdli.