

Preface

The second edition is a substantial revision of the original edition (about 190 additional pages), created in response to readers feedback, as well as to new hardware and software releases from ROBOTIS. All original 11 chapters had been revised or updated to reflect these changes, in particular:

- Chapter 3 includes additional descriptions of the newer CM-50, OpenCM-700, and X series Dynamixels.
- Chapter 4 offers new introductory sections for the ROBOPLUS V.2 tools such as R+SCRATCH which interfaces with MIT's SCRATCH 2 software and the OLLOBOT SDK that opens up Android Programming for Firmware 2.0 types of controllers such as CM-50/150/200 and OpenCM-7.00/9.04.
- Chapter 5 provides a closer look at the MANAGER and TASK V.2 tools regarding their use with the 485-EXP expansion board for the OpenCM-9.04/C system with the use of a new feature called "Dynamixel Channel". It also has new sections on usage of the IR Array Sensor for arbitrary single track maneuvers, new remote control capabilities via SCRATCH 2 event processing constructs, and also from the use of SmartPhone tilt sensors.
- The new Chap. 6 combines the former Chaps. 6 and 7 to provide a single chapter regarding Position Control Applications of ROBOTIS Dynamixels and to show complex interactions between parameters, such as Present Position, Goal Position, Goal Speed, Torque Limit, Present Load, Motion Page, and Joint Offset. New application projects of the PhantomX Reactor robotic arm are illustrated, such as an Avoider Arm and Remote Control of a Mobile Manipulator Platform using a CM-530 controller.
- Chapter 9 now covers Embedded C features with an OpenCM-9.04/C + 485-EXP controller platform with new applications to the Remote Control of the Mobile Manipulator Platform and its use of SmartPhone video cameras in conjunction with NIR distance sensors.
- Chapter 11 is entirely new and written to document the use of the R+SCRATCH tool and the PLAY 700 App (released by ROBOTIS-USA in December 2016), in conjunction with SMART commands from a TASK program or from Arduino-style

codes using the OpenCM IDE, to access various services from an iOS or Android device such as video camera, gesture sensor, touch areas, audio and video playback, text-to-speech, and speech recognition.

- Chapter 12 is also entirely new and describes the OLLOBOT SDK which was originally designed for the OLLOBOT Kit released in August 2016 to enable its control from an Android device using Android Studio. Fortunately for ROBOTIS users everywhere, this SDK turns out to be applicable to all Firmware 2.0 controllers such as CM-50/150/200 and Open-CM7.00/9.04. This chapter is for users interested in Java and Android Programming to create custom Android Apps that interact with ROBOTIS' robotic systems using the new Dynamixel Protocol 2.0.

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