



SAPIENZA
UNIVERSITÀ DI ROMA

Robot Programming

Course Intro

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Topics

Build Systems

- Make
- Cmake
- Ament/Colcon

C++

- Basics
- Classes and OOP
- Meta Programming

ROS

- Concepts
- Robots and Sensors
- Robot Setup
- Navigation

Robot Programming: The Journey

- C++ Concepts (operator overloading, constructors and destructors)
 - Simple linear Algebra
- OOP Concepts (inheritance, overriding)
 - Simulator (many lessons)
- ROS Concepts (basic publish subscribe)
 - Exercise publish && subscribe
- Data Structures And Templates
 - simulator refactoring → less code
- Eigen
 - simulator refactoring → less code
- Navigation
 - Localization
 - Planning
 - Control
- Distance Map
 - For Localization
 - For Planning

Take Home Messages

- Open the box
- Program in a defensive manner (a bug can be everywhere)
- Destroy and redo. Until happy
- Visualize the data

... the rest comes with the experience