BROCHURE

The Construct



Robotics Developer

MASTERCLASS 2026

Master Robotics Developer Skills, Kickstart Your Career

STARTS ON	ESTIMATED TIME	FORMAT
Anytime in 2026	240 hours	Online

roboticsdeveloper.ai

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Robotics Needs Developers

Overview

Robots are becoming an essential part of our world. As a result, there is a massive demand for robotics developers to create solutions to everyday problems.

The challenge is that robotics engineering is multidisciplinary and difficult to learn. So we have built the **Robotics Developer Masterclass** **to help you master robotics developer skills from scratch.**

Completion Time

240 hours to acquire all skills.

Join **Masterclass 2026** and pace yourself through the 240-hour program. See the table below for duration based on weekly commitment.

COMPLETION TIME IN MONTHS	WEEKLY TIME COMMITMENT
3 months	20 hours
6 months	10 hours
12 months	5 hours

Assessment

During the program, students must complete the exercises and projects in each phase. In the final project, they must apply all knowledge learned and present it to all tutors. Students who pass the final project will receive a certificate.

Robotics Developer MASTERCLASS



Course starts on:

Anytime in 2026

Format:

Online

Evaluation language:

English

This Masterclass program is available in four languages:

English, Spanish, Japanese, Korean

Tutor meetings, extra C++ live classes, and Discord channel only in English

Prerequisite:

- **Linux knowledge:** Take this free course to learn Linux essentials for robotics.
- **Python 3:** Take this free course to learn Python essentials for robotics.
- **Basic maths:** Check out this course to learn essential math concepts for robotics.

CLASS HIGHLIGHTS

Key Takeaways

Learn to **build robot apps** in an actual integrated development environment

Gain **in-demand robotics skills** in a Fast-growing industry

Practice with both **simulated & real robots**

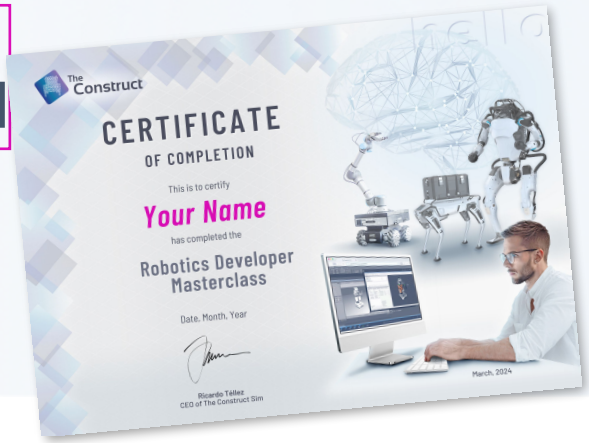
All courses are based on **hands-on exercises & projects**

Walk away with a **robotics portfolio** project to share with potential employers

ACCOMPLISHMENTS

Learn, Practice, Get Certified

Get recognized! This program is graded as pass or fail; students will receive a certificate of completion issued by The Construct after completing the final project and passing the final exam.



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BEGINNER-FRIENDLY
This program is designed for complete beginners, even with no prior experience in robot programming.

PERSONAL MENTOR
Receive 1-on-1 feedback and guidance from robotics experts to ensure your success.

100% PRACTICAL
No videos, no slides—learn by doing with both simulated and real robots.

WE HAVE THE PLAN

Kickstart Your Career in RobDev



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FOLLOW A LEARNING PATH

Program Schedule

Phase 1 - Robotics Developer Foundations

60 hours

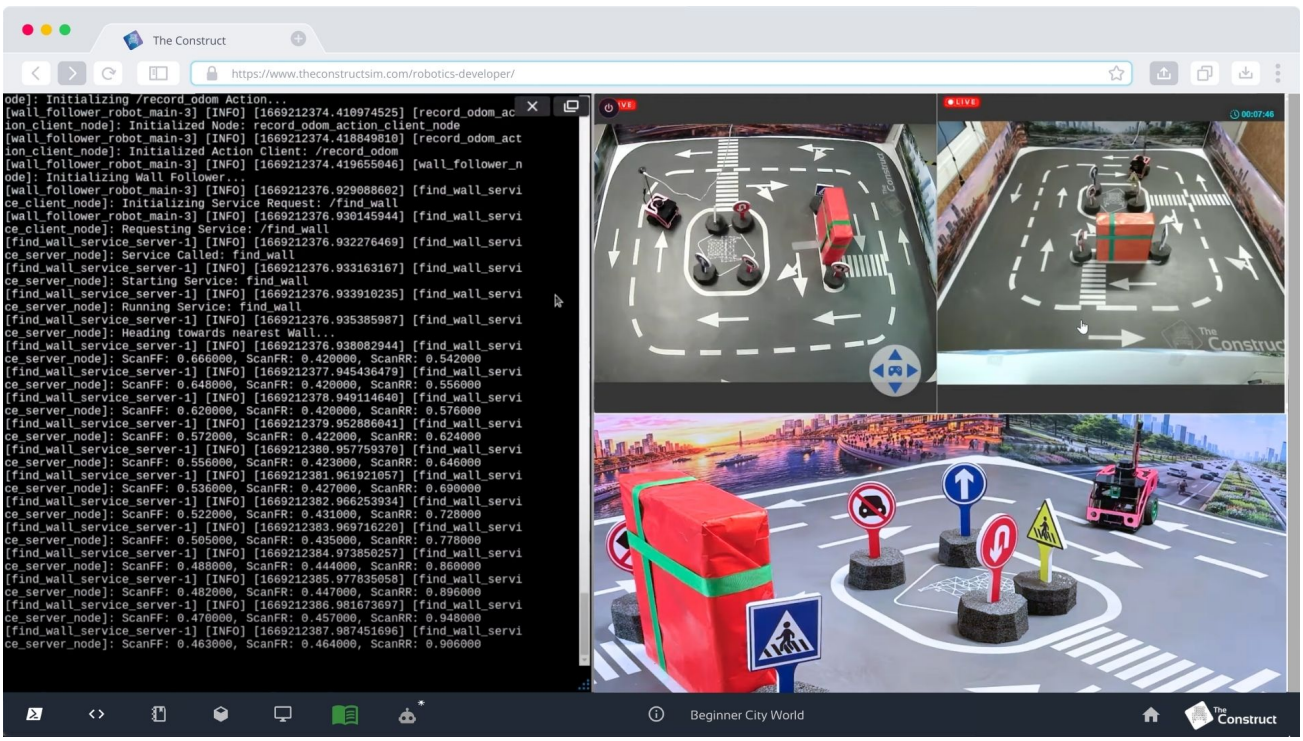


Build the robot programming foundation and get started with ROS.

Acquired Skills:

- Collaborative software development with Git
- C++ programming skills for robotics
- ROS 2 Basics
- Robot modeling with URDF – ROS 2
- Robot frame transformations with TF ROS 2
- Create robot simulations with Gazebo Sim

Project of this phase: Apply ROS to the Beginners City Lab and get a mobile robot – FastBot to perform specific tasks.



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	WHAT YOU WILL LEARN IN THIS PHASE		TIME
1	**Git and GitHub Basics**	• Git Basics • Git Branches • Git and GitHub for Team Collaboration	4 hours
2	**C++ for Robotics**	• How to compile C++ programs • How to store data into Variables • How to operate with the data in the Variables • How to change behavior based on Conditions • How to create Functions that can be called from other places of the code • How to encapsulate the code into Classes so you can have clean and robust code	4 hours
3	**ROS 2 Basics**	• Creation of ROS 2 packages • Management of the new Colcon universal building system. • Topic Publishers and subscribers in ROS 2 C++. • New Launch system based on python • Service servers and client generation for ROS 2. • Basic use of ROS 1-Bridge to communicate ROS 2 systems with ROS 1 systems. • Use of Debbuging tools in ROS 2.	20 hours
4	**TF ROS 2**	• How to Visualize TFs in ROS 2 • How to Publish & Subscribe to TF data • Understanding Transformations & Frames • Common TF Command-line Tools (tf_echo, view_frames…) • Understanding Static Transform Publisher	14 hours
5	**URDF for Robot Modeling in ROS 2**	• How to build a visual robot model with URDF • How to add physical properties to a URDF Model (Collision, Frictions…) • How to use XACRO to clean up URDF files. • How to use URDF in Gazebo-ROS ecosystem. • How to use URDF-XACRO in ROS 2 systems	14 hours
6	**Mastering Gazebo Simulator**	• How to build a robot for Gazebo Sim • How to connect Gazebo with ROS 2	4 hours

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Phase 2 - Become a ROS 2 Developer

70 hours

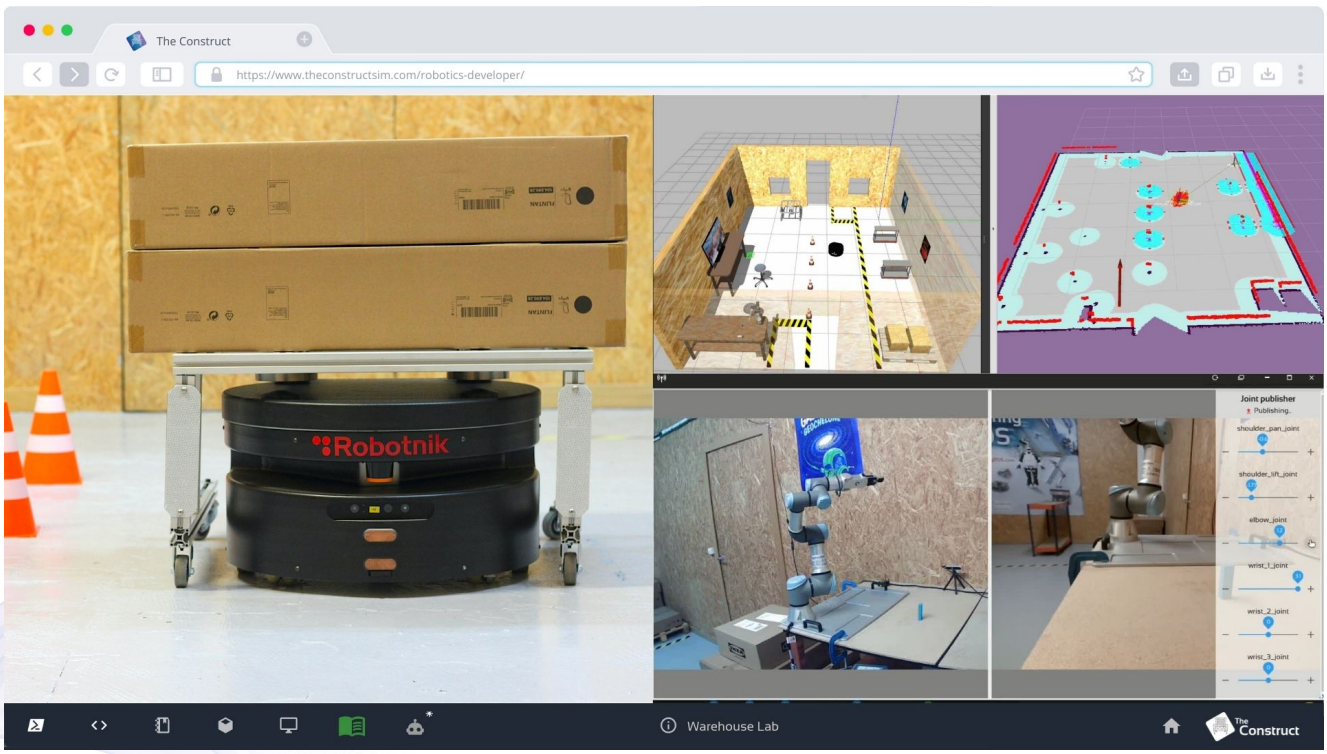
Understand how to program mobile manipulator skills, including navigation, perception of the environment, and manipulation of objects.



Acquired Skills:

- Advanced ROS 2 concepts
- Robot navigation with ROS 2
- Robot perception with ROS 2
- Object manipulation with ROS 2
- Build robot controllers with ROS 2

Project of this phase: Apply what you have learned to the Warehouse Lab and create an entire pick-and-place task with real warehouse collaborative robots: RB1-Base and UR3e Arm.



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	WHAT YOU WILL LEARN IN THIS PHASE		TIME
7	**Advanced ROS 2**	• How to create different types of launch files in ROS 2 • How to work with parameters in ROS 2 • Threading in ROS 2 • How to manage callbacks in ROS 2 • Understand Quality of Service (QoS) in ROS 2 • Understand DDS in ROS 2 • Work with Managed Nodes in ROS 2	10 hours
8	**Autonomous Navigation**	• How to build a map of the environment • How to localize a robot in a map of the environment • Path Planning from an initial position to the desired goal • Obstacle avoidance using Costmaps • Navigation Lifecycle Manager • How Behavior Trees influence Nav2 • How to use the Simple Commander API • How to use Costmap Filters	20 hours
9	**ROS 2 Manipulation and Perception**	• Set up MoveIt 2 for a manipulator robot • ROS 2 Programmatic Motion Planning • Image Processing with OpenCV • PointCloud Processing • Advanced Perception Techniques with AI	30 hours
10	**ROS 2 Control Framework**	• How to configure a ros2_control pipeline • How to write a minimal custom interface for a hardware device • Real-life implementation of a custom hardware interface • Different controller types included with ros2_control • Application of the course content to solve a robotics project based on a quadruped robot	10 hours

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Phase 3 - Understand How Robots Really Work

50 hours

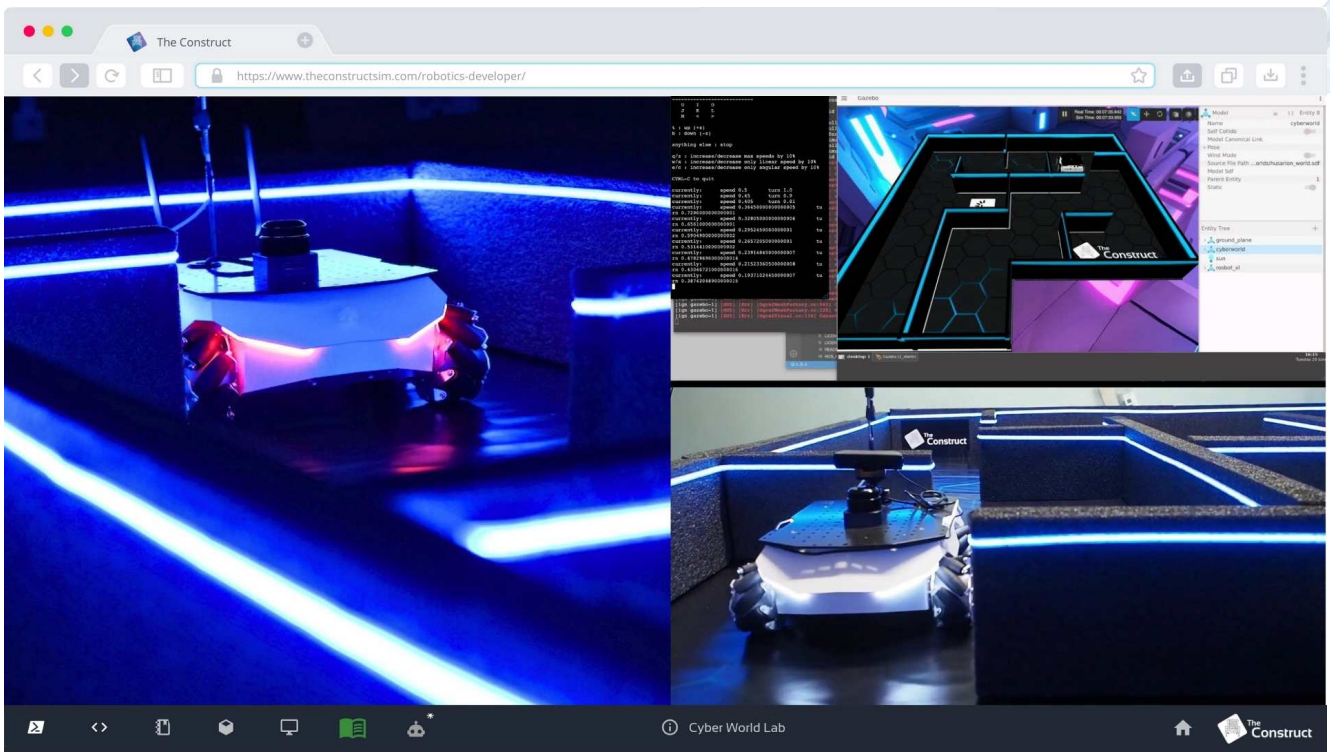
Understand any robotic system's physics and mathematical principles, from simple kinematics to advanced planning and control algorithms.



Acquired Skills:

- Essential math for robotics
- Mobile robot kinematics
- Robot arm kinematics
- Robot dynamics
- Kalman filters

Project of this phase: Apply what you have learned to the Cyber World Lab. Design and develop, from zero, the navigation algorithms for a wheeled mobile robot – ROSBot XL.



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	WHAT YOU WILL LEARN IN THIS PHASE		TIME
11	**Basic Maths for Robotics**	• Linear Algebra, where you'll learn about vectors and matrices • Calculus, where you'll learn about functions, derivatives, and integrals • Probability, where you'll learn about random variables and belief distributions	4 hours
12	**Basic Kinematics of Mobile Robots**	• Rigid-Body Motions • Kinematics for Non-Holonomic Robots • Kinematics for Holonomic Robots • Kinematic Control	10 hours
13	**Basic Arm Kinematics**	• The baiscs of Rigid Body tranformations • The Denavit Hartenberg method for frames generation. • Forwards kinematics • Inverse Kinematics	10 hours
14	**Kalman Filters**	• What is a Kalman Filter and why are required • Different types of Kalman Filters and when to apply each one. • Bayesian Filters • One-dimensional Kalman Filters • Multivariate Kalman Filters • Unscendent Kalman Filters • Extended Kalman Filters • Particle Filters	13 hours
15	**Robot Dynamics and Control**	• How to solve the dynamics for the motion of rigid bodies in 3D space with the use of Newton's laws of motion • How to model the dynamics of a simple robotic system and how to derive its equations of motion • How to create a full state feedback controller to allow a robotic system to balance	13 hours

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Phase 4 - Build and Program Your Own Robot

20 hours

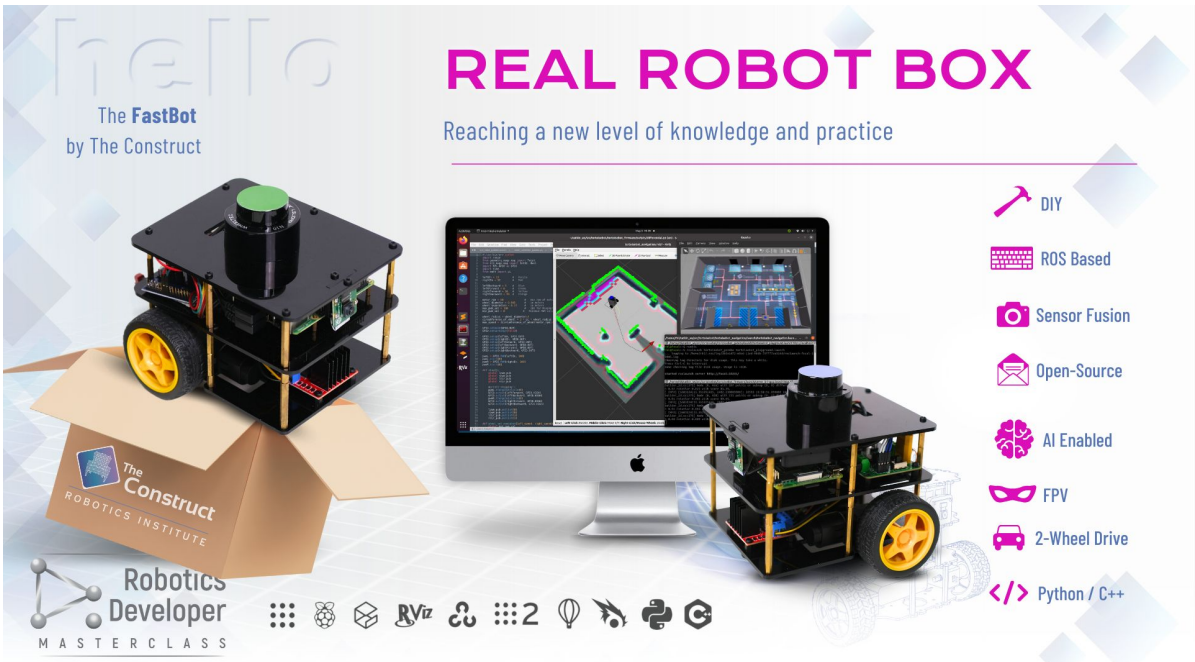
You will receive a real robot kit (FastBot) to assemble and program. In this phase, your goal is to build a ROS 2-based robot from scratch and control it within a containerized environment using Docker.



Acquired Skills:

- Build and Program your own ROS 2 Robot from scratch
- Docker for Robotics

PLUS: A REAL ROBOT KIT!: You'll receive a real robot box – the FastBot kit, assemble and program it.



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	WHAT YOU WILL LEARN IN THIS PHASE		TIME
16	**Build and program your own robot from scratch**	• Motor types, control and integration • Power systems and battery management • Setting up your robot's onboard computer • Installing and using the ROS 2 framework • Integrating a LiDAR for mapping and navigation • Adding camera support for perception	12 hours
17	**Docker Basics for Robotics**	• Introduction to Docker: How to pulling public images, run and inspect containers, basic commands, etc. • Creating Docker Images: Create your own docker image, check its history, and work with Docker containers. • Docker Network and Docker Compose: Launch multi containers using a single command and understand docker-compose files. • Docker with ROS	8 hours

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Phase 5 - Complete Your Final Project and Get Certified

40 hours



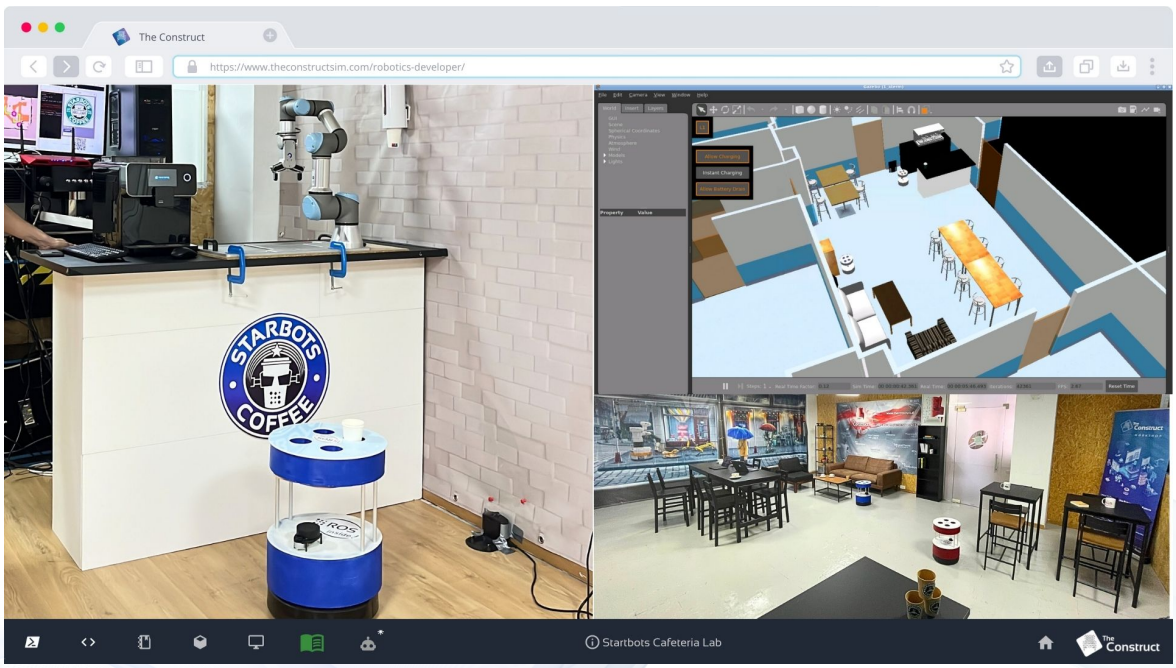
Apply all the skills and knowledge you've gained in a real-world setting. This final project serves as a great opportunity to build your robotics portfolio and showcase your abilities to future employers.

Choose one of the following final project options:

Project Option 1: StarBots Cafeteria Lab

Design, develop, and present a complete robotics project from scratch. Choose between two sub-projects:

- **Robotic Arm Project:** Develop a robotic arm app that grabs a coffee cup and places it on another robot for delivery to the tables.
- **Mobile Robot Project**: Use the TurtleBot 4 robot to clean the tables in the cafeteria.

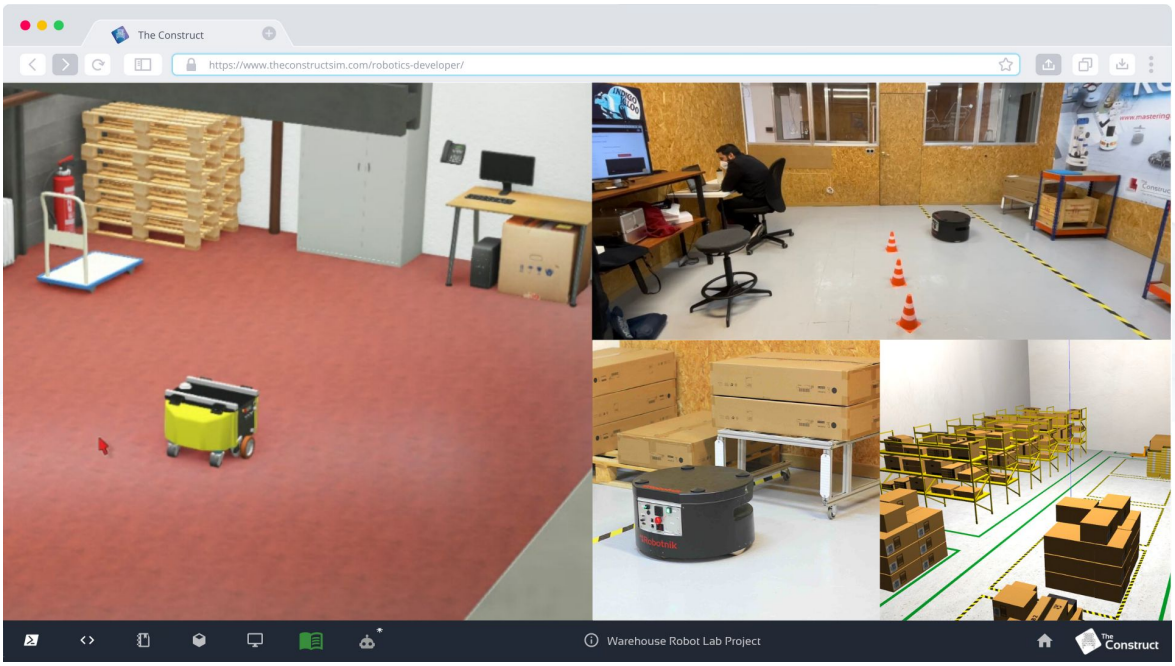


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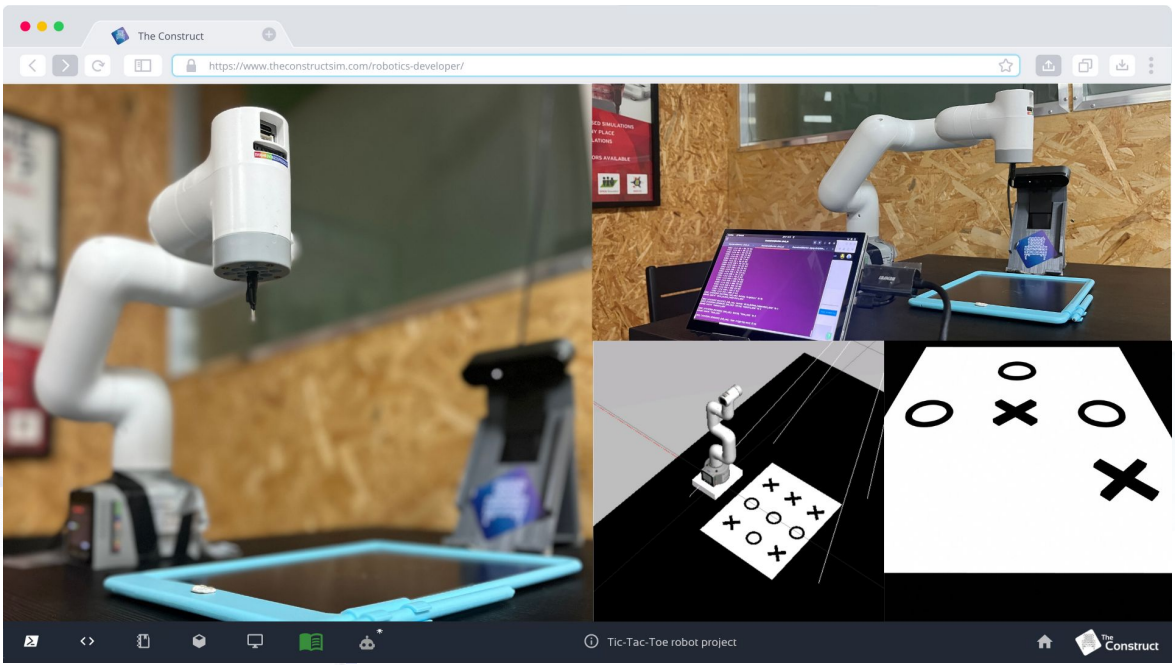
Project Option 2: Warehouse Robot Lab

Design, develop, and present a complete robotics project for a small warehouse setting. Use the RB-1 BASE mobile industrial robot to practice applications for warehouse and logistics use cases.



Project Option 3: Tic-Tac-Toe Lab

Design, develop, and present a complete robotics project featuring a Tic-Tac-Toe robot arm.



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NEW!

Internship Placements



Complete the Robotics Developer Masterclass within six months and receive an internship opportunity at a leading robotics company. Learn in a real-world industry environment and gain hands-on experience through real-world projects to prepare for your future career as a robotics developer.

100 % GUARANTEED

IF YOU COMPLETE THE MASTERCLASS WITHIN 6 MONTHS

WHERE OUR STUDENTS INTERNED IN 2026

STOGL ROBOTICS · Robotnik · WOLFTECH ROBOTICS

MOTO · DUCKIETOWN · XELA ROBOTICS

AIVOT · HIVEBOTICS · ROBOTICS

EKUMEN · robotizer · YOUREE

GAIN REAL-WORLD JOB EXPERIENCE



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REAL PRACTICES

Get Hands-on with Robots

Simulated Robots Used

BB-8



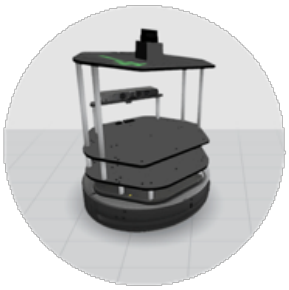
IRI Wam arm



Parrot A.R.



TurtleBot2



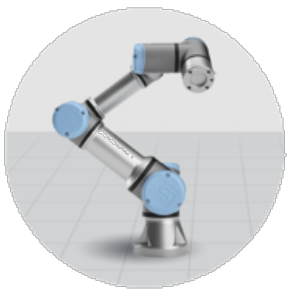
SUMMIT-XL



Husky



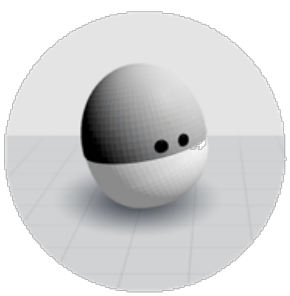
UR3



Fetch



Mira



Phantom X



RB-KAIROS



RRBot



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Neobotix MPO-500



3d Version of the Classical 2D TurtleSim



Pi robot



ROSbot 2.0



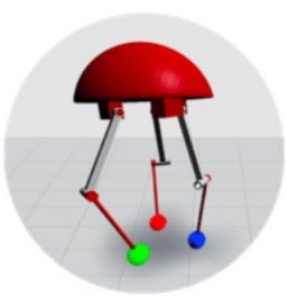
Mara



TurtleBot 3



Gurdy



JIBO



Motoman Sia10f simulation



Clarkson Open Manipulator



PR2



Shadow hand





Real Robots Used

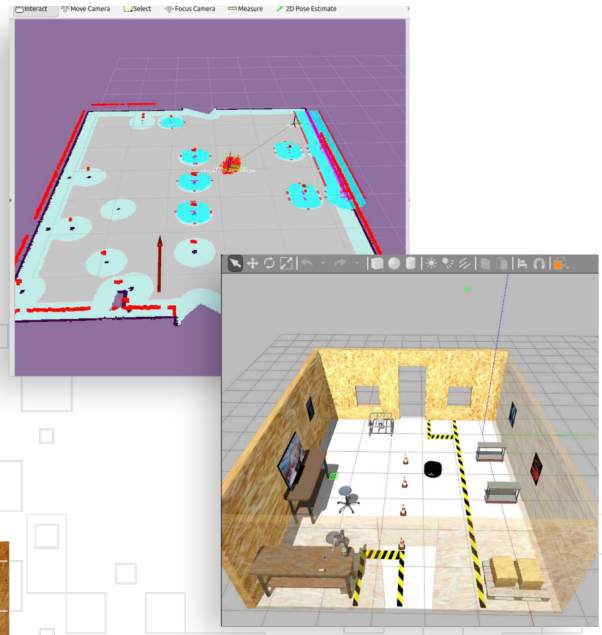
During the program, you will learn robotics and develop robotic apps by connecting remotely to the following real robots to practice:

RB-1 BASE mobile robot - Robotnik

RB-1 BASE is a mobile base robot able to move shelves from one location to another. With this robot, practice autonomous navigation; carrying cargo from one place to another; and recognize environments, like tags, people, or objects.

See how it works (video)









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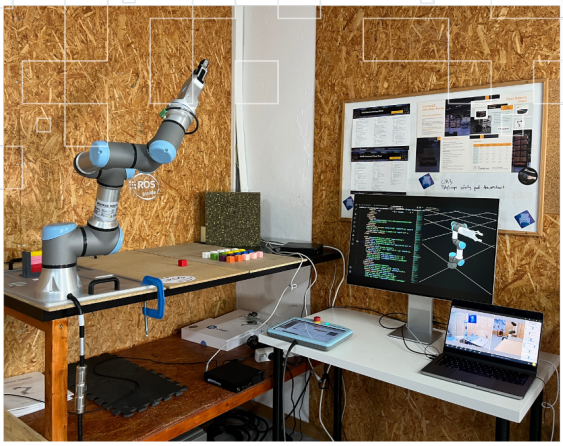
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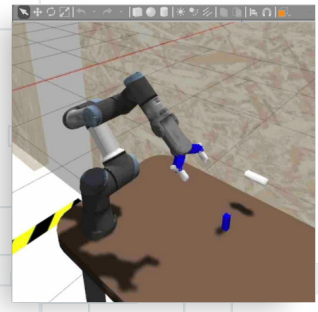


UR3e robotic arm

This is a collaborative robotic arm with a gripper and a 3D sensor for perception.

With this robot, you can practice manipulation, object detection, pick & place objects, and more.





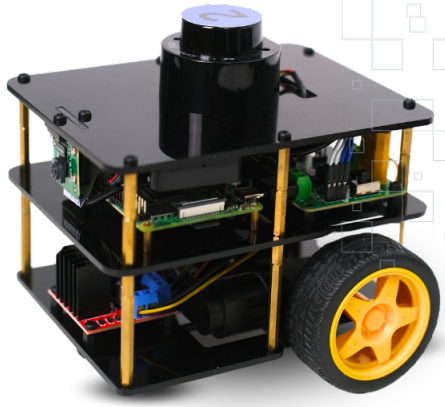


FastBot

FastBot is a fully open-source, ROS 2-based wheeled robot with lidar and a camera.

More Information about FastBot



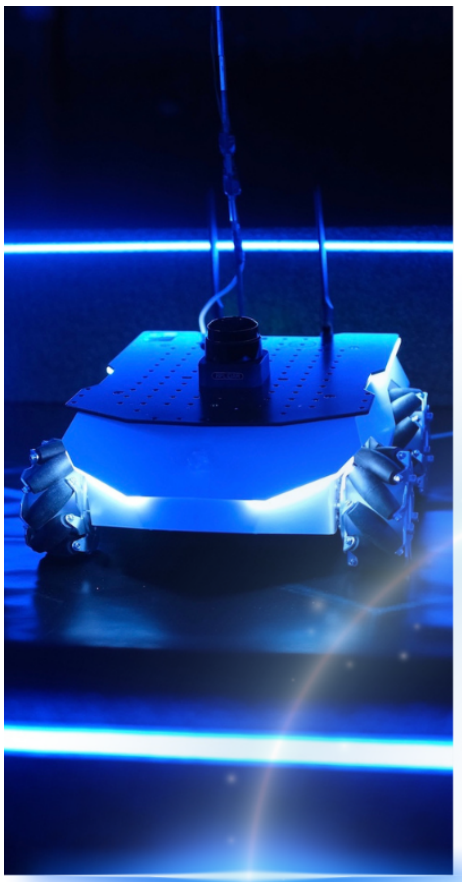




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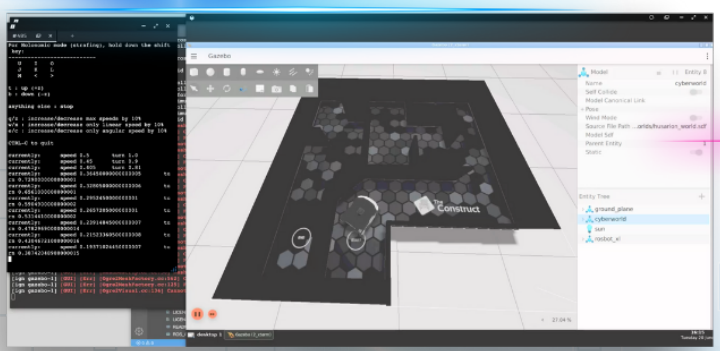
ROSBot XL - Husarion

ROSBot XL is a 4x4 drive autonomous mobile robot platform equipped with LIDAR, RGB-D camera, IMU, encoders, etc.

[See how it works (video)]











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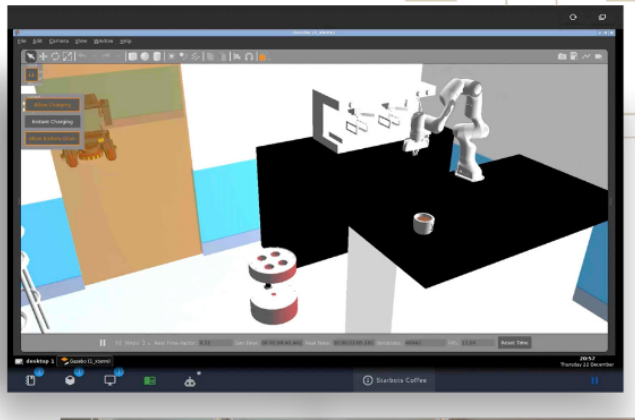




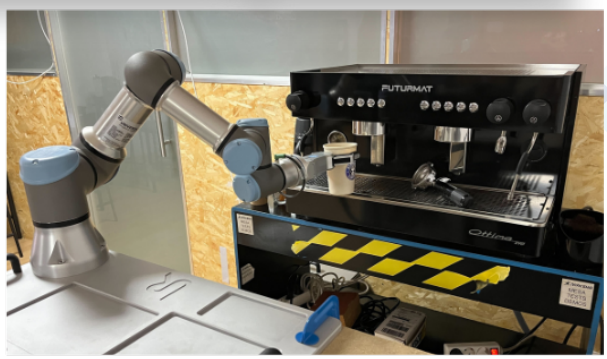
Robots Cafeteria's Advanced Robot Fleet

Our cutting-edge lineup includes:

1. Two coffee delivery mobile robots
2. Two table carrier robots
3. An UR3e robotic arm, skillfully preparing coffee
4. A programmable coffee machine
5. An automatic door







All our robots are equipped with auto-charging capabilities and work 24/7.





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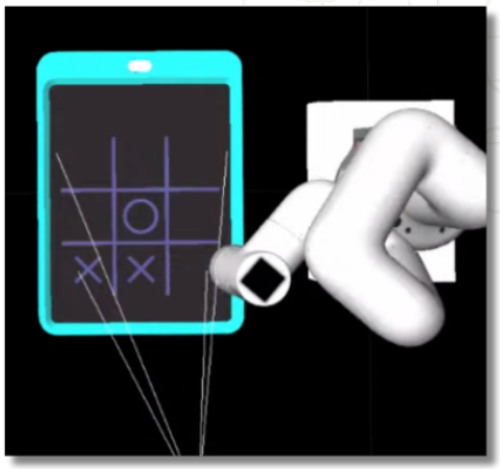


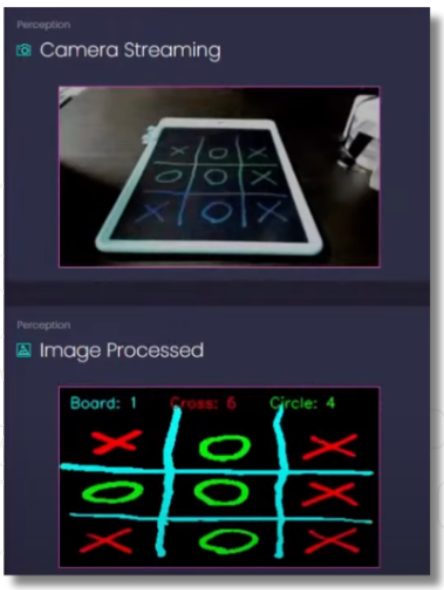
Tic-tac-toe robot Lab

In this lab, you will apply manipulation, perception, and AI reasoning to enable a robot to play tic-tac-toe against a human.

You will need to use perception to identify the current board state, reasoning to select the best move for the robot, and then move the robot to draw the circle in the tic-tac-toe board.









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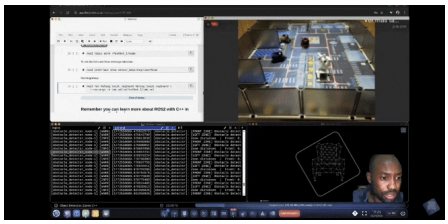


EXTRA PERKS

Bonus Robotics Workouts

Reinforcement C++ Live Class

Boost your C++ programming skills with live class per week.



Open Hour Sessions with Teachers

Weekly open sessions with teachers to ask questions, get support, and overcome challenges.



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Frequently Asked Questions

What is the difference between this Masterclass and The Construct's existing course library?

The differences are:

- Comprehensive and fully guided step-by-step path to becoming a Robotics Developer in the shortest amount of time.
- A personal mentor guides and supports your learning development. You have a 1-hour meeting with him monthly.
- Access to exclusive courses required to do professional development in a robotics company:
    - Git for Robotics
    - Docker for Robotics
    - Advanced C++ for Robotics
    - Build your Firs ROS 2 Based Robot
- During the course, you will create several projects, which will be integrated into a shareable online robotics portfolio, showcasing your code and results to potential employers.
- You will receive a real robot kit – FastBot – to assemble and program
- You will practice what you learn in our Remote Real Robot Labs:
    - Beginners city lab, FastBot (this one is also available to regular students)
    - Warehouse lab, with an RB-1 Base and a UR3 robot arm
    - CyberWorld, with a ROSBot XL
    - Robots cafeteria, with two barista robots, one UR3 robot arm, a door, a coffee machine, and a cleaner robot
- Extra live C++ classes
- Open Hour Sessions with teachers
- LinkedIn shareable Robotics Developer certificates

Can I complete the coursework at any time and at my own pace?

Six months is recommended, but you can complete the program at your own pace.

Is there any contract we need to sign before enrolling in the Masterclass?

Before enrolling and paying, we will ask you to sign a Masterclass License Agreement that explains your rights and obligations.

Can I get a scholarship?

Unfortunately, no scholarship is available at this time.

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Frequently Asked Questions

Is this Masterclass video-based?

NO. The courses are based on notebooks (as shown in the image below) which contain lectures, exercises, assignments, and exams that will guide you through the program. You can also access the notebooks for review at any time.
The courses are also based on regular meetings with your mentor. You will have a mentor assigned to follow your progress. In a monthly session, your mentor will provide feedback on your development, including areas of strength and improvement.



Kickstart Your Career in Robotics Software

Enroll Today

QUESTIONS?

Email: info@theconstruct.ai

Website: roboticsdeveloper.ai

The Construct



The Construct
ROBOTICS INSTITUTE

Where Your
Robotics Career
Happens

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