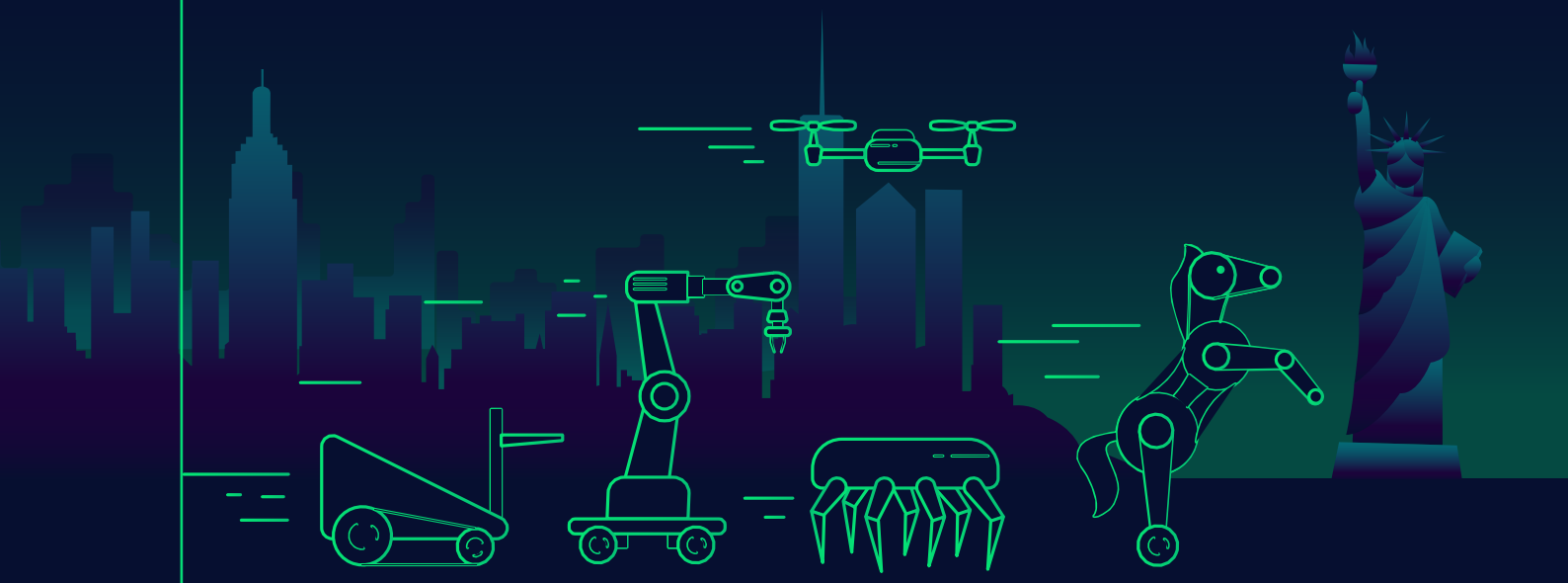
Riders

DEMOCRATIZING ROBOTICS EDUCATION.



AWS EdStart Member

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ROME Maker Faire THE EUROPEAN EDITION

Google for Education

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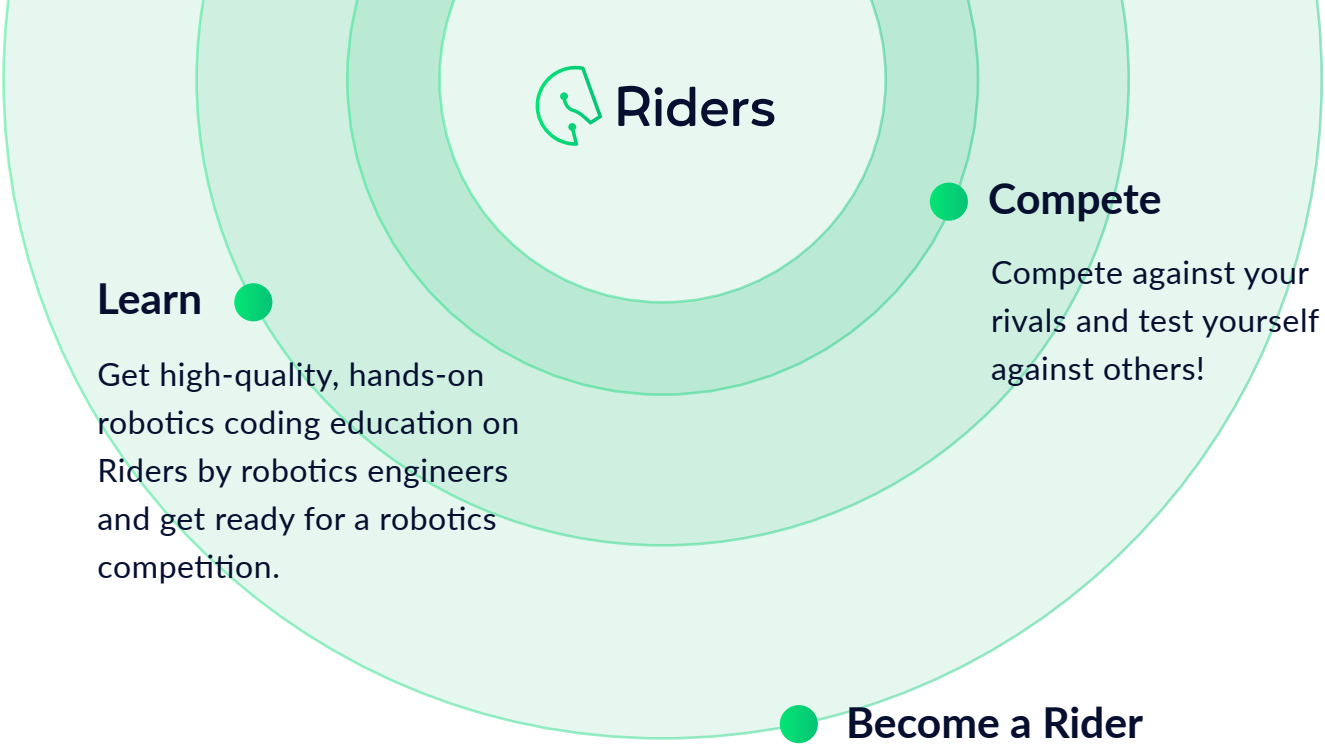


Learn

Get high-quality, hands-on robotics coding education on Riders by robotics engineers and get ready for a robotics competition.

Compete

Compete against your rivals and test yourself against others!

Become a Rider

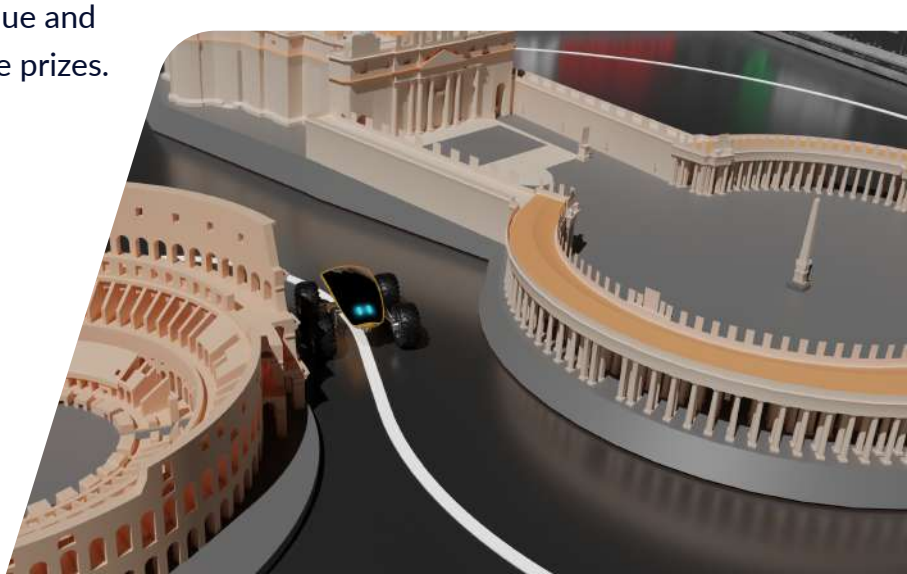
Join the Riders Community, take part in amazing robotics projects, work with your teammates, join free competitions!

Riders Competition

Riders offers a cloud based environment by using ROS with Gazebo simulator, makes it possible to build and code different types of robots with **various competition and lesson scenarios.**

Competitions take place in Riders Arena with autonomous scoring algorithm, allowing users to face off against one another in unique and challenging competitions with valuable prizes.

Riders' **cloud based** platform allows all competitions to be conducted **virtually** without any downloads, installations or browser extensions. It is also possible to implement different simulation environments than Gazebo.



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Concept

Riders hosts **live lessons** in order to introduce the essential robotics concepts that students will need to learn prior to a competition. Lesson content may be chosen according to the levels of participating students.

Students will also have the chance to get ready for the competitions with **preparation tracks.** Before the competitions, Riders team will release a preparation track for competitors to understand the dynamics for the challenge they will attend.

Participants can join the competitions **either individually or as a team.** It is possible to collaborate with your team in Riders!

Organizer's Benefits

Offer your community a modern, low-cost environment for **learning robotics with equal opportunities.**

Competitions are great **gamified** ways for enhancing learning experience. Riders makes it possible to organize **online competitions** with the engagement of all the community.

Riders is dedicated to **connect robotic enthusiasts** and will offer the chance for developing the collaboration in between Riders user organizations.

Attendant's Benefits

Attendants will be rewarded with **participation certificates** in the end of the lessons and competition, winners will be rewarded with success certificates.

Top performers will have the chance to win **robotics kits, surprise prizes and robotics internship opportunities.**

Attendants will have access to **a course content worth $150** with the chance to compete in both your organization's competitions and Riders **global competitions.**

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Organization Steps

05

Competition Results & Award Ceremony

The results can be announced at a later date or can be immediately seen on the leaderboard. Riders can host an award ceremony where the winner performances can be seen on a live stream.

04

Competition Prep Track & Final

Competitions will take place on Riders platform with Preparation and Final Tracks. Riders Team will be present to provide technical support during the competitions.

03

Technical Support

Riders will host office hours and sessions for participants in order to support the lessons.

02

Lessons According to the Participant Level

Riders will provide online lessons to the participants according to their prior robotics knowledge and the competition difficulty.

01

Competition Format Decision

Once the competition format is decided, Riders team can start working to create the environment.

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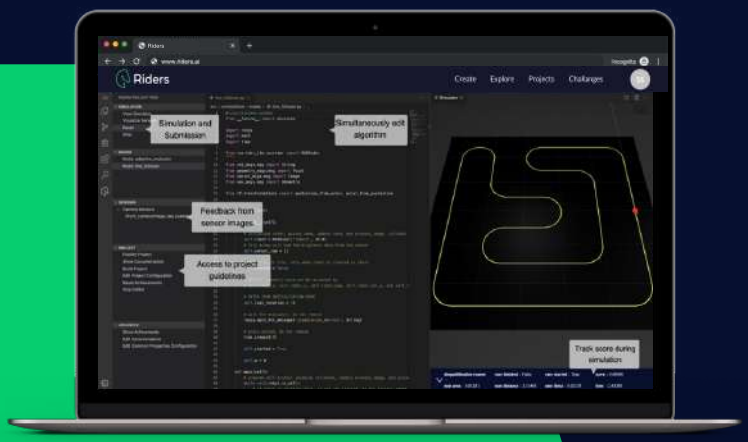
Organization

Who can organize?

Riders can collaborate with educational institutions, robotics clubs and individual organizations that want to organize a robotics competition.

Who can join?

Riders competitions are available for robotics enthusiasts from very beginning levels to advanced developers. Riders offers wide range of competition scenarios and levels for all robotics enthusiasts.



How does it work?

Competitors just need to sign in to Riders in order to start competing. Once they join the competition, competitors will enter the editor to see the challenge track and the IDE to work on their algorithm.

In the editor, competitors can simulate their code, track sensor images, read the documentation and track their score assessed by the scoring algorithm.

How the scores are calculated?

For each challenge track, a scoring algorithm will be pre-defined and clearly explained in detail to all competitors in competition documentation. This scoring algorithm mainly consists of metrics to define what is successful and shows which metric is important. By having the scoring algorithm upfront, competitors will have a better perspective to decide on which methods they are going to use in the competition.

	Team Name	Members	Score	Entries	
1	Valter Padovan		84.03361	32	2w
2	Nicolo Parolini		80.97493	30	
3	RODOLFO ZARLI		80.96838	43	
4	Batuhan Ergun		77.21709	18	

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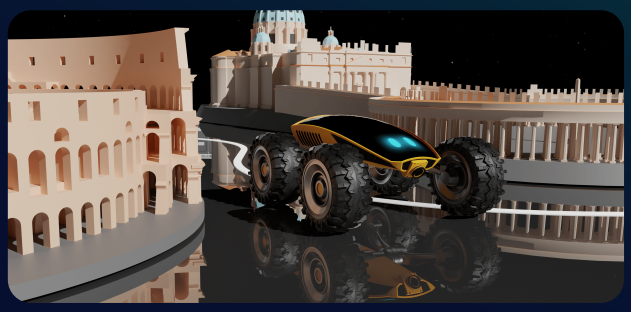
Line Follower Tracks



A challenging track marked by a single line to follow.

Difficulty may vary with dotted lines, sharp corners and random obstacles.

Competitors must program a robot by building an algorithm that can guide the robot in the fastest time possible while following the line accurately.

A challenging track marked by red, green, and blue lines. Competitors can decide which line to follow and or switch lines during the race.

Difficulty may vary with dotted lines, sharp corners and random obstacles.

Competitors must program a robot by building an algorithm that can guide the robot in the fastest time possible while following the line accurately.

A challenging track marked by a single line and walls to follow.

Robot can be guided by the walls using the distance sensors and/or by the line using the camera sensor.

Difficulty may vary with dotted lines, sharp corners and random obstacles.

Competitors must program a robot by building an algorithm that can guide the robot in the fastest time possible while following the line accurately.

A challenging track requires image processing to follow the road within a city, while requiring to follow the traffic signs and rules.

Difficulty may vary with complex traffic signs, roundabouts, and random obstacles.

Competitors must program a robot by building an algorithm that can guide the robot in the fastest time possible while following the rules. Line accuracy is not a relevant metric for this challenge.

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Drone Flying Tracks

The track has gates of alternating colors as checkpoints for competitors to have their drone fly through.

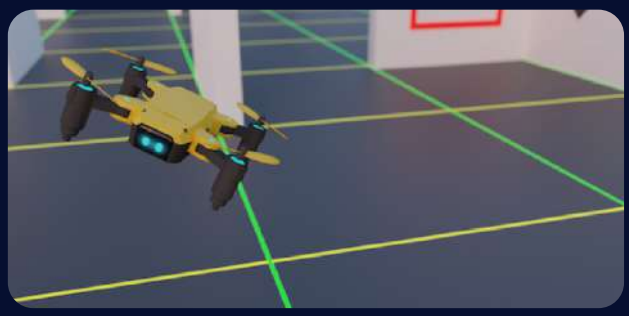
Difficulty may vary with the placement of gates as drone needs to search the track for the next checkpoint gate.

The main purpose is to complete the checkpoints of this multi-gate course in the fastest time possible.

The track has gates of alternating colors as signs that indicate the next gate's position according to their color and shape.

Competitors can use OpenCV image processing to determine the color of each gate in order to proceed to the next one accurately.

Competitors must build an algorithm that can guide the drone in the fastest time possible to finish all the checkpoints.



The track has obstacles that has guiding arrows and flashing red frames on the walls to guide the drone to finish the track.

Competitors must use image processing to recognize the direction of guiding arrow in order to follow the right path.

The obstacles spawn in random positions in each reset in order to make sure that an autonomous algorithm is used to finish the track.

Competitors must build an algorithm that can finish the track as quick as possible.

The track is a maze which is covered by walls around the drone.

Competitors must use image processing to recognize the surroundings and escape algorithms to figure out how to escape as quick as possible.

Difficulty may vary by adding traps and complex paths that makes it difficult to use standart methods.

Competitors must build an algorithm that can escape from the maze as quick as possible.

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References

Riders is being used by **9 universities** and **7 high schools** for classes, creating project groups and collaborating in between students.

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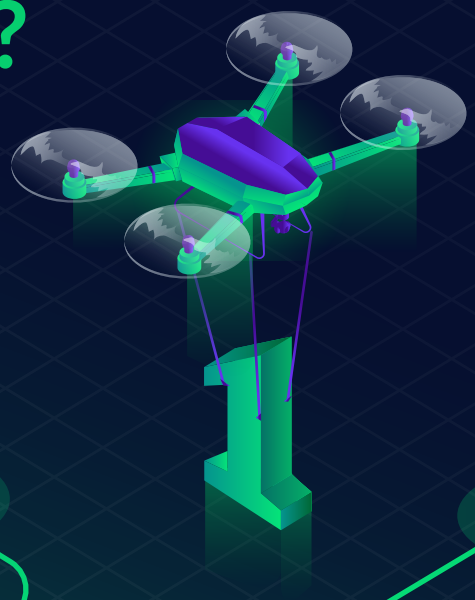
What Happened in a Year?



May'20
First Competition in Turkey

Oct'20
US Mini Competition

Nov'20
Maker Faire Rome

Jan'21
Riders Robotic League Kick-off

May'21

IEEE Student Branch Robofest Competition

Istanbul Metropolitan Municipality Robotics Education

BROCUP Robotics Competition

Teaching with Riders

Dogatech Riders: Introduction to Robotics
Schools are using the Riders platform for the introduction course curriculum prepared by Riders and Doga College.

Introduction to ROS (Robot Operating System)
Schools are using the Riders platform for Introduction to ROS Course prepared by Riders.

Doga College

Marconi High School

Rye Country Day School

İzmir University of Economics

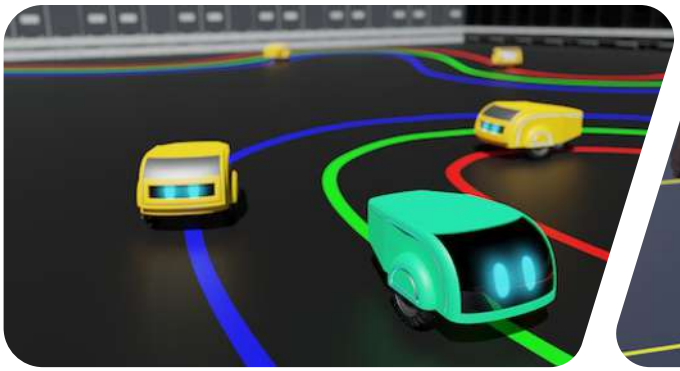
İstanbul Zaim University

SEEK Foundation

The University of Tennessee Chattanooga

Riders

Robotics League



Line Follower League

Drone Flying League

Statistics

Education Institutes
+16

Countries Served
+20

Daily Coding Hours
+31 hours

Website Visitors
+22K

Competitions
+15

Users
+5100

Riders Arena

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Riders Youtube Channel

Riders.ai

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