



RoboCup-Komitee Deutschland im European RoboCup Association e.V. ·  
Hochschulstraße 10 · c/o TU Darmstadt FG SIM D-64289 Darmstadt

# Call for Participation

## Studica Smart Farming Challenge at RoboCup German Open 2025

The future of agriculture will need autonomous intelligent farming robots to provide means to compensate diminishing workers. Additionally, autonomous robots will minimize pesticides, reduce fertilizer usage and enhance organic farming by better adapting to local situations on the field. The future of farming will be bright and full of robots and RoboCup will be a part of it.

### Goals

The goal of this competition is to introduce smart farming and the agricultural context to RoboCup. Additionally, this competition will provide a new challenge for intelligent autonomous mobile robots as teams need to adapt to a given robot in a short amount of time and with limited resources.

### Competition Environment

The competition will be held in an agricultural context. Consequently, teams need to prepare to detect (artificial) fruits, vegetables and disambiguate their ripeness. The crops will be either lying or hanging and need to be handled carefully to prevent damage. Additionally, the floor may be uneven and mimic properties of typical terrain of a field. Qualified teams will be required to use the provided Studica Smart Farming Robot Kit, which they can keep after the competition ends. This will provide the additional challenge of handling a previously unknown robot. However, teams are allowed to extend and modify the robot kit within the established @Work rules. The modifications are limited to swapping single servos or sensors, adding an embedded

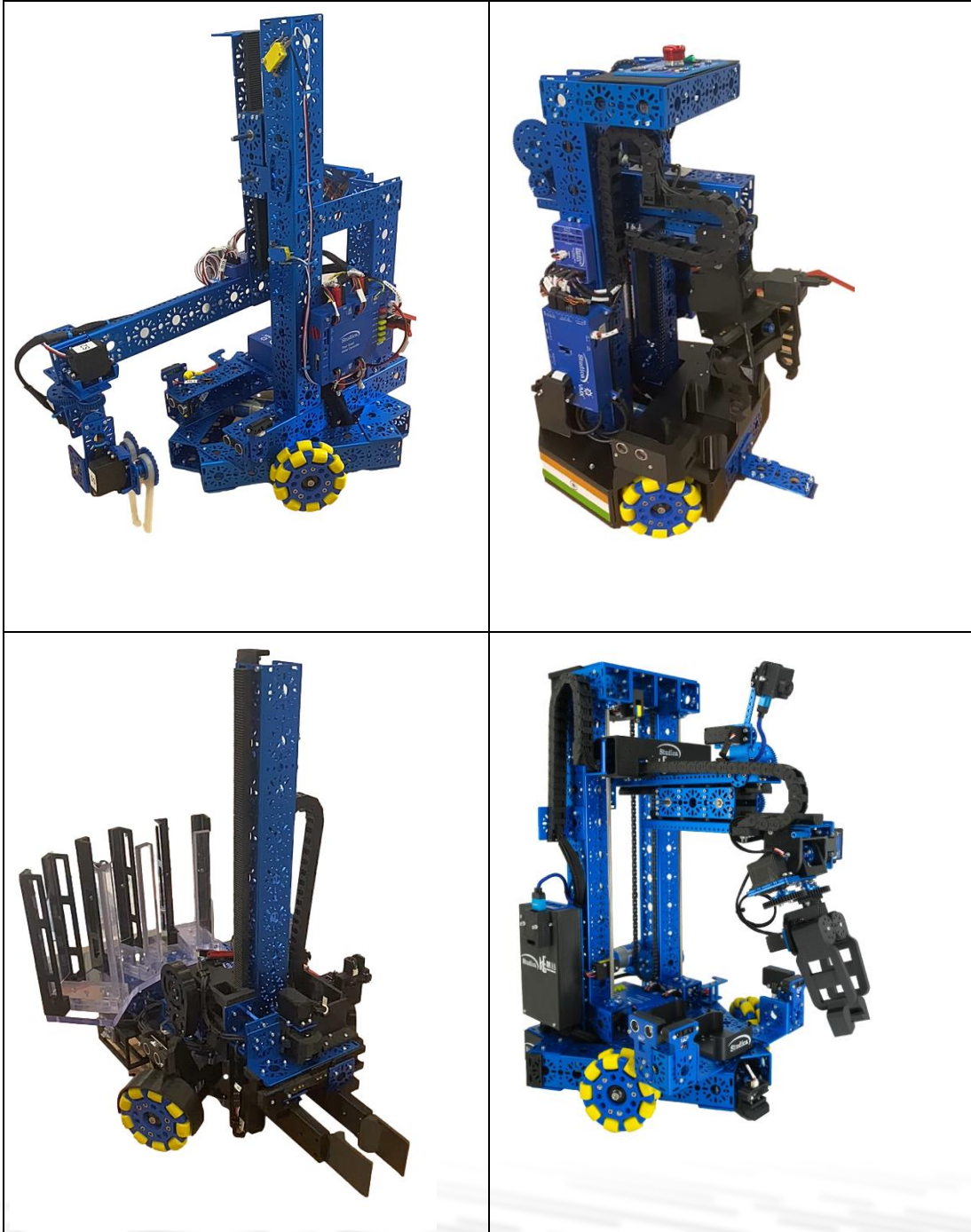
PC, as well as adding 3D-printed parts and acrylic cut-outs to adapt the robot to the tasks. The concrete limitations of these extensions are specified in the rulebook of the challenge. The robot is ROS2-compatible and the relevant software can be found here: <https://github.com/Studica-Robotics/ROS2> (available from Feb. 28<sup>th</sup>, 2025, on).

Prizes sponsored by Studica will be awarded to the top three teams: €1000 for first place, €500 for second, and €250 for third.

The Studica Smart Farming Robot Kit includes the following parts:



Here are some examples of assembled robots:





## Integration with RoboCup@Work League

This competition will be deeply integrated within the @Work League, offering several key benefits:

- The same arena is used.
- Tasks are similar to the transportation tasks of @Work.
- @Work teams may be asked for support and guidance during the competition.
- Challenge runs will be allocated close to the @Work tasks to enhance visibility.
- Challenge participants will be co-located with @Work to ease knowledge transfer and support regarding tools etc.

The competition will follow a modified and simplified version of the @Work Rulebook, which will be provided soon on the RoboCup German Open webpage.

## Participation

The competition is open for new teams as well as for registered RoboCup Teams of all Major Leagues, in parallel to the competition in their respective leagues. It will start on Wednesday, March 12<sup>th</sup>, and conclude with the finals on Sunday, March 16<sup>th</sup>, 2025. Each registered team may only participate with a team consisting of at most 4 persons in this challenge. Teams wanting to participate, but not yet registered as a Major league competitor at RoboCup German Open 2025 are also welcome.

Every team wanting to participate needs to register online as soon as possible through <https://robocup.de/sfc> and not later than **March 9**. The number of teams that can take part in this challenge is limited.