Modular robot user study

In this user study, you are challenged to find the best robot to reach two goals in an environment with obstacles. You have a maximum of 30 minutes to solve the task. If you believe you to have found the best solution before the time limit exceeds, you can stop early.

Your task:

- As soon as you start the user study, the task will be visualized
- Obstacles are highlighted in red, goals are marked as coordinate systems
- Your task is to select robot modules by entering them in the command line interface. The program will assemble them and evaluate whether the resulting robot is able to reach the goals
- A goal counts as reached if the end effector reaches the position with a tolerance of 1mm and the end-effector is pointing along the x-Axis (blue line) with a tolerance of pi/2 radian. (Colloquially speaking: The direction must only roughly be correct while the position requires more precision)
- After submitting your modules, the task visualization will show the robot in alternating poses, highlighting the closest you have gotten to both goal poses with your selection. All kinematic calculations are performed automatically for you.
- If your robot is able to to reach both goals, it will be assigned a cost – the best overall cost will be stored.
- The costs for a robot are composed as a sum of individual module costs. They indicate the mass of a module – you want to reduce the total mass in movement.

The module sheet:

- As additional material, you have gotten an overview sheet with all modules available
- Each module comes with an ID by which it can be selected for your robot
- The **base** and **gripper** modules will automatically be added to every configuration – you don't need to provide them
- There are 5 I-shaped and 4 L-shaped static links and one joint module. The rotation axis of the joint is indicated on the module sheet

Final Questions?

- The best robot is a robot that's able to reach both goals while being as lightweight as possible
- A robot can contain any number of identical modules
- Still unsure how it works? Start the study and enter a first module configuration, e.g. be entering "1, 13, 1, 13" and pressing enter