LEARNING FACTORY

SUMMER SCHOOL

LAYOUT and PROCESS PLANNING for HUMAN–ROBOT COLLABORATION

WHY?

The collaboration of robots and humans is a hot topic these days. Sometimes, it is a necessity for jobs that neither humans, nor robots alone could do at reasonable cost. In other cases, it is seen as an advantage that robots and humans complement each other with their different strengths and abilities. Whether just acting side-by-side, or actually working together on the same job, one thing is sure: in the future, many factories will employ robots and humans at the same workplace, and technology is already catching up with the newly discovered needs.

Human–robot collaboration has been in the focus of research for years. More and more collaborative robots—cobots—are now sold worldwide, and many of them have found their place in education. Yet, things get even more interesting when cobots and humans have to fit into a bigger picture of industrial production, with lots of other resources, processes and requirements around. Deploying cobots is going to change their environment, too, and the first steps of these changes will be mastered by the future production engineers who are just about to get their degrees in the next years. As leading research institutes, we encourage the future generation of engineers to develop their skills and mindset with hands-on experience in our state-of-the-art robot labs and learning factories.

WHAT?

If you are a master's student with backgrounds in automation, production or system engineering, you will find it thrilling to experience firsthand in what makes collaborative robots and humans fit meaningfully into industrial workplaces.

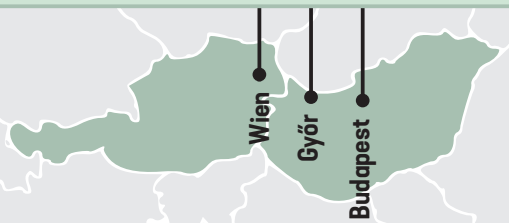
While this year's travel restrictions are likely to last well into the summer months, we still would like to give you as much hands-on experience as it is possible via remote participation. We will provide virtual tools and physical replicas to elaborate solutions with, we will build up your robotized workstation layout with real equipment, and a video link will show you how it works out in reality.

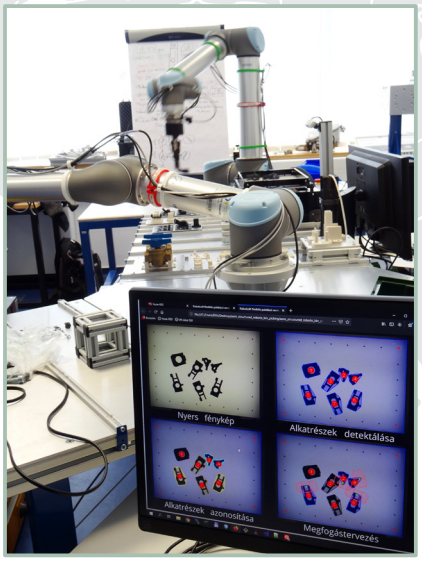
In our lectures, you will get acquainted with

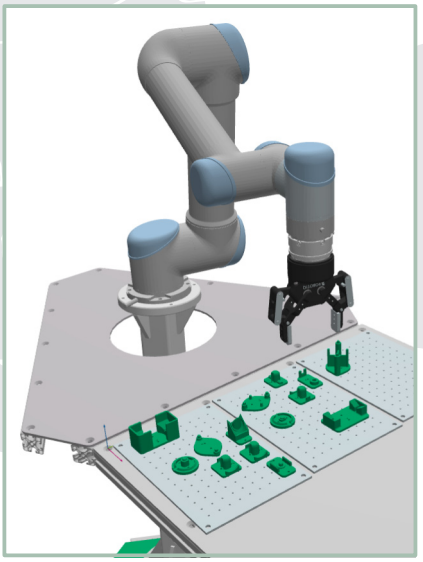
- Use of collaborative robots in production environments where humans are around and take part in the processes by design;
- Digital assistance systems that support workers in different production situations with the information they need, in a form that is just right to get them ahead in the process.

In hands-on work, you will get experience with

- Designing the layout and assembly process of a product by exploring alternatives in arrangement, assignment of resources and tasks at a collaborative workstation;
- Building, running and evaluating your layout and process choices in teamwork, and comparing the results of fellow teams in the summer school course.



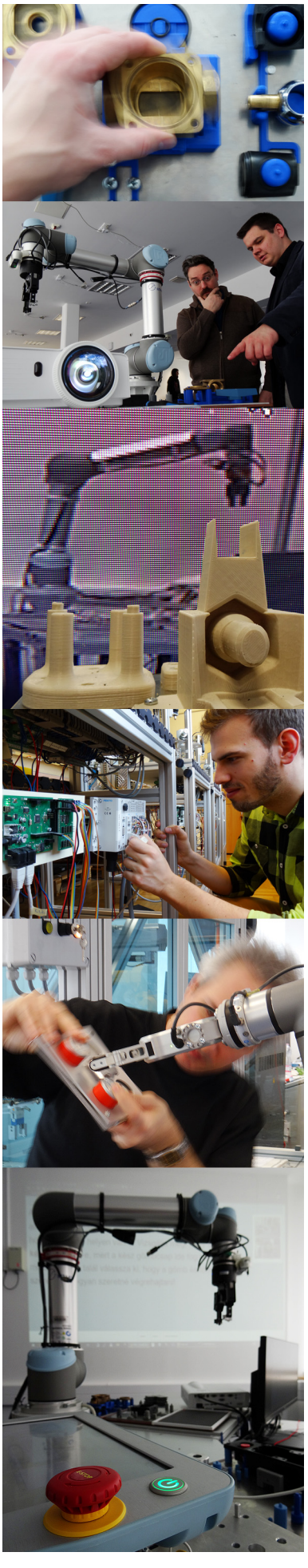




SCHEDULE AT A GLANCE

SUN JUN 28	MON JUL 26	TUE JUL 27	WED JUL 28	THU JUL 29	FRI JUL 30	SAT JUL 31
			Introduction and virtual lab tour at SZTAKI	Human–robot collaboration, robot programming basics	Remote tests with physical robots, Run 1	
			Getting familiar with the tasks to be solved	Layout and process planning basics	Introduction to digital assistance systems	

SUN AUG 1	MON AUG 2	TUE AUG 3	WED AUG 4	THU AUG 5	FRI AUG 6	SAT AUG 7
	Getting familiar with a digital worker assistance system	Virtual tour of the Pilot Factory in Vienna	Measured runs with physical robots	Hands-on experiments, open discussion, optional demonstrations		
	Remote tests with physical robots, Run 2	Rehearsal of built-up solutions with physical robots	Discussion, conclusions, outlook			



WHERE? WHEN?

Jointly organized by the leading research partners Fraunhofer Austria and SZTAKI, the virtual summer school is planned to take place between 28th July and 5th August, 2021. The program is prepared for remote attendance of groups of co-located students or individual participants. Lecture notes, supplementary materials and replicas of selected equipment will be sent out for preparation prior to the summer school program.

Lectures will be held by Fraunhofer Austria and SZTAKI. Solutions designed by participating students will be built up by our local teams, and tested with physical equipment located at SZTAKI's premises in Budapest and Győr. Students will observe the results via video link, and receive test data for final evaluation.

WHO CAN APPLY?

We are expecting the participation of 12–16 students (master's or equivalent), with backgrounds in industrial production, automation, robotics, and/or systems engineering. Applicants are asked to send us a CV with

- Preliminaries in education or other practical experience;
- Optionally, a summary of your motivation, briefly explaining why you would take this course and what you expect of its outcome for you;
- Optionally, a recommendation from your parent institution or employer.

FEE

The participation fee for the entire seven-day program is EUR 300.

This covers theoretical lectures, use of facilities and materials needed for the course, including the physical replicas of equipment which participants can keep after the course. If your application is accepted, you will receive more information on access to tools and remote services connected to the course, as well as payment instructions for the participation fee.

DATES

Deadline for applications:	28 May 2021
Notification of acceptance:	5 June 2021
Summer school course:	28 July–6 August 2021

CONTACT

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