ACROBA
connect & produce through agile production

D7.6 Report on the Hackathons WP7.

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History of Changes

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Introduction

The ACROBA project has actively engaged the academic and industrial communities through a series of hackathons across Europe. The "Acrobathons" contributed to disseminate the project outputs towards all targeted audience groups, to build a community around the ACROBA solution, and strengthen collaboration with the robotics DIH.

These events have provided platforms for students, professionals, and researchers to collaborate on innovative solutions in cognitive robotics, aligning with ACROBA's mission to revolutionize industrial automation.

This report provides an overview of the hackathons organized during the project lifespan.

1. Objective and target

The Acrobathons are largely inspired by the hackathons, these competition-style events where a project must be completed in a short time frame (typically 24 or 48 hours) and are designed to bring developers, designers, innovators, and other domain experts together to solve specific problems. Hackathons are inclusive, agile, multidisciplinary, and collaborative. They lead to shorter innovation cycles and hence are ideally suited to ensure that the ACROBA solution will be adopted and taken to the next level by the community.

The Acrobathons were thoughts as a mechanism to co-create the ACROBA platform thus increasing its excellence. They helped identify lacking features of the ACROBA solution and improve the modules of the platform. The Acrobathons runners were expected to address pressing real-life business challenges and build 'proof of concept' and a Minimum Viable Product for a specific predefined manufacturing problem identified as requiring an agile production solution. Each contest hence resulted in several functional basic applications of a robotic system powered under the ACROBA platform.

The target participants of the hackathons organized by ACROBA were engineering students. Researchers and experts were involved as mentors, as well as manufacturing companies (R&D engineers, start-up developers) as use case providers.

2. Initial plan and deviation

The original plan was highly ambitious: it included the organization of 11 mini-Acrobathons and 1 Master-Hackathon during the project lifespan. The mini-Acrobathons included:

- 8 mini-Acrobathons organized by consortium members
- 3 mini-Acrobathons organized by DIHs. DIH orchestrators would have to provide a use-case of agile production coming from a manufacturer of their region. Two DIHs will be supported by ROBOCOAST, and one by EMC2, with guidelines and meetings at their facilities two days ahead of the event to help to settle the details and promote ACROBA with a dedicated booth on site during the event. The DIH organizing the further 3 mini-hackathons will be selected on the bases of a call for expressions of interest that will include the capacity to provide SME industrial use case as basis for the mini-hackathon challenge.

As recommended by the Project Officer and the reviewers after the review meeting held at M27, the consortium partners have agreed on reducing the number of mini-Acrobathons initially planned (11) in order to redirect part of the dedicated budget and efforts towards activities that will target more directly potential users of the ACROBA solution. This deviation made it possible to ensure a participation of ACROBA in major events: the industrial fair Automatica 2023, the European Robotics Forum 2024 and the ROSConFr 2024. These alternative events are described into details in D7.7 Final Dissemination and Communication Plan.

According to this new action plan, the ACROBA consortium has delivered 5 mini-Acrobathons (DEUSTO, BFH, BIBA, SIGMA, IMR) and 1 master-hackathon involving 3 challenges (ROB, VICOM, BIBA). Altogether these events have gathered +150 participants.

3. Methodology

The mini-Acrobathons have been designed following a common framework. Dedicated tools were created to support the partners in the preparation of their mini-Acrobathon.

1. Hackathons Canvas

The hackathon Canvas is a template aimed to help Acrobathon organizors define the scope of their Acrobathon. It adresses all aspects of the organization of the event and its format is inspired by the business canvas. It provides a comprehensive overview of the Acrobathon organization:

- hackathon objectives
- challenge statement
- hackathon format (duration, scope, physical or online)
- profile of the expected attendees, constitution of the teams
- how to engage the attendees pre-event, during the event, and post-event
- key resources and partners (challenge owner, sponsors, jury, suppliers, etc)

Figure 1. Hackathon Canvas

2. Communication toolkit

A dedicated communication toolkit was created, including:
- A dedicated visual identity
- A hackathons-dedicated section on the ACROBA website:
    https://acrobaproject.eu/hackathons/
- Communication templates

WHY PARTICIPATE?

5 GOOD REASONS TO JOIN A HACKATHON BY ACROBA

An exciting mission:

A unique opportunity to contribute to the development of an AI-powered platform for agile manufacturing.

Work on a real platform/software:

Develop your programming skills (ROS based platform).

Learn about the challenges faced by manufacturing industries:

Discover real-world problem that the manufacturers are facing.

Build your network:

Engage with the best of European experts in robotics and AI and manufacturing engineering.

Become a player in the digitization of the manufacturing sector:

Contribute to accelerate the digitization and automation of the European manufacturing sector, and the competitiveness of the European industry.

HACKATHONS LOCATIONS

FIND YOUR HACKATHON

FRANCE	IRELAND
FINLAND	SPAIN
GERMANY	SWITZERLAND
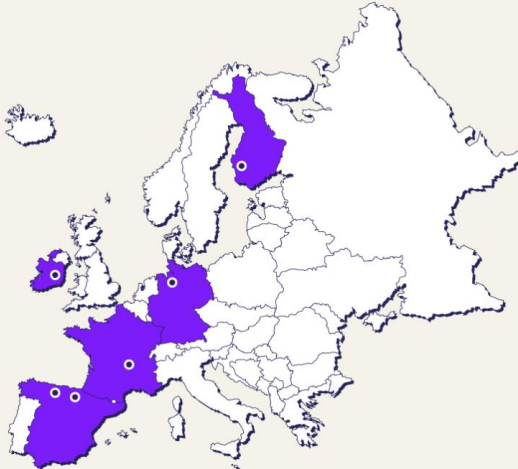
Figure 2. ACROBA hackathons-dedicated webpage

4. Overview of the mini-Acrobathons

1. DEUSTO hackathon (M22)

DEUSTO	
Webpage	https://acrobaproject.eu/hackathons/bilbao/
Article and Video	https://acrobaproject.eu/a-first-success-for-the-hackathons-by-acroba/
Date of the hackathon	15 December 2022
Duration of the hackathon	One week part-time
Agenda	12 December: presentation of the hackathon and challenge description. Team formation. Work on the challenge in teams. On their own and outside official timetable of classes. 15 December: Presentation of results by the teams and selection of the winners.
Location	Robotics Lab at the University of DEUSTO
Objective of your hackathon	To prove that is easy to create and integrate new skills through the platform, that the platform is open and extensible.
Related WPs	WP1
Challenge title	Enjoy robotics application development with the ACROBA platform
Target participants	Robotic Engineering students
Number of participants	24
Team formation: did you let the participants choose their team?	Yes, as students of the same career courses they have organized their groups

Comentado [JG1]: Page looks empty. Checked in Chrome and Edge

Did you have participants from external organizations?	We opened the call, but did not have external participants
Did you involve any consortium partner in the organization of your hackathon?	Yes, in the jury there was a Vicomtech representative
Did you involve any other stakeholder in your hackathon?	no
Technical aspects	
Which ACROBA modules did you use?	Basic platform
How many computers were available for the participants?	At least one for each group. All the equipment connected in a LAN
Please indicate the computers' configuration (processor, RAM, memory)	Quite powerful in this case. They are work stations for robotics applications: Intel Core i7-10700F 64 GB RAM 1TB SSD disk
Please indicate the operating system	Ubuntu 20.04 LTS
Who was in charge of the deployment of the platform on the computers?	Programming Lecturer
What type of UR did you use? How many did you have?	UR3e. We used 2, We currently have 4
What camera did you use?	No camera was used
What gripper did you use?	On Robot gripper for UR (https://onrobot.com/es/productos/pinza-rg2)
Event programme	
How did you train the participants on the platform? Did you organize a	They self learned. Having the platform up and running is one command line, explained in the

specific workshop? Did you provide any tutorials?	documentation. Python programming and ROS are part of the contents in our « programing for robotcis course »
Did you have mentors available? Were they familiar with the ACROBA platform?	No
Presentation of the projects	5-10 minutes presentation by each group
Please describe your evaluation procedure	Jury evaluates: Difficulty, originality and correct execution
Jury members	Ignacio Angulo, Head of Computers, Electronic and Communication Technologies Department, University of Deusto
Ignacio Fidalgo, Robotics Lecturer and Researcher, University of Deusto
Marko Ojer, Robotics Researcher, Vicomtech
Outputs	
How many solutions were developed as part of the hackathon?	One different task involving two robots working together per group
Winning project *Please explain why this project was selected*	It worked properly, was very original, and the difficulty of programming was bigger than in other solutions
Prize	4 kits of NVIDIA-based-ROS-powered Jetson robots
Are the solutions exploitable in one way or another for the future developments of ACROBA?	No. They are original final tasks for certain applications.

Figure 3. DEUSTO Hackathon

2. BFH hackathon (M39)

BFH	
Webpage	https://acrobaproject.eu/hackathons/bfh/
Date of the hackathon	14.03.2024, 21.03.2024
Duration of the hackathon	2 days
Location	I3S Lab, Burgdorf
Objective of your hackathon	ACROBA "Planning" Hackathon @ BFH The goal of the hackathon will be to implement some PDDL planners to resolve the following "color matching problem": **Initial State** • some rings of different colors are randomly disposed on the table slots • some cylinders of the same colors are also randomly fit into some available rings on the table. **Final State** • all rings which were placed on the table slots should be assembled with a cylinder of the matching color. Task Description A PDDL Solver has to be implemented (in python) in the **bfh cell config**
Related WPs	WP2
Challenge title	Taskplanning challenge
Target participants	Bachelor students
Number of participants	8
Team formation: did you let the participants choose their team?	yes

Did you have participants from external organizations?	no
Did you involve any consortium partner in the organization of your hackathon?	vicomtech
Did you involve any other stakeholder in your hackathon?	no
Technical aspects	
Which ACROBA modules did you use?	ACROBA Platform, TP, Skills
How many computers were available for the participants?	20
Please indicate the computers' configuration (processor, RAM, memory)	64Go Ram, 16 cores, AMD Ryzen, RTX 2080
Please indicate the operating system	Linux
Who was in charge of the deployment of the platform on the computers?	BFH
What type of UR did you use ? How many did you have?	Ur5e, 2
What camera did you use?	Zivid
What gripper did you use?	Robotiq 2f 85
Event programme	
How did you train the participants on the platform? Did you organize a specific workshop? Did you provide any tutorials?	Half day tutorial before the hackathon
Did you have mentors available? Were they familiar with the ACROBA platform?	**2**

Presentation of the projects	Each team should run their code on the bfh cell live.
Please describe your evaluation procedure / criteria	The team with a planner that achieves the correct assembly of the cylinders in the shortest time wins.
Jury members	Baier Norman, Cavazzana Laurent
Outputs	
How many solutions were developed as part of the hackathon?	2
Winning project *Please explain why this project was selected*	It was a close match, the planner that won performed better.
Prize	3D printer
Storage of the solutions	Github, cell config bfh
Are the solutions exploitable in one way or another for the future developments of ACROBA?	yes

Figure 4. BFH hackathon

3. BIBA hackathon (M40)

BIBA	
Webpage	https://acrobaproject.eu/hackathons/bremen/
Date of the hackathon	25th and 26th April 2024
Duration of the hackathon	2 days from 10 am to 5 pm
Agenda	DAY 1 (25th March 2024) 10:00 – 10:30 Introduction, presentation of the hackathon and challenge description 10:30 – 11:00 Team Formation 11:00 – open Work on the challenge in teams DAY 2 (26th March 2024) 10:00 – 13:00 Work on the challenge in teams 14:30 – 17:00 Presentation of results by the teams and selection of the winner.
Location	BIBA, Bremen, Germany
Objective of your hackathon	Improving human-robot collaboration & interaction. Getting fresh ideas for human-robot interaction analysis. Getting skills for ACROBA platform. Getting software artefacts which can be integrated into ACROBA platform modules.
Related WPs	WP2, WP3, WP7
Challenge title	A) Develop a solution for flexible human-robot object overhanding with IR tracking system.

	or
	B) Develop a solution for human intention recognition with IR tracking system.
Target participants	Bachelor or Master students from engineering, computer science, mathematics or similar.
Number of participants	8
Team formation: did you let the participants choose their team ?	Participants have chosen their groups
Did you have participants from external organizations?	University of Bremen HSB City University of Applied Science (Hochschule Bremen Bremerhaven)
Did you involve any consortium partner in the organization of your hackathon?	BIBA, EMC2
Did you involve any other stakeholder in your hackathon?	Mittelstand Digital Zentrum Bremen Oldenburg
Technical aspects	
Which ACROBA modules did you use?	HRC Toolkit
How many computers were available for the participants?	They used their own laptops for programming etc. and one master PC was running with platform etc.
Please indicate the operating system	Ubuntu
Who was in charge of the deployment of the platform on the computers?	BIBA ACROBA team
What type of UR did you use? How many did you have?	One Universal Robot UR10e was available for the Hackathon
What camera did you use?	None. But Vive Lighthouse tracking system

What gripper did you use ?	Schunk CoAct

Event programme	
How did you train the participants on the platform ? Did you organize a specific workshop ? Did you provide any tutorials ?	Platform was setup by the BIBA ACROBA team, students got information about ROS/Python for preparation (public tutorials from internet)
Did you have mentors available? Were they familiar with the ACROBA platform ?	BIBA ACROBA team members
Presentation of the projects	Live demonstration
Please describe your evaluation procedure	Live demonstration by the groups, Q&A, Code review. Evaluation criteria: Technical complexity, Solution originality, Software quality, Presentation.
Jury members	BIBA ACROBA team members

Outputs	
How many solutions were developed as part of the hackathon?	3
Winning project *Please explain why this project was selected*	Flexible Human-Robot-Overhanding
Prize	Raspberry Pi 5 8GB Bundles and Vouchers
Storage of the solutions	BIBA internal project server. Solutions will be review/optimized by BIBA ACROBA team and provided as skills on Github later.
Are the solutions exploitable in one way or another for the future developments of ACROBA?	Solutions will be review/optimized by BIBA ACROBA team and provided as skills on Github later.

Figure 5. BIBA Hackathon

4. SIGMA hackathon (M41)

SIGMA	
Webpage	https://acrobaproject.eu/hackathons/clermont-ferrand/
Date of the hackathon	06th May 2024
Duration of the hackathon	1 day
Agenda	8AM-5PM
Location	SIGMA Clermont robotic lab
Objective of your hackathon	Continue the work done during lectures given at Sigma, where students learned how to use ACROBA Platform. Solving of a new robotic challenge
Related WPs	WP2 - WP7
Challenge title	Detection and pick & place of colorful object
Target participants	SIGMA students
Number of participants	16 (4 teams of 4)
Team formation: did you let the participants choose their team?	The teams were imposed by balancing the level of the students
Did you have participants from external organizations?	No
Did you involve any consortium partner in the organization of your hackathon?	No
Did you involve any other stakeholder in your hackathon?	No
Technical aspects	
Which ACROBA modules did you use?	Platform + Perception & Control Module
How many computers were available for the participants?	8 + 1

Please indicate the computers' configuration (processor, RAM, memory)	Various as it was student's laptop, + my own laptop (Linux, Ubuntu 20.04, Intel® Core™ i7-9850H CPU, NVIDIA Quadro T1000 Mobile GPU, 32Gb RAM)
Please indicate the operating system	Linux / Virtual machines
Who was in charge of the deployment of the platform on the computers?	Platform was deployed only 1 laptop used by all the groups to assess their final demonstration. I did the deployment and just taught students how to use it
What type of UR did you use? How many did you have?	Four UR 3e
What camera did you use?	Intel Real-sense D435
What gripper did you use?	Onrobot 2fg7. Not integrated in the platform, it was controlled through UR proprietary interface (Polyscope)
Event programme	
How did you train the participants on the platform? Did you organize a specific workshop? Did you provide any tutorials?	Students were trained on different subjects during previous lectures held since the beginning of the year: - python / C++ programming - ROS concepts - URDF representation and MoveIt Configuration - perception and control module architecture - primitives & skills development - platform usage
Did you have mentors available? Were they familiar with the ACROBA platform?	I was available for the students during the whole event, trying to split equally my help between groups
Presentation of the projects	- Integration of Intel Real-sense D435 camera adding it to the cell representation, usage of its ROS driver, getting familiar with RGB-D cameras

|	
	- Integration of a new primitive to detect ArUco markers: testing of a pre-programed primitive, with ArUco markers placed on the cell
	- Development a new primitive, to detect colorful objects in the scene (color filtering using OpenCV library
	- Development a new primitive, to obtain the 3D pose of the object, using the previously filtered image and camera depth information
	- Final challenge:
	Creation of a complete task using all available and developed primitives to detect in a specific order a red, green, and blue objects, grasp them, and place them alternatively above specific ArUco markers.
Please describe your evaluation procedure	No fixed criteria, evaluation of global work, presentations of the demonstrations and written report provided after the event
Jury members	Youcef Mezouar; Mohammad Alkhatib; Erol Ozgur Bastien Mourin
Outputs	
How many solutions were developed as part of the hackathon?	Each group had their demonstration solving the challenge.
Winning project *Please explain why this project was selected*	One group demonstration was slightly more advanced than the other. However, we decided to elect the winners not by group but individually.
Prize	DJI mini 2 SE drone and USB keys
Storage of the solutions	Code snapshots in students report
Are the solutions exploitable in one way or another for the future developments of ACROBA?	Not really as I already developed a solution to answer the proposed challenge, in order to test it and help students when they were stuck during the event.
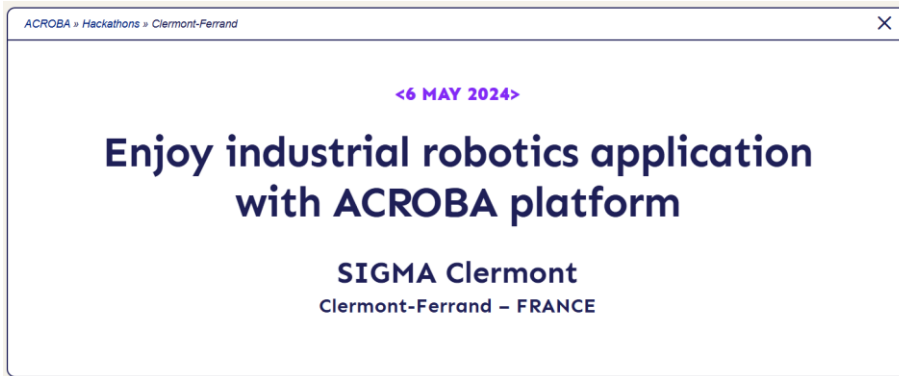
Figure 6. SIGMA Hackathon

5. IMR hackathon (M46)

IMR	
Webpage	https://acrobaproject.eu/hackathons/dublin-2/
Date of the hackathon	15th October 2024
Duration of the hackathon	One day event
Agenda	Industrial Assembly Manipulation
Location	Mullingar facility
Objective of your hackathon	Assessing flexibility of ACROBA
Related WPs	WP3, WP7, and WP8
Challenge title	Agile Assembly Challenge
Target participants	Robotics Researchers
Number of participants	15
Team formation: did you let the participants choose their team?	Yes
Did you have participants from external organizations?	Yes
Did you involve any consortium partner in the organization of your hackathon?	Yes, Part of the mega-hackathon with RoboCoast
Did you involve any other stakeholder in your hackathon?	No
Technical aspects	
Which ACROBA modules did you use?	Platform, skills and primitives from WP2, and Agile Cells from WP3
How many computers were available for the participants?	3
Please indicate the computers' configuration (processor, RAM, memory)	Intel i7, 16 GB, 1 TB, RTX 2000 Quadro
Please indicate the operating system	Linux

Who was in charge of the deployment of the platform on the computers?	IMR Engineers
What type of UR did you use? How many did you have?	KUKA Indutrial robot KR3
What camera did you use?	Intel RealSense D435i
What gripper did you use?	OnRobot RG2
Event programme	
How did you train the participants on the platform? Did you organize a specific workshop? Did you provide any tutorials?	We expect they basic understanding of ROS and robotics but on the day of hackathon, they will be given a demon on how to use ACROBA
Did you have mentors available? Were they familiar with the ACROBA platform?	Yes; prior to this hackathon, no
Presentation of the projects	Available
Please describe your evaluation procedure	7 different metrics are used, as described in shared doc
Jury members	3
Outputs	
How many solutions were developed as part of the hackathon?	5 expected
Winning project *Please explain why this project was selected*	Explained in detail in another deliverable?
Prize	Perx cards
Storage of the solutions	ACROBA Shared Drive
Are the solutions exploitable in one way or another for the future developments of ACROBA ?	Yes

Figure 7. IMR Hackathon

5. ACROBA mega-hackathon (M46)

This series of hackathons organized by ACROBA culminated with the organization of a Mega-Hackathon by ROBOCOAST, VICOMTECH and BIBA in M40. BFH was also contributor to this event.

This 2-day hackathon took place on October 15-16, 2024, at the Satakunta University of Applied Sciences (SAMK) in Pori, Finland. Participants were challenged to create innovative IT solutions while fostering collaboration between diverse teams.

The event attracted a total of 63 participants with diverse backgrounds. Here are some statistics about the participants:
  - 8 universities from 4 different countries represented:
    o Satakunta University of Applied Sciences (Finland)
    o Vaasa University (Finland)
    o Tampere University (Finland)
    o Jyväskylä University (Finland)
    o Tecnun Universidad de Navarra (Spain)
    o University of Bremen (Germany)
    o Universitas Mercatorum (Italy)
    o University La Sapienza (Italy)
  - Different fields of expertise represented:
    o AI
    o Data Engineering, Data Science
    o Robotics
    o Mechatronics Engineering
    o Computer Science
    o Electrical Engineering
    o Industrial technology engineering
    o Mathematics
    o Machine learning
    o Smart manufacturing

Three different challenges related to ACROBA were proposed in the hackathon:

- Challenge 1 led by ROB and BFH : "Gripper design and manufacturing"
- Challenge 2 led by VICOM : "Validate robotic solutions in simulated industrial process in the Virtual Gym"
- Challenge 3 led by BIBA : "Installation and Integration of ACROBA platform and third party modules"

BFH / ROB challenge "Gripper design and manufacturing"	
Date of the hackathon	15-16.10.2024
Duration of the hackathon	2 days
Location	Satakunta University, Pori
Objective of your hackathon	Gripper design and manufacturing
Related WPs	WP1, WP2, WP5, WP8
Target participants	Bachelor & Master students
Number of participants	15
Team formation: did you let the participants choose their team ?	yes
Did you have participants from external organizations?	yes
Did you involve any consortium partner in the organization of your hackathon?	yes
Did you involve any other stakeholder in your hackathon?	yes
Technical aspects	
Which ACROBA modules did you use?	Platform, basic skills

How many computers were available for the participants?	Participants laptops, 12.
Please indicate the computers' configuration (processor, RAM, memory)	n.a. heterogenous configs
Please indicate the operating system	Linux, or WSL
Who was in charge of the deployment of the platform on the computers?	BFH Script
How much time did it take to install the platform on the computers?	2h max
What type of UR did you use? How many did you have?	UR5e
What camera did you use?	none
What gripper did you use?	Robotiq 2f 85 with own fingers
Did you experience any challenge with the installation and parameters of the drivers?	Yes, integration of design gripper fingers in cell config
Event programme	
How did you train the participants on the platform? Did you organize a specific workshop? Did you provide any tutorials?	Tutorial at the beginning of the hackathon
Did you have mentors available? **Were they familiar with the ACROBA platform?**	no
Presentation of the projects	Each group prepare a 3mins speech to present their work and results
Please describe your evaluation procedure	Each jury members voted on several criterias on each group.

Jury members	Vicomtech (Marco, Xiao), BIBA (Xied, Aaron), BFH (Laurent)
Outputs	
How many solutions were developed as part of the hackathon?	1 per group
Winning project *Please explain why this project was selected*	Gripper fingers were carefully designed to be able to grasp pieces in packed boxes, as well as to have precise regrasping. The Solution was chosen to be used in Ensto AOSL.
Prize	Perx Cards
Are the solutions exploitable in one way or another for the future developments of ACROBA?	The winner solution was used in Ensto AOSL.

VICOMTECH challenge "Validate robotic solutions in simulated industrial process in the Virtual Gym"	
Date of the hackathon	15th-16th October
Duration of the hackathon	2 days
Location	Pori, Finland
Objective of your hackathon	Validate robotic solutions in simulated industrial process in the Virtual Gym
Related WPs	WP1 WP2 WP8
Target participants	University students
Number of participants	15
Team formation: did you let the participants choose their team?	yes

Did you have participants from external organizations?	yes
Did you involve any consortium partner in the organization of your hackathon?	Yes, partners from BIBA and BFH are in the jury
Did you involve any other stakeholder in your hackathon?	No
Technical aspects	
Which ACROBA modules did you use?	Virtual Gym, ACROBA architecture
How many computers were available for the participants?	5
Please indicate the operating system	Windows
Who was in charge of the deployment of the platform on the computers?	Xiao Lin and Marco Ojer
What type of UR did you use? How many did you have?	UR5 in the virtual simulation
What camera did you use?	Zivid one plus in the virtual simulation
What gripper did you use?	Onrobot RG2 in the virtual simulation
Event programme	
How did you train the participants on the platform? Did you organize a specific workshop? Did you provide any tutorials?	Yes, we released the hackathon package one week before the event day, which includes a detailed instruction document, the virtual environment and sample codes with step-by-step comments and a video to demonstrate the process. The first day of the event, we organized a tutorial workshop to the attendees.
Did you have mentors available?	Yes, Xiao Lin (VICOMTECH) and Marco Ojer are the mentors during the whole process.

Were they familiar with the ACROBA platform?	Yes, they are developers from WP2.
Presentation of the projects	A pitch session, 10 min presentation per group
Please describe your evaluation procedure	Scores (1-5) were given with respect to the following aspects: 1. Relevance 2. Creativity andsolution originality 3. Technical complexity 4. Functionality 5. Scalability 6. Design 7. Presentation and pitch.
Jury members	Xiao Lin, Marco Ojer, Aaron Heuermann, Cavazzana Laurent, Zied Ghrairi
Outputs	
How many solutions were developed as part of the hackathon?	5
Winning project *Please explain why this project was selected*	The winning project provides a complete solution for the pick, regrasp and assembly process, which involving object localization algorithm based on multi-modal information, grasping pose analysis based on the estimated 6D object poses, control of the robot, trajectory planning.
Prize	Perx Card
Storage of the solutions	Owned by the attendees
Are the solutions exploitable in one way or another for the future developments of ACROBA?	The virtual scene was prepared on top of a problem in the real industrial process of our ACROBA Onsite Lab. The developed algorithms during the hackathon can be further improved to be integrated in the ACROBA Onsite Lab solution for ENSTO.

General comments

We were preparing the installation on laptops with low specs (Core i5, 16GB ram, without graphics card), where the fidelity of the simulation was affected whcih causes unstable graspings. The issue was addressed by using laptops with independent GPU.

BIBA challenge "Installation and Integration of ACROBA platform and third party modules"

Date of the hackathon	15-16.10.2024
Duration of the hackathon	2 days
Agenda	**Tuesday 15 Okt.**
	10:00 — Welcome
	10:30 — Introduction to ACROBA (common 3 tracks)
	11:00 — Team build - ice breaker
	11:30 — 3 challenges presentation
	12:00 — Lunch
	13:00 — Task projects
	18:00 — Evening program, supper
	Wednesday 16 Okt.
	7:30-9:00 — Tasks continue
	11:00 — Pitching coaching
	12:00 — Lunch
	13:00 — Tasks continue
	14:00 — Pitching session
	15:30 — Winners
	16:00 — Hackathon ends
Location	Satakunta University, Pori
Objective of your hackathon	Development of tools and mechanisms enabling the integration and deployment of ACROBA Platform
Related WPs	WP1, WP2, WP7, WP8

Challenge title	Installation and Integration of ACROBA platform and third party modules
Target participants	Bachelor & Master students
Number of participants	17
Team formation: did you let the participants choose their team?	yes
Did you have participants from external organizations?	yes
Did you involve any consortium partner in the organization of your hackathon?	yes
Did you involve any other stakeholder in your hackathon?	yes
Technical aspects	
Which ACROBA modules did you use?	Platform
How many computers were available for the participants?	8
Please indicate the computers' configuration (processor, RAM, memory)	N/A
Please indicate the operating system	Windows/WSL, Linux
Who was in charge of the deployment of the platform on the computers?	students
How much time did it take to install the platform on the computers?	Depends on the adopted approach of the participants (students)
What type of UR did you use? How many did you have?	no
What camera did you use?	no

What gripper did you use?	no
Event programme	
How did you train the participants on the platform ? Did you organize a specific workshop? Did you provide any tutorials?	Yes, tutorial at the beginning of the hackathon
Did you have mentors available? Were they familiar with the ACROBA platform?	Yes, BFH team
Presentation of the projects	Each group prepares a 3mins speech to present the achieved work and results
Please describe your evaluation procedure	Each jury members voted on several criteria on each group.
Jury members	Vicomtech (Marco, Xiao), BIBA (Zied, Aaron), BFH (Laurent)
Outputs	
How many solutions were developed as part of the hackathon?	1 per group
Winning project *Please explain why this project was selected*	An easy-to-use wizard for the installation of the platform. All required conditions are verified and addressed in the background without involving the end-user.
Prize	Perx Cards
Storage of the solutions	All the developed solutions have been uploaded on GitHub
Are the solutions exploitable in one way or another for the future developments of ACROBA?	Sure, some of the solutions are providing supporting mechanisms for an easy integration and deployment of ACROBA on the future.

Are you ready for the NEXT LEVEL? Join the Robotics Hackathon!

Are you passionate about robotics and innovation?

Do you have what it takes to create the next big tech breakthrough?

How can the ACROBA robotic system transform an SME production site to be more agile, and what fresh perspectives can be applied to marketing, distribution strategies, and pricing models (e.g., freemium, SaaS, one-time) during the hackathon?

Now's your chance! We invite you to join the NEXT LEVEL Robotics Hackathon at SAMK!

Whether you're passionate about robotics, mechatronics, economics, or marketing, this is your opportunity to team up with top minds, solve real-world challenges, and compete for multiple prize categories—worth a total of 4500€! You'll have the chance to win amazing prizes across various tracks, making this an exciting opportunity to showcase your skills and creativity.

Register Here

Event Details:

📅 Date: 15-16.10.2024

📍 Location: SAMK Campus Pori

Why should you participate?

• Collaborate with talented minds and industry experts

• Innovate with cutting-edge robotics technology and Business Strategies

• Compete for amazing prizes and recognition

• Learn from leaders through hands-on workshops and mentorship

Whether you're a beginner or a pro, this hackathon is for everyone. Plus, you can join as an individual or with a team!

🚀 Ready to level up?

Check out the exciting challenges:

• Material handling in virtual and real worlds

• Gripper design and manufacturing

Innovative Business Models

• Development of new robotic systems for food industry

• Robotic solution for the food industry

Don't miss this chance to showcase your skills and creativity!

For more information and registration, go to this website.

We want you to be the future of robotics!

Looking forward to seeing you at the hackathon!

The Mega-hackathon was a success as illustrated by the multiple participants' testimonies on the social media.

Hasan Ali · 2nd
Mechanical Engineer | Master in petroleum & Gas process Engineering |Master in I...
2mo · 🌐

I had an incredible time participating in the recent Robotics Hackathon on the 15th and 16th of October! Our team tackled the challenge of developing an Installation and Integration Wizard for a novel robotic platform, aimed at simplifying the installation process for users of both Windows and Linux. With the use of ROS and Python, we created a solution that automates the download and installation of missing components in the background, making the process seamless for third-party modules.

Throughout the hackathon, we got hands-on experience with advanced robotics applications in both the virtual and real world. It was a thrilling challenge that allowed us to explore different domains:

Material handling with UR robots and the ACROBA platform.

Gripper design and manufacturing, tested in both simulated and physical environments.

Real-world problems in the food industry, where robotics can be a game-changer.

A huge thank you to the amazing team at ACROBA for organizing this event and pushing us to expand our knowledge. Special shoutout to Tomi Juha-Pekka Alanen and Kati Nordlund for their support throughout the process! 🙌

#Robotics #ROS #Python #Hackathon #Innovation #Automation #URRobots #ACROBA #RoboticSolutions #Teamwork
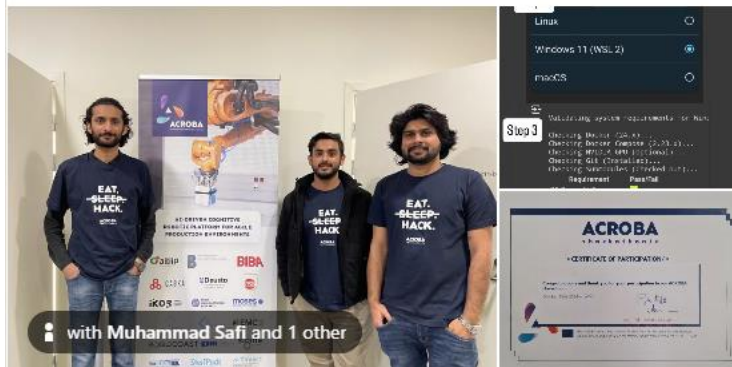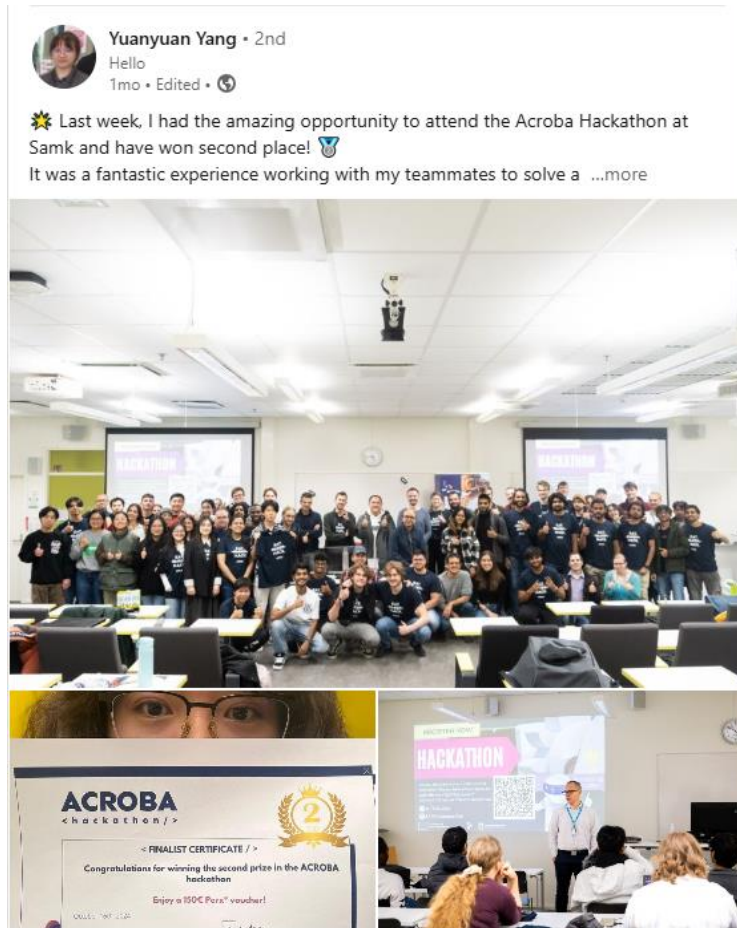
Ane Moraza Azpiazu • 2nd
Estudiante de Máster en Ingeniería Industrial
1mo • Edited • 🌐

I am excited to share that my team, including Antonio Tammaro, William Silipo and I, won the ACROBA project Hackathon in Finland on October 15-16!

We were challenged to develop solutions in a virtual environment simulating an industrial manufacturing process. This involved automating tasks like object localization, grasping and robot control, all using Python and ROS.

Huge thanks to the ACROBA Project organizers for the great experience, and to Vicomtech for giving me the opportunity to participate. I learned so much along the way ! #Vicomtech #ACROBA #SAMK #PRIZZTECH #ROBOCOAST #ROBOTICS #HACKATHON

Jonaid Shianifar • 3rd+
PhD Researcher in Computer Science
2mo • Edited • 🌐

🎉 Excited to share that Puru Rastogi and I secured 1st place at the ACROBA project Hackathon 2024! 🏆🥇

We tackled an industrial-grade bin-picking challenge at Irish Manufacturing Research (IMR), fine-tuning robot parameters and optimizing performance in a collaborative robotics environment. It was an incredible experience working with cutting-edge robotics technologies like the UR5 robot and Zivid camera, enhancing object detection and grasping capabilities.

A huge thank you to my teammates, the event organizers, and all the mentors who provided guidance throughout the hackathon. This experience has deepened my understanding of industrial robotics and automation, and I'm looking forward to applying these learnings in my ongoing PhD research at the University of Galway. Also, thanks to Dr. Philip Long , Dr. Karl Mason and Dr. Michael Schukat for suggesting that I attend this hackathon and supporting me.
Special shout-out to Sunny Katyara and Court Edmondson for their support and contributions!

#Robotics #Automation #Hackathon #FirstPlace #CollaborativeRobots #Innovation #IMR #UR5 #ROS #PhDlife

👏❤️ You and 56 others   17 comments • 3 reposts

Norman Urs Baier · 1st
Coordinator at ACROBA project
2mo · 🌐

Students presenting their results from the Hackathon in the ACROBA project.
Great thanks to all participants and Robocoast EDIH for organising.

Petri S. · 2nd
Coordinator @ University of Jyväskylä | Master of Science in Cognitive Science | Ba...
2mo · 🌐

It was a pleasure to attend the joint event hosted by ACROBA project
and Robocoast EDIH yesterday in Pori. The event provided valuable insights into
the cognitive robotic system that Acroba is developing, and I also had the chance to
reconnect with colleagues from Prizztech Oy. Many thanks to the event
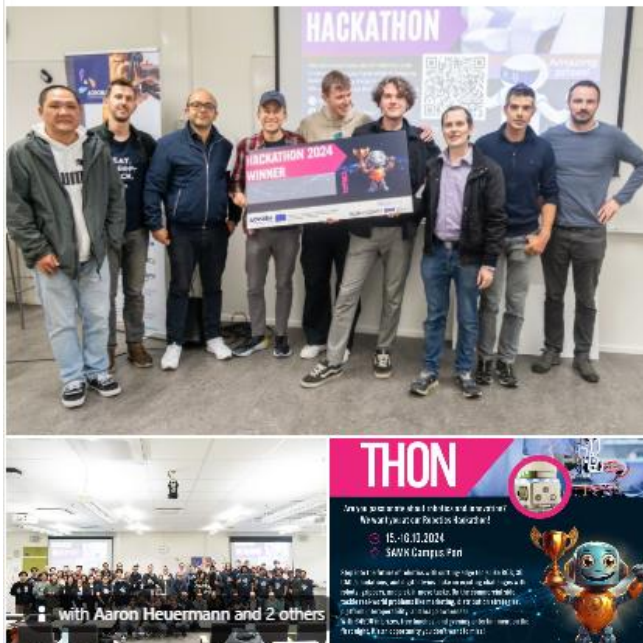organizers! Kati Kiljunen Pirita Ihamäki PhD., M.Sc. Juha-Pekka Alanen

Figure 8. ACROBA mega-hackathon

Conclusion

The organization of a series of hackathons within the ACROBA project has been an effective way to encourage collaboration and innovation around the ACROBA solution.

These events allowed participants from various disciplines to address practical challenges while exploring the ACROBA technology. By fostering teamwork and creative problem-solving, the hackathons contributed to the project's goals and provided valuable insights into potential applications of ACROBA's solutions. This approach illustrates the benefits of collaborative events in advancing both technical progress and community engagement within the robotics field.