



Rules and Guidelines

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1. Event name: Simuthon (edition 2023)
2. Event webpage: <https://simuthon.com>.
3. Organizer: Oprogramowanie Naukowo-Techniczne sp. z o.o.
4. Co-organizers: The MathWorks Inc., Aptiv Services Poland S.A.
5. Purpose / Topic: Simuthon is a competition dedicated to modeling and simulation - it is addressed to students and enthusiasts of the latest technologies in the indicated areas. The competition is embedded in the Automotive industry, in the field of autonomous driving, where modeling and simulation play a key role in the process of designing modern solutions, allowing for significant savings, avoiding many errors in the later stages of design and optimal cooperation between teams responsible for individual components.
6. Date: December 1-2, 2023
7. Place: The hackathon will take place in an stationary form which will take place in the Novotel Krakow City West, at Armii Krajowej 11 Street in Krakow.
8. Program: The program of the event can be found on the <https://simuthon.com/>
9. Rules of the competition:
 - 1.1. A team can have minimum 2 and maximum 4 members. If there are any changes in the team structure, the application form for the competition must be resubmitted and an e-mail about the same should be dropped to contact@simuthon.com
 - 1.2. By applying yourself, you agree to be assigned to a random team by the Organizers.
 - 1.3. A participant may be a member of only one Team.
 - 1.4. Participants are required to behave in a manner that does not endanger the safety of other people, and in particular to comply with the provisions of the facility and event regulations.
 - 1.5. It is forbidden to bring and possess by the Participants weapons or other dangerous objects, explosives, pyrotechnic products, fire-hazardous materials, narcotic substances or psychotropic substances.
 - 1.6. Each participant will receive a wristband from the Organizer, during the registration process, in an event place, and is obliged to wear it throughout the duration of the event, in the place, visible to the Organizer (or is obliged to present it each time at the Organizer's request), throughout the duration of the event. The lack of a wristband entitles the Organizer to remove the Participant from the event area. The participant cannot transfer the wristband to another person.
 - 1.7. In exceptional situations, the organizer reserves the right to extend the time of the event.
 - 1.8. The winners can be selected by the organizer, not just the scoring system.
 - 1.9. Due to the current restriction, the organizer has to right to refuse the participate in the event.
10. Registration: Registration for the events will start on 9/18/2023 and will end on 10/16/2023. Registration link: <https://simuthon.com>
11. Registering for an event is not synonymous with acceptance/getting into the Simuthon.
12. The organizer reserves the right to extend the time of registration.
13. The participant agrees to be sent by e-mail information about current and future event editions or about recruitment processes conducted by organizer.
14. Contact details of the Organizer: contact@simuthon.com
15. Additional information:

1.1. Awards:

- i. There will be prizes for the top three winning teams (the prizes can have material or financial format: <https://simuthon.com>).
- ii. The offered material prizes are not subject to exchange for cash prizes, other prizes or a cash equivalent.
- iii. Prizes are awarded only to the winning teams, however, the Organizer and Sponsors reserve the right to award distinctions to other teams or participants. The organizer reserves the right to verify the identity of team members during the competition.

SIMUTHON 2023 | COMPETITION GUIDELINES

INTRODUCTION

The competition consists of one 12 hour round during which participants will attempt to solve multiple tasks. Each task will be scored separately. Tasks will not be dependent on each other and may be solved in any order.

MathWorks will provide each participating team with complimentary software to work on the problem statement.

PARTICIPATION REQUIREMENTS AND PRE-WORK

1. MATLAB/Simulink installation:
Each participant should have necessary MathWorks tools installed before the competition starts. Teams can use only the latest release, as of the date of the competition, of MathWorks products to complete the task.
2. Pre-work is not required but participants are encouraged to familiarize themselves with reference materials.

RULES

1. Competition consists of multiple tasks.
2. Each task will have a separate set of guidelines.
3. Tasks and guidelines will be provided 10 minutes before the start of the competition.
4. Teams may attempt any task in any order.
5. Each task will be scored separately.
6. Task solutions must be provided in .zip packages. Solution for every task should be its own package.
7. Solutions may be submitted at different times for each task.
8. All submissions will be judged and scored at the end of the competition. Preliminary scoring will be done after half of the allocated time passes.
9. Teams may use other software development tools and/or programming languages than MATLAB/Simulink, but the solution must be fully runnable on the latest release of MATLAB/Simulink, i.e. no other software should be needed to run the prepared solution.
10. Usage of previously authored code/models/assets is not permitted.

JUDGING

The competition will be judged by representatives of ONT Technical Department and APTIV.

Each solution will be evaluated based on task guidelines.

The competition will be scored based on:

- guidelines set for each task,
- bonus points acquired based on additional criteria.

Tie-breaks will be resolved by earlier time of submission.

The decision made by the judges will be final

SUBMISSION

To submit an entry, the team captain needs to provide judges access to the submission files.

Submission package should include all files necessary to run the solution and presentation file describing prepared solution. Time of submission is the time of receiving the submission by judges.

Top 3 teams will be asked to present their solution as described in the file they've submitted.

REFERENCE MATERIAL

- Recommended Tutorials:
 - [Image Processing Onramp](#)
 - [Control Design Onramp with Simulink](#)
 - [Optimization Onramp](#)
 - [Simscape Onramp](#)
 - [Stateflow Onramp](#)
- Additional Video Tutorials:
 - [Making Vehicles and Robots See: Getting Started with Perception for Students - MATLAB & Simulink \(mathworks.com\)](#)
 - [Mathematical Modeling with Optimization - Video Series - MATLAB & Simulink \(mathworks.com\)](#)
 - [Rozpoznawanie obiektów na obrazie z kamery | MATLAB - YouTube](#)
 - [Controlling Robot Manipulator Joints Video - MATLAB & Simulink \(mathworks.com\)](#)
 - [Control Design for Robot Throwing Systems Video - MATLAB & Simulink \(mathworks.com\)](#)
- Documentation Links:
 - [Image Processing and Computer Vision - MATLAB & Simulink \(mathworks.com\)](#)
 - [Control Systems - MATLAB & Simulink \(mathworks.com\)](#)
 - [Optimization Toolbox Documentation \(mathworks.com\)](#)
 - [Global Optimization Toolbox Documentation \(mathworks.com\)](#)
 - [Mapping Toolbox Documentation \(mathworks.com\)](#)