**TEKNOFEST**

**AEROSPACE AND TECHNOLOGY FESTIVAL**

**ROBOTAXI-FULL SCALE AUTONOMOUS VEHICLE COMPETITION**

**(AUTONOMOUS-READY VEHICLE CATEGORY)**

**PRELIMINARY DESIGN AND SIMULATION REPORT**

**APPLICATION ID**

**CONTEST**

[1. Summary 3](#_Toc63619759)

[2. Team Organization 3](#_Toc63619760)

[3. Software Architecture 3](#_Toc63619762)

[4. Autonomous Driving Algorithms 3](#_Toc63619763)

[5. Sensors 3](#_Toc63619764)

[6. Software Security Precautions](#_Toc63619765) 4

[7. Simulation 4](#_Toc63619766)

[8. References 4](#_Toc63619767)

1. **Summary**

In this section, general introductory information about the software system to be prepared for the competition should be given. Emphasis should be placed on the design process, acquired skills, and unique aspects of design. The task to be performed by the autonomous vehicle should be briefly explained and general information about the performance of the vehicle that will perform this task should be conveyed.

1. **Team Organization**

This section should provide general introductory information about team organization and capabilities. An organizational chart showing the work sharing during the Robotaksi Autonomous Vehicle design process and who is working should be shown. At this stage, brief information about the team members should be conveyed. The work packages to be used in the vehicle design process should be shown with a “timeline graphic”. Also, the main work packages should be briefly described with their requirements and objectives.

1. **Software Architecture**

It is requested to explain the software architecture required for autonomous driving, such as the autonomous driving algorithm and sensor fusion, which you will create in order for the vehicle to be given by the TEKNOFEST committee to fulfill the tasks and requirements given in the specification.

1. **Autonomous Driving Algorithms**

In this section, information should be given about the autonomous driving algorithms used in the vehicle, such as the recognition of traffic signs and lane tracking.

1. **Sensors**

Information should be given about the sensors and sensor fusion techniques you use in the software.

1. **Software Security Precautions**

During the test phase and during the competition, the precautions to be taken for possible dangerous situations will be determined and information about the software systems planned for this will be conveyed.

1. **Simulation**

The preliminary design should include a simulation of autonomous vehicle operation according to the competition specifications. We plan to share the model in the simulation environment of the vehicle, which will be given by the TEKNOFEST committee, with our teams in the future. The video of the realized simulation will be uploaded to Youtube before the date specified in the specification and its name/link will be included in this section of the report. Team information should be included in the video to be uploaded. No changes will be made on the video after the date specified in the specification. This video is considered as proof of concept of the simulation. The scores for the simulation will be calculated according to Table 3 in the competition specification.

1. **References**

You should specify the resources, websites, trainings, books, articles, etc. you have used in this section.

***Additional Notes:***

* Each report should begin with a cover page and include a “Contents” page.
* Reports pages should be numbered consecutively.
* Font should be selected as “Times New Roman”, “Point: 12”.
* Compliance with academic report standards is sought.

**Preliminary Design Report scoring will be done according to the template below.**

|  |  |  |
| --- | --- | --- |
| **Section** | | **Scoring** |
| 1 | Summary | 5 |
| 2 | Team Organization | 5 |
| 3 | Software Architecture | 25 |
| 4 | Autonomous Driving Algorithms | 30 |
| 5 | Sensors | 5 |
| 6 | Software Security Precautions | 5 |
| 7 | Simulation |  |
| 8 | References | 5 |

\* *P*, represents the scores from the simulation according to Table 3 in the competition specification.