



Expression of interest

Contact details

Country	TURKEY
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Short description of the organisation

Provide a short description of the equipment available, the relations with the industry, the profile of the main researchers

Karsan has been producing commercial vehicles with 100 percent local capital since 1981. Throughout this journey, Karsan has produced for the world's automotive giants and developed its own branded products that stand out for their originality in the field of public transportation. As a result, Karsan has become a rising brand in Turkey.

Karsan with its business partnerships and game-changing innovations, it today operates in more than 40 different countries around the world. Boasting an innovative brand DNA and a mission to provide sustainable solutions, Karsan moves forward with full momentum and expands its product range continuously by integrating innovations in electric vehicle technology that is shaping the future. Our electric development vision, e-Volution, we are taking firm steps towards our goal of positioning the Karsan brand in the top 5 in Europe.

Karsan, one of the leading companies in e-mobility solutions, has also started the hydrogen era, adding the hydrogen-fueled vehicle to its range of electric and autonomous products, it takes electric mobility to another dimension with more than 160 engineers in the R&D department.

Specific skills related to the project

Indicate the specific skills and competence in relation with *HORIZON-CL5-2024-D6-01-04: AI for advanced and collective perception and decision making for CCAM applications (CCAM Partnership)*

KARSAN can:

- *Embed high-technology sensors into the vehicles and calibrate them for effective use.*
- *Perform sensor fusion method(s) to bring together inputs from multiple sensors.*
- *Implement point cloud mapping to build a point cloud map of an environment from sensor data that conveys information about the surroundings of a perceiving agent.*
- *Use the SLAM algorithms to precise road information to help self-driving vehicles identify the static object with good accuracy.*
- *Provide real-time traffic information on other cars on the road, pedestrians, and cyclists which can help avoid accidents in critical situations through quick response times.*



- *Build AI-based models to analyze objects and make accurate decisions while on the road.*
- *Propose novel approaches in the field of algorithm development to make the process better or fast.*
- *Put into its vehicles into operation to get to many places to observe scenarios and to obtain the data.*

KARSAN has also a dedicated AV team that is responsible for autonomous bus software and system stacks.

Proposed activities for the project

Indicate which activities you would like to implement during the project

KARSAN can:

- *Study AI-based methods to improve the existing techniques for ensuring safe operations.*
- *Integrate up-to-date algorithms into the vehicle.*
- *Automatize the autonomous software stack from perception to control.*
- *Analyze and improve the behavior planning methods in the AV stack.*
- *Test the developed algorithms in closed-area with vehicles.*
- *Simulate the vehicle into the simulation environment to understand of potential risks before running.*
 - *Provide whole technology including sensor fusion, high-level world models/maps, and vehicle positioning information.*
 - *Analyze the correlation between the vehicle and forecasted intentions of other road users.*

KARSAN can also open to use its road inside the factory for testing and validation of the vehicles.

References

Previous research project

Project acronym / starting date	Main objectives	Main activities	Role in the project
Publication	Grey Wolf Optimizer to the Hyperparameters Optimization of Convolutional Neural Network with Several Activation Functions	Algorithm development	First Author
Publication	Modified forensic-based investigation algorithm for global optimization	Algorithm development	First Author
Publication	A hybrid optimizer based on backtracking search and differential evolution for continuous optimization	Algorithm development	First Author
Publication	A comparative study of the state-of-the-art algorithms on multi-objective problems using performance metrics	Algorithm development	First Author