

## Modular SLAM Framework in Firebot

The Firebot project is aiming to improve the ability of robots used by the fire brigade to navigate in life threatening environments. At this moment the robots are controlled by human operators driving the robot remotely. This is a robust and simple solution, but when the robot is beyond the line of sight of the operator due to obstructions or smoke, it is almost impossible for the operator to steer and control the robot.



Scarab TX - Amsterdam Amstelland



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## Adding Autonomy

Within the Firebot project, Saxion Mechatronics Research Group (Lectoraat Mechatronica), Demcon and iBotics (University of Twente + TNO) are collaborating to test innovative open source methods to **add autonomy** to these robots. Several frameworks to add navigation capabilities for robots exist, but these are highly dependent on a fixed combination of sensors. For highly unusual applications, like robots in a smoky environment, these **existing frameworks cannot be used** without much effort in testing and tuning.

The University of Twente and Demcon have developed a **modular navigation and SLAM framework** that can use a large variety of inputs to determine the robots' location. This framework was made as a "**proof of principle**", and was tested in a simulation environment, but not yet on real robots.

## Task description

The assignment is to take the existing software library of the framework and make it suitable to **share with the robotics software community**. To do that, you will develop some worked-out examples; with real robots as well as simulated robots, showing the (in-)capabilities of the framework. You will also make good documentation for the framework and develop **tutorials** for setup and usage. The goal of the assignment is the creation of a convincing **demonstrator** of this framework that we can **publish on GitHub**. You will be guided by experts from the University of Twente (Douwe Dresscher), Demcon (Geert Folkertsma) and the Mechatronics Research Group (Victor Sluiter and Gerjen ter Maat).

## Practical Information

**Student Profile:** Applied Computer Science, HBO-ICT

**Duration:** half a year

**Compensation:** 230 euro before taxes when carrying out this assignment at Mechatronics.

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