

# Eurathlon 2013

23-27. September 2013,  
Berchtesgaden, Germany

## Team Information

Pictures of vehicle:



Photos: François Pomerleau

Name of vehicle:

ARTOR (Autonomous Rough Terrain Outdoor Robot)



Picture of team leader:

Name of team leader:

Philipp Krüsi

Team Name:

ARTOR

Team E-mail:

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Logo:

-

Website:

<http://artor.ethz.ch>

Location:

Switzerland

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## Team Information

Institution/Company: ETH Zürich, Autonomous Systems Lab  
Institute of Robotics and Intelligent Systems

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Team Description: Team ARTOR is a collaboration between the Autonomous Systems Lab (ASL) at ETH Zürich, RUAG Defence and armasuisse W+T. The team is composed of Researchers and technical staff at ASL and RUAG Defence, under the leadership of Philipp Krüsi (PhD student, ETH/ASL) and Dr. Thomas Nussbaumer (Head of the armasuisse research program UGV, RUAG Defence).

The focus of our research lies in fully autonomous navigation in rough and three-dimensional outdoor terrain. This includes localization and terrain mapping based on laser range measurements and stereo vision, as well as system-compliant motion planning.

Our robot ARTOR (Autonomous Rough Terrain Outdoor Robot) is a 6-wheeled, skid-steered electric vehicle. An array of onboard sensors is used for monitoring the robot's state and gathering information about the environment for online mapping, localization and obstacle avoidance. The equipment includes a rotating 3D laser scanner, two 2D laser scanners, a stereo camera, a GPS receiver and an inertial measurement unit. Furthermore, a pan-tilt-zoom unit containing both a visual and a thermal camera is installed. All data processing for autonomous navigation, including mapping, localization, path planning, obstacle avoidance and motion control, is performed on the onboard computer, using the robot operating system ROS.

Sponsors: -

Selection of scenario:

- Reconnaissance and surveillance in urban structures (USAR)
- Mobile manipulation for handling hazardous material
- Search and rescue in a smoke filled underground structure
- Autonomous navigation using GPS, GLONASS and GALILEO
- EOR/EOD/IEDD/CIED (for professionals only!)

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