Title: **ROS2 compatible simulation environment for RoboCup Rescue Simulation**

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Abstract: The RoboCup Rescue Simulation has a Virtual Robot competition since 2006, where multiple robots explore a disaster site, partly autonomous, partly controlled by high-level commands from a human in a control station[1]. The latest years the competition was based on the ROS1 framework, which allowed the competing teams to integrate many of the existing perception, navigation and exploration modules from the ROS-community.

Yet, according the ROS roadmap, Noetic Ninjemys (released May 2020) will be the last official ROS1 distribution[2]. In addition, ROS2 is designed for multi-robot operation, non-ideal communication networks and supports multiple platforms[3]. As Research Showcase, we will like to demonstrate the benefits of porting the Rescue Simulation environment to ROS2 and the new research challenges which are possible in the future.
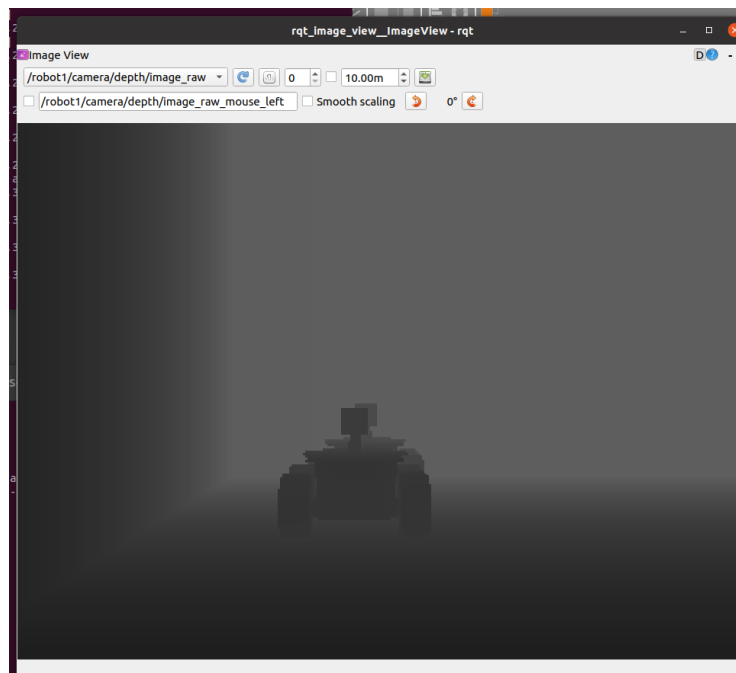
Example of a depth image of two other robots in the simulation environment.

The code of this new version of the environment is available on github[4], including a Single-Robot SLAM & Mapping Demo and a Multi-Robot Scenario for ROS2.

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[1] Sheh, R., Schwertfeger, S. & Visser, A. 16 Years of RoboCup Rescue. Künstl Intell 30, 267–277 (2016)

[2] Open Robotics, Noetic Ninjemys: The Last Official ROS 1 Release, May 23, 2020.

[3] S. Macenski *et al*, "Robot Operating System 2: Design, architecture, and uses in the wild," Science Robotics vol. 7, May 2022.

[4] https://github.com/RoboCup-RSVRL/RoboCup2022RVRL_Demo