

**SMART RESCUE NAVIGATION SYSTEM
FOR FIREFIGHTERS**

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Knowledge is power and unity is strength.

[Ebrahim Abdalnabi Hadi Mahdi]

ABSTRACT

The purpose of this project is to develop a Smart Rescue Navigation System (Smart RNS) for tracking of the first responders, such as firefighters, often operates in extreme environments and the possibility of getting lost in a blazing building is a hazard firefighters have to face during rescuing process, for instant in environments where the GPS signal does not work or absent (e.g. inside buildings or underground areas). This system (Smart RNS) design to help track firefighters so that the incident commander could dictate an escape route to the disoriented rescuers over voice radio. The system consists of portable units (PUs) which can be attached to the rescuers and a fixed unit (FU) set up near the scene and monitored by an incident commander. The PU is equipped with inertial measurement unit (IMU) this inertial sensor provides three-dimensional (3D) that uses gyroscope, accelerometer and magnetometer to track movements and send the data wirelessly to the fixed unit (FU). The received data will be processed by FU and display sites rescuers using Kalman filter. This Smart RNS has a potential to replace the use of ropes and hoses by the firefighters to navigate in near black conditions. It is expected that the system provides great challenges to save rescuer's lives and time thus prevent fatalities.

Keywords — Smart rescue navigation system, indoor navigation

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