AMBUBOT: Ambulance Robot Automated External Defibrillator Robotic Ambulance

Mohammad Arif*, Hooman Samani*

**Department of Electrical Engineering, National Taipei University, Taiwan*

arifayip91@gmail.com, hooman@mail.ntpu.edu.tw

***Abstract*—The purpose of this paper is to introduce a novel robot in order to overcome some difficulties in providing an Automated External Defibrillator (AED) device at the nearest location of victim suffering from sudden cardiac arrest in the shortest possible time before the advent of the ambulance. We designed and developed an ambulance robot, called it Ambubot, that brings along an AED to help lay rescuers for saving patients life in a sudden event of cardiac arrest. The first aid to the victim can be carried out once an incident alarm is transmitted to the Ambubot station by sensing via body-attached sensor and/or mobile phone application. Such applications transmit required information to the Ambubot center for further execution. Ambubot center is integrated with three independent servers namely database server, message controller, and GIS server. In addition, message controller server is connected with telecom's short message server for transmitting the message to family members of the patient. The Ambubot robots are located in Ambubot stations when several stations can be covered via single center where human operators are located. Different methods had been proposed for dispatching Ambubot to locate the victim namely tele-control, partially autonomous, and fully autonomous operations. While we have illustrated all those methods in this paper we present the conduction of the tele-control method to control the operation of the robot. In this method, not only Ambubot follows instructions of human operator till the robot reaches the location of victim and delivers the AED but also provides instruction to the people in the location for applying the AED hence the lay rescuers will dry the victim's chest and attach the AED pads by themselves while instructed and monitored by the human experts in the main center in real-time.**

***Keyword*—Network Robotic, Tele-Robot, Medical Robot, Telematics, Rescue Robot.**

Mohammad Arif (M'13) was born in Pekanbaru, Indonesia, in 1991. He received the B.IT. degree in industrial computing from Universiti Kebangsaan Malaysia, Malaysia, in 2012. He is currently pursuing the M.Sc. degree in electrical engineering from the National Taipei University. His current research interest is in mobile robot applications. In September 2011, he had been through his internship at Tekad Communications Sdn. Bhd. for 5 months as a Network and Design Engineer. And he is now undergoing internship as Design and Development Engineer at Fusheng Industrial Company.

Hooman Samani received the Phd degree from the Graduate School for Integrative Science and Engineering, Electrical & Computer Engineering Department, National University of Singapore. He is currently an Asst. Professor at the Department of Electrical Engineering, College of Electrical Engineering and Computer Science, National Taipei University, Taiwan.