An Innovative EPW Design Using Add-on Features to Meet Malaysian Requirements

Mohammed Hayyan Alsibai
Faculty of Engineering Technology,
University Malaysia Pahang,
Gambang, Kuantan, Malaysia
mhdhayyan@gmail.com

Mhd Saeed Sharif
School of Architecture, Computing and Engineering,
UEL, E16 2RD, London, UK.
s.sharif@uel.ac.uk

Salma Yaakub and Nurul Nadia Nor Hamran
Ftek, University Malaysia Pahang,
Gambang, Kuantan, Malaysia
salmayaakub94@gmail.com,
nnadiahamran@ump.edu.my

***Abstract*— Electric Powered Wheelchair (EPW) is a special Electric Vehicle (EV). It is used by senior citizens, handicapped, disabled, people with mobility impairment or people who have health complaints. Therefore, it is not always safe to use an EPW independently as users are more subject to fatigue, weakness and emergency situations. Due to the special needs of EPW drivers/users, the design of the EPW and its controlling system should fulfill their requirements. This paper proposes a new design for EPW which is suitable for Malaysian community needs. The design takes in consideration the easiness of the independent use, the price reduction and the flexibility in changing the controlling method. A smartphone is used as an add-on controlling option besides to the normal joystick. A health monitoring system which implements Internet of Things (IoT) features is also presented as an add-on device. The EPW system is designed to be extendable and accepts other add-on devices. The system is tested in real modes and it is validated as a real-time system.**

***Index Terms*— EV, Assistive technology, IoT, embedded system, wheelchair.**