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Design of a Low Cost Smart Cardio Pulmonary Resuscitation (CPR) Device Using Locally Available Raw Materials for Cardiac Arrest Patients

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Cardiovascular disease is the main worldwide reason for death. According to a recent study, the main worldwide reason for death is cardiovascular disease. A total of 17.3 million deaths each year are identified due to this disease. It is expected that, by 2030, this number may exceed 23.6 million. In 2008, cardiovascular deaths accounted for 30% of all deaths worldwide, with low-and middle-income countries accounting for 80% of those deaths. Cardiovascular diseases can cause the heartbeat to stop. If a person experiences a cardiac arrest, then direct treatments such as cardio-pulmonary resuscitation (CPR) with chest compressions and artificial ventilation along with defibrillation are methods to greatly improve the patient's possibility of survival. Usually, CPR is completed manually. Manual CPR is carried out by applying external chest compressions followed by artificial ventilation. It helps pump blood around a person's body when their heart cannot do this job. This presentation will present and discuss the development and analysis of a low-cost cardio-pulmonary resuscitation (CPR) device using locally available raw materials for the treatment of cardiac arrest patients. This CPR is automated, portable, and very user-friendly. This is a very cost-effective product which people can easily afford to buy. The unit price of this CPR is USD 500.

Biography

Dr. Mohammad Monirujjaman Khan is currently working as an Associate Professor in the Department of Electrical and Computer Engineering at North South University, Dhaka, Bangladesh. He received the B.Eng. degree in Electrical and Electronic Engineering from Queen Mary University of London (QMUL), United Kingdom, with First Class Honours. Dr. Khan received the Draper's Company Undergraduate Prize in 2008 from Queen Mary University of London for outstanding academic merit. He completed his PhD degree in Electrical and Electronic Engineering from Queen Mary University of London (QMUL). His PhD was funded by a Queen Mary University of London full scholarship. After completing his PhD, Dr. Khan worked as a postdoctoral research assistant under the Engineering and Physical Science Research Council (EPSRC) funded IMPACT QM KTA Scheme 1 project in the School of Electronic Engineering and Computer Science at Queen Mary University of London, UK.

Dr Khan received Dr Fatema Rashid's first best paper award at the International Conference on Advances in Electrical Engineering (ICAEE 2013). He also received the best presenter award at the 3rd International Conference on Informatics, Electronics, and Vision Technology (ICIEV-2014). Dr. Khan received the best poster paper award at the 1st International Conference on Electrical Engineering and Information & Communication Technology (ICEICT-2014). In addition, he received the best paper award at the 10th Global Engineering, Science, and Technology Conference, 2015. His paper 'Wireless Health Monitoring System' received the best presenter award at the 2nd Borneo International Conference on Applied Mathematics and Engineering, BICAME, Indonesia, 2018. Dr. Khan received a best paper award for his paper titled "Education System for Bangladesh Using Augmented Reality, Virtual Reality, and Artificial Intelligence" presented at the IEEE World AI IoT Congress, 10th-13th May, 2021, Seattle, USA.

Dr. Khan has authored and co-authored more than 172 peer-reviewed publications in leading journals and international conferences. He is an active reviewer of IEEE Transactions on Antennas and Propagation, IEEE Magazine on Antennas and Propagation, MDPI, HINDAWI, Tech Science Press, IEEE Antenna and Wireless Propagation Letter, IEEE Communication Letter, IET Microwaves Antennas & Propagation, Wireless Personal Communications, Springer, Multimedia Systems, International Journal on Communications Antennas and Propagation, International Journal of Microwave and Wireless Technologies, and numerous IEEE Conferences.

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