VLSI Technology for Real Time Monitoring System of High Risk Cardiac Patients

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ABSTRACT Recent developments in Cardiac surgery have led to increase in number of patients between the age group of 25 and 69 years of age who have survived Myocardial Infarction. Regular and continuous monitoring of these patients becomes essential as this age group of people is the real asset to a family. Hence this paper aims in design and development of low cost, light weight, portable real time monitoring system for cardiac patients. The proposed system employs a Field Programmable Gate Array (FPGA), a reconfigurable platform that performs online analysis of the acquired ECG signal continuously. FPGA based Arrhythmia detector, implemented on a DE0 Nano Altera Cyclone IV board is interfaced with GSM/GPS module to alert the physician or the caretaker on a mobile phone about the imminent fatal condition and location of the patient. If the portable system detects any arrhythmia, it automatically sends an alarm condition to the patient's care taker and doctor or ambulance centre. Through our proposed system the caretaker is immediately aware of the fatal condition of the patient, and hence immediate cardiopulmonary resuscitation (CPR) may be performed, because CPR can provide an efficient method for maintaining a flow of oxygen–rich blood to the body's vital organs before advanced emergency care is available for the patient.