

Triabot Project Report
Entry Number Micro 13MG286
By Melahd Gibson

The Triabot is based upon an Arduino Mega 256k development system with a Parallax Shield. It is capable of transmitting any patient's vitals, through an Xbee transmitter using a Parallax SIP adapter, to a base station personal computer up to 15 miles away. By acquiring the pulse, SpO2 readings, detecting systolic diastolic blood pressure, and by finding out body temperature through a LM-34 sensor we can report the necessary vital biometric readings to determine the health and condition of a individual.

I think that the Triabot addresses an important problem in today's world. That problem is when a disaster strikes there will be many more victims than there are responders. Responders need a way of monitoring victims remotely while the most critical are treated. In addition the Triabot can be used in large hospitals where there are many patients and only a few nurses and doctors.

From a cost standpoint I have combined the capabilities of four devices into one device under the control of a single microprocessor. Once I work out all the software problems the unit can be reduced in size and cost further reduced by building custom printed circuit boards.

By using a PC based Microsoft Visual Basic program connected via a USB to a Parallax XBee Adapter the Triabot is able to report its vital information reliably and quickly to medical personnel. The accumulated values are summarized and transmitted every five minutes except for blood pressure, which is taken and transmitted every 15-30 minutes. It is important to note we summarized the readings by taking the worst measurements received in a sequence. The software looks for the worst case readings to make sure we don't miss anything. This is a medical device that is designed to gain vital readings from multiple victims during a time of crisis using Xbee's mesh networking

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capabilities. It is accomplished by fitting multiple Tirabot units into a duffle bag where one person or small group of people can diagnose, and monitor many people in times of disaster. By outfitting victims with the Triabot, vital health readings will be transmitted up to 20 miles away to medical staging area or near by clinic so nurses and doctors can triage, assess and prep as needed for treatment of the most critical incoming victims.

The enclosure design, although not included in this submission due to funding and time problems, will be 3D printed based upon our beautiful chassis, which includes a bottom plate for electronics, and the top portion supported by screws. The 3D drawings will be submitted soon for printing. I am looking at reducing the size of the unit also.

I appreciate the opportunity to submit the Triabot design for the MicroMedic Contest. I learned a lot and plan to continue development of the Triabot particularly in the software area.