

Rancang bangun prototipe pulse oximeter genggam berbasis single board computer = Design prototype of handheld pulse oximeter based single board computer

Hendrana Tjahjadi, author

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Abstrak

ABSTRAK

Pulse oximeter telah mendapatkan penerimaan yang luas dalam komunitas medis untuk beberapa alasan. Sejak produksi pertamanya di awal tahun 1980-an dengan mengacu pada hukum Beer-Lambert, pulse oximeter telah diakui dan dipuji karena biaya operasionalnya rendah serta pengoperasiannya yang mudah. Kebanyakan peralatan pulse oximeter tidak membutuhkan komponen perangkat keras yang besar. Peneliti melakukan penelitian dengan tujuan membuat prototipe pulse oximeter genggam yang dilengkapi LCD layar sentuh berbasis Single Board Computer Raspberry Pi B+ yang dapat menampilkan besarnya kadar saturasi oksigen (SpO₂), pulse rate (PR) dan photoplethysmography (PPG). Menggunakan perangkat lunak Qt berbasis LINUX sehingga menghasilkan Graphical User Interfaces (GUI) lebih informative. Penelitian ini merupakan penelitian laboratorium eksperimental melalui pendekatan kuantitatif dengan metode pengumpulan data menggunakan data primer. Peneliti berhasil membuat prototipe pulse oximeter genggam berbasis Raspberry Pi B+ yang dapat menampilkan saturasi oksigen (SpO₂) dengan tingkat akurasi 2% dan pulse rate dengan tingkat akurasi 2 bpm serta dilengkapi dengan tampilan grafik photoplethysmography.

ABSTRACT

Pulse oximeter has gained wide acceptance in the medical community for several reasons. Since its first production in the early 1980s with reference to the Beer-Lambert law, pulse oximeter has been recognized and praised for its low operational costs and easy operation. Most pulse oximeter equipment does not require large hardware components. Researchers conducted the research with the aim of making a prototype handheld pulse oximeter based Single Board Computer Raspberry Pi B + and equipped with an LCD touch screen which can display the amount of oxygen saturation levels (SpO₂), pulse rate (PR) and photoplethysmography (PPG). Using Qt software based LINUX resulting Graphical User Interfaces (GUI) more informative. This research is an experimental laboratory through a quantitative approach to data collection methods using primary data. Researchers successfully produced a prototype handheld pulse oximeter based Raspberry Pi B + which can display oxygen saturation (SpO₂) with 2% accuracy rate and pulse rate with accuracy 2 bpm which is equipped with a graphic display photoplethysmography.