

ABSTRAK

Fidela Paramesti

WIRELESS WRIST VITAL SIGN MEASUREMENT BASED ON WIFI COMMUNICATION (NIBP & SKIN TEMPERATURE)

xvii + 75 Halaman + 18 Tabel + 4 Lampiran

Pengukuran kondisi tanda vital manusia menggunakan alat kesehatan berupa vital sign, seperti tekanan darah, BPM, kadar oksigen, dan suhu kulit. Penelitian ini merancang dan mengembangkan alat pemantauan tanda vital pergelangan tangan dengan parameter tekanan darah *non-invasif* (NIBP) dan suhu kulit berbasis komunikasi wifi pada sistem web. Komponen pendukung untuk mengukur tekanan darah menggunakan sensor MPX5050GP. Suhu tubuh *non-contact* diukur dengan sensor MLX90614. Data hasil pengukuran ditampilkan pada layar Nextion dan dikirim secara *real-time* melalui ESP32 ke sistem web berbasis database untuk penyimpanan dan pemantauan data.

Metode kuantitatif ini digunakan pada penelitian *vital sign* pergelangan tangan. Penelitian ini melakukan pengujian alat modul dibandingkan dengan alat ukur medis seperti *Digital Pressure Meter* dan *Thermometer*. Hasil pengujian menunjukkan bahwa sistem mampu mengukur NIBP dan Suhu Kulit secara akurat, dengan nilai rata-rata error sistole sebesar 1,15%, sedangkan nilai rata – rata error tekanan diastole sebesar 3,25%. Selain itu, pada pengukuran suhu kulit didapatkan rata – rata nilai error sebesar 0,86%, masih berada dalam batas toleransi medis.

Vital sign pergelangan tangan dibuat sistem portable dan minim kabel untuk pemantauan kesehatan mandiri, terutama dalam situasi darurat dan pemantauan pasien jarak jauh. Dengan sistem *Internet of Things* (IoT) pengiriman dan penyimpanan data secara langsung ke server, sehingga memudahkan petugas kesehatan dalam memantau kondisi pasien.

Kata kunci : Vital Sign, NIBP, Suhu Kulit, MPX5050GP, MLX90614, IoT

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ABSTRACT

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WIRELESS WRIST VITAL SIGN MEASUREMENT BASED ON WIFI COMMUNICATIN (NIBP & SKIN TEMPERATURE)

xvii + 75 pages + 18 Tables + 4 out Attachment

Measurement of human vital signs conditions using medical devices such as blood pressure, BPM, oxygen levels, and skintemperature. This research designs and develops a wrist vital sign monitoring tool with non-invasive blood pressure (NIBP) and skin temperature parameters based on wifi communication on a web system. Supporting components for measuring blood pressure use an MPX5050GP sensor. Meanwhile, to measure skin temperature without contact, this device uses an MLX90614 sensor. Measurement data is displayed on the Nextion screen and sent in real time via ESP32 to a databased web system for data storage and monitoring.

The reasearch method used is quantitative experience. By conducting tests, the results of the device module were compared with medical measuring devices such as Digital Pressure Meter and Thermometer. According on the test results of respondents, this system can accurately measure NIBP and Skin Temperature, with an average systole error value of 1.15%, while the average diastole pressure error rate is 3.25%. In addition, average error rate of 0.86% was found for the skin temperature measurement, which was still within medical tolerance limits.

The wrist vital sign is made portable and minimal cable system for self health monitoring, especially in emergency situations and remote patient monitoring. With the Internet of Things (IoT) system, data is sent and stored directly to the server, making it easier foor health workers to monitor patient conditions.

*Keywords : Vital Sign, NIBP, Skin Temperature, MPX5050GP, MLX90614, IoT
References : 33 Journals (2009 – 2024)*