DEVELOPMENT OF AN IOT-BASED GLUCOMETER FOR TELEMEDICINE APPLICATION IN JAKARTA

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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Transformation of primary services is one of the six pillars of health transformation announced by the Indonesian government, where screening of diseases with high mortality rates such as diabetes as one of its main focuses. Diabetes is one of the deadly diseases in Indonesia, with Jakarta holding the highest prevalence with a value of 3.4%. This implies that diabetes screening and monitoring is important in Jakarta. A combination of point of care technology and telemedicine feature in a glucometer will be beneficial to remotely screen and monitor diabetic people, due to the suitability of its functions with the profile of Jakarta. Hence, in this thesis work, an IoT-based glucometer with ESP32 and GlucoDr. AGM-2100 test strips as sensor were developed. AWS was used to integrate telemedicine. From each of the ten measurements using glucose solution and blood glucose; all of glucose solution and 90% of blood glucose measurement error are within ±15 mg/dl below 100 mg/dl and ±15% above 100 mg/dl. There is also no significant mean difference between the developed glucometer and other glucose measurement tools. The statistical analysis and measurement display in a webpage proves the reliability of the glucometer for remote screening and monitoring of diabetes.

Keywords: Diabetes, Screening, Monitoring, Glucometer, IoT, Telemedicine

DEDICATION

I dedicate this works for the improvement of health services in Jakarta.

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