

SIGMA : Sistem Integrasi Monitoring Dan Prediksi Gizi Balita Menggunakan Algoritma Holt-Winters

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Abstract

Stunting is a significant health problem in Indonesia, with a prevalence reaching 21.6% in 2022, although this figure has shown a decline from the previous year. This study aims to develop the Sigma system (Toddler Nutrition Monitoring and Prediction Integration System) based on the Internet of Things (IoT) and integrated with a website. This system is designed to automatically measure children's height and weight, calculate nutritional status using the Z-score according to WHO standards, and map the prevalence of stunting using the Geographic Information System (GIS). By implementing the Holt-Winters algorithm, the system is able to predict children's nutritional status for the next three months with a high level of accuracy, as evidenced by the MAE value of 1.47 for weight and 2.54 for height. The Sigma system also provides a visualization of the geographic distribution of toddler nutritional data in Gayungan District, Surabaya, which facilitates efforts to handle and make decisions related to stunting. The evaluation results show that this system has succeeded in increasing the accuracy and efficiency in monitoring toddler nutritional status, as well as providing more accurate predictions than other methods such as ARIMA and SARIMA. The implementation of this system is expected to be an effective tool in handling nutritional problems in Indonesia.

Keywords: Stunting, IoT, Z-score, GIS, nutritional prediction.

