

**SMART GROWTH: APLIKASI PEMANTAUAN PERKEMBANGAN ANAK
UNTUK PENCEGAHAN STUNTING**

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ABSTRACT

Stunting is one of the most serious health problems that affects the quality of human resources in the future. This condition is caused by chronic malnutrition experienced by children from conception until the age of two. This study aims to develop the SMART GROWTH application as a child growth monitoring system based on Artificial Intelligence (AI) using the Extreme Gradient Boosting (XGBoost) method combined with Explainable Artificial Intelligence (XAI). The XGBoost method is applied to predict the risk of stunting based on anthropometric data, nutritional status, and environmental factors, while XAI is used to provide transparent explanations of prediction results to identify the main causes of stunting for each child. The data were collected from health surveys and secondary sources from community health centers (Posyandu), including information on weight, height, age, immunization history, and nutritional parenting patterns. The results show that the XGBoost model achieved high accuracy in classifying child nutrition status, and XAI interpretations effectively assisted health workers and parents in understanding the primary risk factors for stunting. The SMART GROWTH application not only functions as an early detection tool but also serves as an educational and monitoring platform for continuous child growth tracking. Thus, the implementation of this system is expected to provide an innovative solution for stunting prevention through data-driven and AI-based monitoring that is accessible and understandable to users.

Keywords: XGBoost, Explainable AI, Child Growth Monitoring, Artificial Intelligence

