

ABSTRAK

Alizha Nur Arspandy. 2026. Klasifikasi Status Gizi Balita Menggunakan Deep Learning Dengan Pendekatan Multi-Class Classification Pada Data Kesehatan Balita. Dibimbing oleh **Desi Anggreani, S.Kom., M.T** dan **Muhyiddin A.M Hayat, S.Kom., M.T.**

Status gizi balita merupakan salah satu indikator penting dalam menilai kondisi kesehatan dan pertumbuhan anak. Permasalahan gizi seperti gizi buruk, gizi kurang, dan obesitas masih menjadi tantangan di Indonesia, khususnya pada wilayah dengan akses layanan kesehatan yang terbatas. Penelitian ini bertujuan untuk mengembangkan model klasifikasi status gizi balita menggunakan metode Deep Neural Network (DNN) dengan pendekatan multi-class classification berdasarkan data kesehatan balita. Data yang digunakan berasal dari pencatatan gizi balita di UPTD Puskesmas Cendana Putih Kecamatan Mappedeceng, Kabupaten Luwu Utara, dengan jumlah dataset sebanyak 156 data balita. Variabel yang digunakan meliputi usia, berat badan, tinggi badan, dan nilai Z-Score berdasarkan standar WHO.

Tahapan penelitian meliputi preprocessing data, normalisasi, pembagian dataset menjadi data training dan testing, pembangunan arsitektur DNN, pelatihan model, serta evaluasi performa menggunakan confusion matrix, accuracy, precision, recall, dan F1-score. Arsitektur model terdiri dari tiga hidden layer dengan fungsi aktivasi ReLU dan output layer menggunakan Softmax. Hasil penelitian menunjukkan bahwa model DNN mampu melakukan klasifikasi status gizi balita dengan baik. Pada pengujian menggunakan 100 epoch, model memperoleh nilai test accuracy sebesar 91,67% dengan nilai loss sebesar 0,4596. Hasil tersebut menunjukkan bahwa metode Deep Neural Network memiliki kemampuan yang baik dalam mengenali pola data kesehatan balita dan dapat digunakan sebagai sistem pendukung keputusan untuk membantu tenaga kesehatan dalam melakukan identifikasi status gizi balita secara lebih cepat dan akurat.

Kata Kunci: *Deep Learning, Deep Neural Network, Multi-Class Classification, Status Gizi Balita, Klasifikasi, Artificial Intelligence.*

ABSTRACT

*Alizha Nur Arspandy. 2026. Classification of Toddler Nutritional Status Using Deep Learning with a Multi-Class Classification Approach on Toddler Health Data. Supervised by **Desi Anggreani, S.Kom., M.T** and **Muhyiddin A.M Hayat, S.Kom., M.T.***

Toddler nutritional status is one of the important indicators in assessing children's health and growth conditions. Nutritional problems such as malnutrition, undernutrition, and obesity remain major challenges in Indonesia, especially in areas with limited access to healthcare services. This study aims to develop a toddler nutritional status classification model using the Deep Neural Network (DNN) method with a multi-class classification approach based on toddler health data. The data used were obtained from toddler nutrition records at UPTD Puskesmas Cendana Putih, Mappedeceng District, North Luwu Regency, consisting of 156 toddler datasets. The variables used include age, weight, height, and Z-Score values based on WHO standards.

The research stages include data preprocessing, normalization, dataset splitting into training and testing data, DNN architecture development, model training, and performance evaluation using confusion matrix, accuracy, precision, recall, and F1-score metrics. The model architecture consists of three hidden layers using the ReLU activation function and an output layer using Softmax. The results show that the DNN model is capable of classifying toddler nutritional status effectively. In the 100-epoch experiment, the model achieved a test accuracy of 91.67% with a loss value of 0.4596. These results indicate that the Deep Neural Network method has good capability in recognizing patterns in toddler health data and can be utilized as a decision support system to assist healthcare workers in identifying toddler nutritional status more quickly and accurately.

Keywords: *Deep Learning, Deep Neural Network, Multi-Class Classification, Toddler Nutritional Status, Classification, Artificial Intelligence.*