ABSTRACT

Timely diagnosis is crucial for patients' future care and treatment. However, inadequate medical service or a global pandemic can limit physical contact between patients and healthcare providers. Combining the available healthcare data and artificial intelligence methods might offer solutions that can support both patients and healthcare providers. Artificial neural network (ANN) is one of the most studied methods and has been applied in various classification and prediction studies. In this project, a chatbot with a medical specialty recommendation system was created for Lira Medika Hospital. This study focused on developing the ANN model, specifically a multilayer perceptron (MLP), that can give medical specialty recommendations. Data of common symptoms and comorbidities, with suitable medical specialties, were collected, resulting in a small dataset that consists of 111 instances. Due to the dataset's size, the performance of the model was estimated with the leave-one-out cross-validation (LOOCV) method to avoid overfitting. The metrics used were confusion matrix, precision, recall, and F1 score. The macro average and the weighted average F1 score were 0.59 and 0.84, respectively. The model showed good performance at classifying 5 out of 9 medical specialties.

Keywords: neural network, medical specialty, classification, artificial intelligence