

Hybrid Reasoning-Based Expert System (Forward & Backward Chaining) for Early Diagnosis of Dental Diseases at Ladenta Dental Clinic

Elfan Fanhas Khoeri

Program Studi Teknik Informatika Medis, Fakultas Sains dan Teknologi

Universitas Teknologi Yogyakarta

Jl. Ringroad Utara Jombor Sleman Yogyakarta

E-mail : elfanhas@gmail.com

ABSTRACT

A common issue faced at Ladenta Dental Clinic is the need for a fast and accurate initial diagnosis to support the effectiveness of medical services. Dentists often have to address a variety of patient complaints with diverse symptoms, requiring a tool that can provide an initial prediction of dental diseases based on the symptoms experienced. Therefore, this study aims to develop a web-based expert system that assists dentists in making an initial diagnosis of potential dental diseases a patient may be suffering from. The system utilizes forward chaining and backward chaining as inference techniques, with a knowledge base built from interviews with dentists and medical literature studies. This knowledge is then formulated into rules that link symptoms to specific types of dental diseases. Testing results indicate that the system is capable of diagnosing 14 types of dental diseases based on 41 predefined symptom data points. Validation was carried out through manual calculations and assessments by two dentists, who confirmed that the system has a high level of accuracy and is suitable for use as an initial diagnostic tool. With this system in place, it is expected that the diagnostic process at Ladenta Dental Clinic will become more efficient, supporting quicker and more accurate medical decision-making.

Keywords: Expert System, Forward Chaining, Backward Chaining, Dental Disease Diagnosis, Dental Clinic