

ABSTRAK

Gionanda, Junioka Bayu 2026. Sistem Pakar Deteksi Dini Pneumonia Pada Balita Menggunakan Metode *Forward Chaining* Dan *Certainty Factor*. *Skripsi*. Program Studi Teknik Informatika, Fakultas Teknik, Universitas PGRI Madiun. Pembimbing (I) Sri Anardani, S.Kom., M.T. (II) Yessi Yunitasari, S.Kom., M.Cs.

Penelitian ini berfokus pada perancangan dan pembangunan Sistem Pakar Deteksi Dini Pneumonia Pada Balita Menggunakan Metode *Forward Chaining* yang digunakan untuk menelusuri gejala secara logis dan metode *Certainty Factor* yang digunakan untuk menentukan seberapa besar tingkat keyakinan terhadap suatu diagnosis berdasarkan gejala yang dipilih pengguna. Sistem ini dibangun menggunakan metode *Extreme Programming*, meliputi perencanaan (*planning*), perancangan (*designing*), penulisan kode program (*coding*) menggunakan *framework* Laravel dan pengujian (*testing*) menggunakan metode *Black Box Testing* dan *System Usability Scale* (SUS). Fitur Utama sistem mencakup diagnosis penyakit pneumonia pada balita, hasil diagnosis dengan tingkat keyakinan, pengelolaan basis pengetahuan, dan riwayat diagnosis. Hasil pengujian menggunakan metode *Black Box Testing* menunjukkan seluruh fungsi sistem berjalan dengan baik dan metode *System Usability Scale* (SUS) mendapatkan hasil rata-rata 85,68 dari 11 responden. Sehingga dapat disimpulkan bahwa tingkatan nilai dari pengujian sistem masuk kedalam kategori *Excellent* dengan *Grade B*. Sistem ini dinilai layak digunakan sebagai alat bantu deteksi dini pneumonia pada balita karena mampu memberikan informasi yang akurat, mudah diakses, dan meningkatkan kesadaran masyarakat terhadap pentingnya deteksi dini.

Kata Kunci : Sistem Pakar, Pneumonia Balita, Deteksi Dini, *Forward Chaining*, *Certainty Factor*, Laravel

ABSTRACT

Gionanda, Junioka Bayu 2026. Expert System for Early Detection of Pneumonia in Toddlers Using Forward Chaining and Certainty Factor Methods. Thesis. Informatics Engineering Study Program, Faculty of Engineering, Universitas PGRI Madiun. Supervisor: (I) Sri Anardani, S.Kom., M.T. (II) Yessi Yunitasari, S.Kom., M.Cs.

This research focuses on designing and developing an Expert System for Early Detection of Pneumonia in Toddlers using the Forward Chaining method to logically trace symptoms, and the Certainty Factor method to determine the level of confidence in a diagnosis based on the symptoms selected by the user. The system was built using the Extreme Programming (XP) methodology, which includes Planning, Designing, Coding using the Laravel framework, and Testing using Black Box Testing and the System Usability Scale (SUS). The main features of the system include pneumonia diagnosis in toddlers, diagnosis results with a confidence level, knowledge base management, and diagnosis history. The results of the Black Box Testing showed that all system functions operated correctly, and the System Usability Scale (SUS) evaluation achieved an average score of 85.68 from 11 respondents. Consequently, it can be concluded that the system's test usability falls into the "Excellent" category with a "Grade B". This system is considered feasible for use as a tool for the early detection of pneumonia in toddlers because it provides accurate information, is easily accessible, and increases public awareness regarding the importance of early detection.

Keywords: *Expert System, Pneumonia in Toddlers, Early Detection, Forward Chaining, Certainty Factor, Laravel*