

ABSTRAK

UNIVERSITAS AISYIYAH PALEMBANG

**FAKULTAS KESEHATAN DAN TEKNOLOGI PROGRAM STUDI D4
MANAJEMEN INFORMASI KESEHATAN**

Skripsi

Juni 2026 (Alvin Valency)

**Pengembangan dan Pengujian Sistem Rekomendasi Coding ICD-10 Berbasis
Artificial Intelligence pada Rekam Medis Elektronik**

XVIII, 57 Halaman, 10 Tabel, 7 Gambar, 6 Daftar Singkatan, 4 Lampiran

Pendahuluan: Pengkodean diagnosis ICD-10 pada rekam medis elektronik memerlukan ketepatan, konsistensi, dan efisiensi, sedangkan variasi istilah diagnosis serta ketidaklengkapan dokumentasi dapat meningkatkan beban verifikasi coder. **Tujuan:** Penelitian ini bertujuan mengembangkan dan menguji sistem rekomendasi coding ICD-10 berbasis artificial intelligence sebagai alat bantu coder. **Metode:** Penelitian menggunakan metode Research and Development dengan model Waterfall yang meliputi analisis kebutuhan, perancangan, implementasi, pengujian fungsional, dan pengujian kesesuaian rekomendasi. Purwarupa dibangun sebagai aplikasi web menggunakan Laravel, PHP 8.2, MySQL, dan API Gemini AI. **Hasil:** Pengujian fungsional dilakukan melalui delapan skenario black box, sedangkan kesesuaian rekomendasi dievaluasi pada 20 diagnosis uji dengan membandingkan keluaran sistem terhadap kode rujukan ICD-10 serta kebutuhan informasi klinis tambahan. **Kesimpulan:** Seluruh skenario fungsional dinyatakan berhasil. Sebanyak 16 dari 20 diagnosis (80%) dikategorikan sesuai dan 4 diagnosis (20%) memerlukan verifikasi lanjutan. Secara deskriptif, 18 keluaran memiliki kode yang sama secara literal dengan kode rujukan; namun tiga di antaranya tetap memerlukan verifikasi karena istilah diagnosis belum cukup spesifik, sehingga angka tersebut tidak ditafsirkan sebagai akurasi klinis. Sistem berpotensi mempercepat penelusuran kandidat kode dan memberikan alasan rekomendasi, tetapi keputusan akhir harus tetap dilakukan coder. Implementasi produksi memerlukan validasi lebih luas, penyimpanan riwayat pada basis data backend, pengendalian akses, audit trail, dan tata kelola privasi.

Kata kunci: artificial intelligence, black box testing, ICD-10, rekam medis elektronik, rekomendasi coding

Daftar Pustaka: 24 (2019-2025)

ABSTRAK

AI SYIYAH UNIVERSITY OF PALEMBANG

FACULTY OF HEALTH AND TECHNOLOGY D4 HEALTH INFORMATION
MANAGEMENT STUDY PROGRAM

Final Project Report

June 2026 (Alvin Valency)

**Development and Testing of an Artificial Intelligence-Based ICD-10 Coding
Recommendation System for Electronic Medical Records**

XVIII, 56 pages, 10 tables, 7 figures, 6 lists of abbreviations, 4 appendices

Introduction: ICD-10 diagnostic coding in electronic medical records demands accuracy, consistency, and efficiency; however, variations in diagnostic terminology and incomplete documentation can increase the verification burden on coders. **Objective:** This study aimed to develop and test an artificial intelligence-based ICD-10 coding recommendation system to assist coders. **Methods:** The study employed a Research and Development approach using the Waterfall model, comprising requirements analysis, design, implementation, functional testing, and recommendation suitability testing. A prototype was built as a web application using Laravel, PHP 8.2, MySQL, and the Gemini AI API. **Results:** Functional testing was conducted via eight black-box scenarios, while recommendation suitability was evaluated across 20 diagnostic test cases by comparing system output against reference ICD-10 codes and assessing the need for additional clinical information. **Conclusion:** All functional scenarios were successfully executed. Sixteen out of 20 diagnoses (80%) yielded appropriate recommendations, while four (20%) required further verification. Descriptively, 18 outputs matched the reference codes literally; however, three of these still required verification due to a lack of specificity in the diagnostic terms, meaning this figure does not equate to clinical accuracy. The system has the potential to accelerate the retrieval of candidate codes and provide rationales for recommendations, though the final decision must remain with the coder. Production implementation requires broader validation, backend database history storage, access control, audit trails, and privacy governance.

Keywords: artificial intelligence, black box testing, coding recommendation, electronic medical record, ICD-10

References: 24 (2019-2025)