Intelligent Laboratory Management System

Evaluation Summary Report

Based on feedback from three doctors (Dr. Ernest Kamaro, Dr. Eulade Muhizi, and Dr. Normand Gatsinda) and several test cases, this report presents a comprehensive assessment of the Intelligent Laboratory Management System. The system demonstrates strong capabilities in test recognition and explanation but requires improvements in workflow efficiency and patient history integration.

Key Strengths

1. **Excellent test recognition**: The system effectively identifies and processes various test names (CBC, FBC, malaria tests) regardless of how they're phrased.
2. **Strong follow-up capabilities**: Consistently asks appropriate clarifying questions when test requests are ambiguous.
3. **Detailed test explanations**: Provides comprehensive information about tests, including clinical significance.
4. **Abnormal value detection**: Accurately flags and explains abnormal test results with clinical context.

Areas for Improvement

1. **Patient history utilization**: Only provides history-based test suggestions when explicitly prompted, rather than proactively.
2. **Workflow complexity**: Doctors noted excessive confirmation steps and unnecessary complexity.
3. **Prioritization inconsistencies**: The prioritization mechanism sometimes fails to properly weigh medical urgency (e.g., prioritizing hormone tests over malaria tests).
4. **Customization options**: Limited ability to customize result displays and report formats.

Doctor Recommendations

1. Streamline the workflow with fewer confirmation steps.
2. Improve prioritization logic based on medical urgency.
3. Make patient history integration more consistent and proactive.
4. Add voice-to-text functionality for consultation notes.
5. Provide more information icons for additional context.
6. Consider integration with EHR systems.

Performance Metrics

Test Case Performance Analysis

Feature	Test Case 1 (Hormones)	Test Case 2 (Malaria)	Test Case 3 (CBC)	Average
Test Recognition	5/5	5/5	5/5	5.0
Follow-up Quality	5/5	5/5	5/5	5.0
Test Explanation	5/5	5/5	5/5	5.0
Patient History Integration	0/5	4/5	0/5	1.3
Prioritization	5/5	4/5	0/5	3.0

Overall Score	4.0/5	4.6/5	3.0/5	3.9/5

Physicians' Assessment (Scale 0-5)

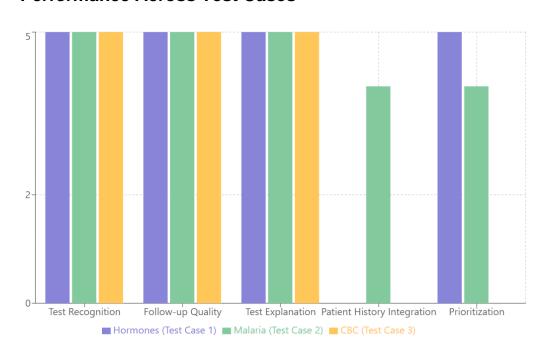| Feature	Average Score	Comments
Test Recognition	4.7	Excellent recognition of test naming conventions
Follow-up Quality	4.3	Appropriate clarification questions
Test Explanation	4.7	Detailed and clinically relevant explanations
Patient History Integration	3.0	Inconsistent use of patient history
Prioritization	2.7	Priority scores not aligned with clinical urgency
Result Analysis	4.0	Strong abnormal value detection
Workflow Efficiency	3.0	Too many confirmation steps

Performance visualization

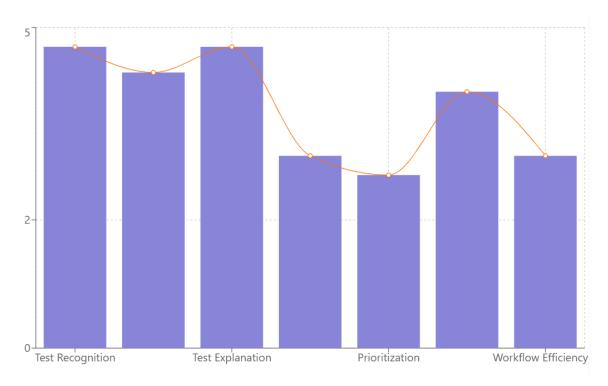## System Capabilities: Test Cases vs. Physicians' Assessment

Test Cases   Physicians' Assessment

Performance Across Test Cases

Hormones (Test Case 1)   Malaria (Test Case 2)   CBC (Test Case 3)

Physicians' Assessment (Scale 0-5)

Conclusion

The Intelligent Laboratory Management System demonstrates strong fundamental capabilities in test recognition, explanation, and result analysis. However, significant improvements are needed in workflow efficiency, prioritization logic, and proactive use of patient history. With these enhancements, the system could become a more valuable tool for clinical laboratories and improve doctor satisfaction.