

# TOBILOLA OGUNBOWALE

Digital Health Solutions Project Manager | Laboratory Informatics Specialist

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## PROFESSIONAL SUMMARY

CAPM-certified project manager with 10+ years managing digital health implementations and laboratory informatics systems across diagnostic, research, and clinical environments. Built and deployed production AI systems currently used by research institutions for laboratory automation and workflow optimization. Proven expertise in scaling operations (1M+ samples processed during COVID-19), managing multi-million dollar research portfolios, and implementing LIMS/LIS platforms with 95%+ user adoption. Strong technical foundation combining laboratory domain expertise (PCR, ELISA, molecular diagnostics), data analytics, and modern AI/ML engineering. Passionate about advancing frontier AI capabilities through research-driven engineering and building intelligent systems that transform healthcare operations.

## TECHNICAL PROJECTS

### Medical AI Agent | [github.com/tobilola/medical-ai-agent](https://github.com/tobilola/medical-ai-agent)

- Built autonomous AI agent that reasons through clinical questions using multi-step planning and dynamic tool selection
- Created 5 clinical tools: patient data query, PubMed literature search, drug interaction checker, clinical calculators, and SOAP note generator
- Designed agent reasoning loop that breaks complex medical queries into steps, validates results, and self-corrects errors
- Built RAG system with vector database containing medical guidelines and clinical protocols for evidence-based recommendations
- Technologies: LangChain, OpenAI GPT-4, ChromaDB, FastAPI, Streamlit, PostgreSQL

### Requiva Lab Management System | *Production System - Currently in Use*

- Deployed lab order tracking platform currently used by Adelaiye-Ogala Lab at University at Buffalo for managing consumables and procurement workflows
- Integrated 5 machine learning models: predictive reordering using time-series analysis, spending forecasts with moving averages, anomaly detection for unusual ordering patterns, vendor recommendations based on price and reliability, and bulk order optimization
- Built grant-based spending tracker with audit-ready reporting for NIH compliance requirements, reducing report generation from 2 hours to 5 minutes
- Technologies: Python, Streamlit, Firebase, Scikit-learn, Pandas, Prophet/ARIMA, Render

### LIMS-ELN Integration Platform | [github.com/tobilola/LIMS-ELN\\_Integration](https://github.com/tobilola/LIMS-ELN_Integration)

- Designed middleware platform for bidirectional data synchronization between Laboratory Information Management Systems and Electronic Laboratory Notebooks
- Trained 3 machine learning models: anomaly detection using Isolation Forest to identify unusual sample patterns, entity extraction with spaCy NER for automated metadata capture, and compliance scoring to ensure FDA 21 CFR Part 11 requirements
- Built asynchronous data pipelines capable of processing 1000+ samples daily with complete audit trail documentation
- Technologies: Python, FastAPI, PostgreSQL, MongoDB, Redis, Docker, Scikit-learn, spaCy

### Regulatory Compliance Tracker | [github.com/tobilola/compliance-tracker](https://github.com/tobilola/compliance-tracker)

- Created automated compliance monitoring system with OCR document processing and NLP analysis for pharmaceutical laboratories
- Developed 5 machine learning models including document classifier achieving 94.5% accuracy using Random Forest, compliance scorer with Gradient Boosting for risk assessment, entity extractor for automated data capture, anomaly detector, and text similarity analyzer

- Built real-time dashboard with gap analysis and document expiration tracking supporting FDA 21 CFR Part 11, GLP, and ISO 17025 standards
- Technologies: Python, Tesseract OCR, Scikit-learn, spaCy, Transformers, PostgreSQL, React

## PROFESSIONAL EXPERIENCE

### Research Systems Operations Manager

*University at Buffalo, Department of Medicine* | 2024 - Present | Buffalo, NY

- Design and implement AI-powered systems for laboratory automation including inventory tracking, equipment scheduling, and workflow optimization across \$2M+ research portfolio
- Lead cross-functional teams of 15+ across laboratory operations, IT, and research departments to integrate LIS/LIMS with clinical workflows
- Deployed predictive systems that reduced operational costs by 60% while maintaining compliance with IRB, HIPAA, and IACUC standards
- Built analytics dashboards that improved forecasting accuracy by 20% for portfolio resource planning and budget allocation

### Graduate Research Assistant - Bioinformatics & Laboratory Informatics

*SUNY Center for Excellence in Bioinformatics & Life Sciences* | Nov 2022 - Dec 2023 | Buffalo, NY

- Coordinated bioinformatics research projects using computational infrastructure, managing timelines, resources, and stakeholder communications across laboratory operations and IT teams
- Designed and optimized bioinformatics pipelines using Snakemake and Nextflow on HPC infrastructure, processing large-scale genomic datasets
- Developed and implemented standard operating procedures (SOPs) for research workflows, ensuring consistent processes and knowledge retention
- Established quality control procedures for NGS datasets using Seurat, Cell Ranger, and GATK, implementing validation workflows that improved data accuracy
- Configured LIMS workflows for automated biospecimen tracking, integrating laboratory automation with computational analysis pipelines

### Digital Transformation Lead

*Afri-Global Medicare Limited* | June 2020 - Aug 2021 | Lagos, Nigeria

- Led enterprise laboratory transformation during COVID-19 pandemic, processing 1 million+ diagnostic samples while maintaining 95% accuracy and regulatory compliance
- Achieved 95% user adoption within 6 months on LIS implementation (EPIC Beaker, Cerner) across multi-site diagnostic operations
- Cut diagnostic turnaround time by 35% through workflow optimization, laboratory automation configuration, and process re-engineering
- Scaled COVID-19 testing operations 300% in 3 months while maintaining quality control protocols, CLIA compliance, and data integrity
- Built and managed 15+ person cross-functional team across laboratory operations, IT infrastructure, and clinical workflows

### Project Manager & Data Analyst

*Field Approach Consult* | March 2017 - June 2020 | Lagos, Nigeria

- Managed 500+ participant clinical research study coordinating international teams across Nigeria and Germany for hepatitis epidemiological intelligence initiative (Ambrose Ali University × Bernhard Nocht Institute for Tropical Medicine)
- Led multi-jurisdictional population health research across 5 local government areas with strategic field operations, data collection, and advanced statistical analytics
- Coordinated cross-functional teams across multiple time zones, establishing communication protocols and meeting schedules to ensure project alignment and deliverable completion

- Conducted data analysis using Python and R for epidemiological modeling, generating policy-level insights for global health strategy development
- Developed project plans, monitored progress, and adjusted timelines and resource allocation based on evolving stakeholder needs and research requirements

## Laboratory Operations & Technology Coordinator

University of Lagos - Central Research Laboratory | Dec 2014 - Feb 2017 | Lagos, Nigeria

- Coordinated laboratory technology implementation projects, managing timelines, resources, and stakeholder communications across research and operations teams
- Performed molecular diagnostic work including PCR, RT-PCR, ELISA, and gel electrophoresis for clinical and research applications
- Developed and implemented quality control systems using Lean Six Sigma methodologies to improve laboratory processes and reduce error rates
- Led cross-functional project teams for laboratory operations modernization and technology integration initiatives
- Created standardized protocols and SOPs for laboratory operations, data management, and regulatory compliance documentation

## EDUCATION

**Master of Science, Biomedical Informatics** | University at Buffalo | Dec 2023

*Relevant Coursework:* Machine Learning, Healthcare Data Integration, Bioinformatics, Clinical Research Informatics

**Master of Science, Medical Microbiology** | University of Lagos | Dec 2016

**Bachelor of Science, Microbiology** | Redeemer's University | Aug 2012

## CERTIFICATIONS

**Certified Associate in Project Management (CAPM)** | Project Management Institute (PMI)

## TECHNICAL SKILLS

**Programming & Development:** Python, JavaScript, SQL, Bash, Git/GitHub

**AI & Machine Learning:** LangChain, OpenAI GPT-4, Anthropic Claude, Scikit-learn, TensorFlow, spaCy, ChromaDB, Pinecone, RAG systems, Agentic AI, Time-series forecasting (Prophet, ARIMA), Anomaly detection, NLP

**Laboratory Informatics:** LIMS/LIS platforms (EPIC Beaker, Cerner, Meditech, Sunquest), Biospecimen tracking, Laboratory automation, Workflow optimization, PCR, RT-PCR, ELISA, Gel electrophoresis

**Web Development & APIs:** FastAPI, React, Streamlit, RESTful APIs, Docker, Microservices architecture

**Data & Databases:** PostgreSQL, MongoDB, Firebase, Redis, Pandas, NumPy, Data pipelines, ETL processes

**Cloud & DevOps:** Google Cloud Platform (GCP), Cloud Storage, BigQuery, Vertex AI, CI/CD pipelines, Infrastructure as Code

**Bioinformatics:** Snakemake, Nextflow, Seurat, Cell Ranger, GATK, HPC computing, NGS analysis, Genomic data processing

**Healthcare IT & Compliance:** EHR/EMR integration, HL7/FHIR standards, HIPAA, CLIA, FDA 21 CFR Part 11, GLP, ISO 17025, IRB, IACUC

**Project Management:** CAPM certified, Agile/Scrum, Lean Six Sigma, DMAIC, Risk assessment, Change management, Stakeholder communications, Resource allocation