Enabling machine learning for enhanced research efficiency and precision in clinical imaging

Client
A global life sciences company based in London, Ontario

Company Size
500+ employees

Location
Global

Featured Partners

Microsoft Azure

Marlabs partnered with a global life sciences company to modernize their clinical imaging processes using machine learning. The project aimed to improve accuracy and efficiency and to reduce manual processing time for biopsy image analysis.

Marlabs conducted a five-phase engagement, during which we assessed machine learning models for deployment and provided extensive training and resources. The outcome was a detailed report that highlighted implementation recommendations.

Machine Learning

Data Science & AI Enablement

Data Strategy

Data Analytics Consulting

The Challenge: Overcoming manual image processing in clinical research

Objective: Standardize and accelerate clinical imaging processes using machine learning.

Existing Issues: Manual workflows were inefficient and prone to error.

Solution Needed: Machine learning models that could modernize data processing.

Outcome: Improved consistency, reduced cost, and enhanced research capabilities.

The client was looking to standardize their clinical imaging processes to accelerate drug development and improve research outcomes. Their existing image analysis workflows were highly manual, making them inefficient, prone to error, and resource-intensive. This limited the client's ability to scale and meet growing research demands.

The Solution: Multi-phase machine learning solution for clinical imaging

To address these challenges in standardizing and accelerating clinical imaging processing, Marlabs implemented a multi-phased approach to leverage machine learning. Below is an overview of the phases involved and their relevant workstreams:

Phase 1: Business Understanding & Problem Definition

Our team analyzed data, defined KPIs, and aligned with stakeholders.

Workstreams:

- Stakeholder Interviews
- Data analysis

Phase 2: Model Design & Development

We designed candidate models based on our findings from phase one.

Workstreams:

- Model development
- Hyperparameter tuning

Phase 3: Model Output Assessment

The team evaluated models against KPIs for accuracy and efficiency.

Workstreams:

- Performance evaluation
- Model comparison

Phase 4: Model Deployment

We deployed the models using containerized solutions for scalability.

Workstreams:

- Performance evaluation
- Model comparison

Phase 5: Monitoring & Maintenance

Following deployment, we provided training and workshops on sustainable model management.

Workstreams:

- Training
- Documentation

Services and Technologies Used:

Services:

- Machine Learning Consulting
- RPA
- Data Science Advisory

Technologies:

- GitHub
- Terraform
- Docker
- PostgreSQL
- Python
- React.js
- Scala
- Microsoft Azure

The Results: Impact on the client organization

The engagement resulted in a comprehensive 90-page report that included implementation recommendations to ensure data readiness for future initiatives. Marlabs enabled the client to shift toward strategic decisions driven by data intelligence, which improved research outcomes.

Time reduction: This effort reduced manual processing time.

Machine Learning Scalability: Our team enabled scalability for future machine learning initiatives.

Accuracy: The models enhanced image analysis accuracy.

Training and Knowledge Sharing: We provided structured knowledge transfer and trainings.

Improved Data Quality: The client's data standardization and consistency both improved.