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AI-Microscopy based Disease Diagnostics

Company Pitchdeck 2024

Team Setup

CORE TEAM

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DESIGNATED PARTNER

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AI/ML CONSULTANT

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MICROSCOPY CONSULTANT

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Our Conviction

We improve the quality of life of the masses by increasing the accessibility & reliability of healthcare by providing AI assisted diagnostics solutions

To make diagnostics **efficient, accessible, and affordable.**

We aim to **reduce the time and cost** of microscopy based disease diagnostics by **at least 10x**

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Problem Area

The diagnostic pipeline that currently exists for the general public to use is **not scalable** while maintaining affordability and reliability

PBS Microscopy

Expensive equipment

Delayed diagnosis

(due to unavailability of lab staff at odd hours)

Variable accuracy

(due to human error, untrained professionals in rural areas)

Rapid Diagnostic Kit

High error rate

High cost per diagnostic

Pain Points

Pain points faced by users

- Unavailability of diagnostic labs & skilled pathologists in rural & remote areas
- Long turnaround times for diagnostic reports (1 -2 days)
- High prices for existing diagnostic solutions
- Misdiagnosis leads to overprescription of antibiotics leading to antimicrobial resistance

Pain points faced by pathologists

- Inefficiency due to manual counting methods for multiple hours
- Skill gap between pathologists from urban v/s rural areas
- Inconsistency in blood smear preparation

Our Solution

A **robust & portable** diagnostic device that automates **microscopy and image analysis** for a **quick, cost effective & precise** diagnosis

- Small form factor, ~2kg weight constraint
- Industry grade microscope optics with 0.8 micron resolution
- Custom built AI for image analysis
- Comprehensive diagnostic report & suggested treatment plan
- Sample analysed and diagnosed within 10 mins at 1/5th the cost

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Our Solution

We are demonstrating our Proof-of-Concept with Malaria, so as to build necessary systems and programs that once trained, will be able to diagnose:

- Malaria - P. falciparum, P. vivax, P. ovale, P. malariae
- Anaemia
- Sickle Cell Disease
- Acute Myeloid Leukemia
- Acute Lymphocytic Leukemia
- Oncology Diagnostics
  - Breast Cancer
  - Pancreatic Cancer
  - Colon Cancer

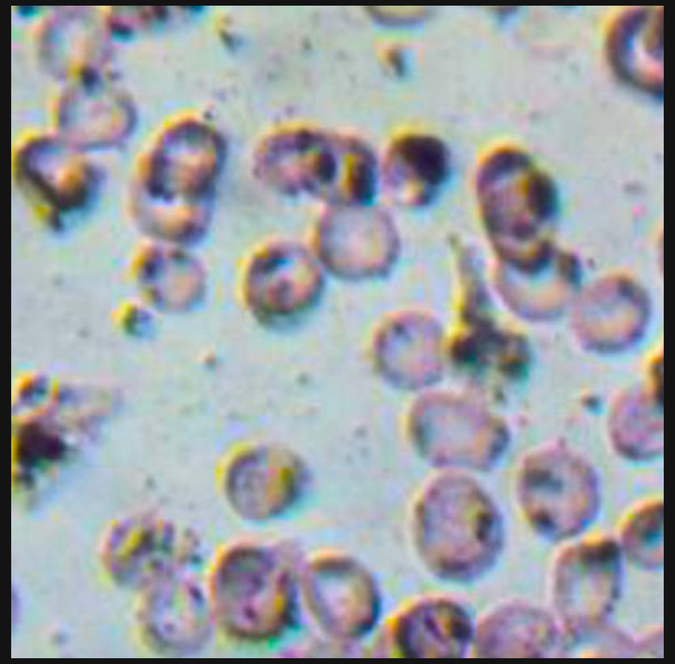
"The microscopic morphology-based pathology remains the "gold-standard" to identify cancer cells and to specify cancer type."

-Yang Liu and Jianquan Xu, 2019

Current Progress

We are currently developing the 4th prototype of our portable diagnostic instrument & collecting malarial samples for training while we develop our ML architecture.

Our AI model is already **98.5%** accurate in identifying cells and **92%** accurate in classifying the identified cells.



Model training Progress

Stage 0:
Pre-processed Image

~300 unique field view images of the sample are collected as input.

Note that the model was trained on images from an **online dataset** to test the optimal ML architecture.

Stage I

- Identifying bounding boxes encompassing objects.
- Classifying these objects into two broad categories: RBCs and "others." (infected cells and leukocytes)

Current Accuracy:

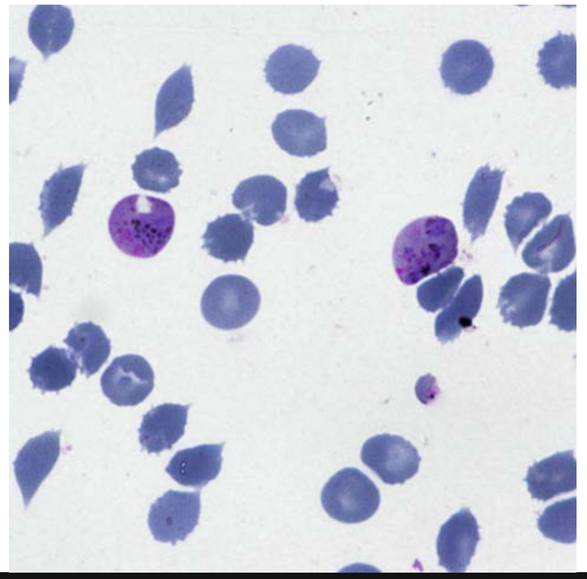
98.5%

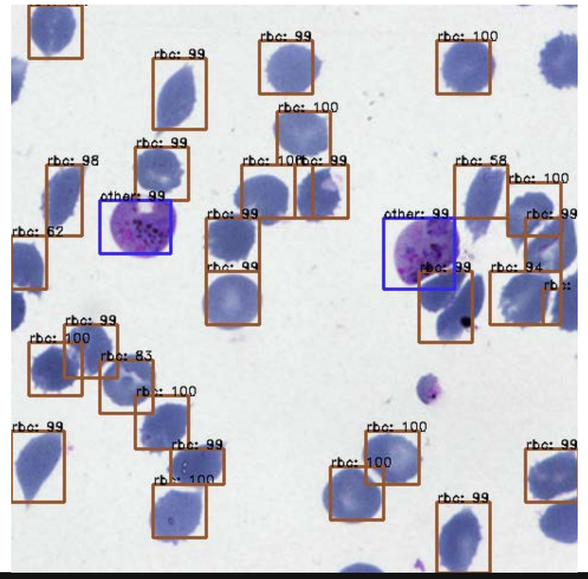
Stage II

The cells labelled as "others" (i.e., non-RBCs: infected cells and leukocytes) are identified and classified.

Current Accuracy:

92%





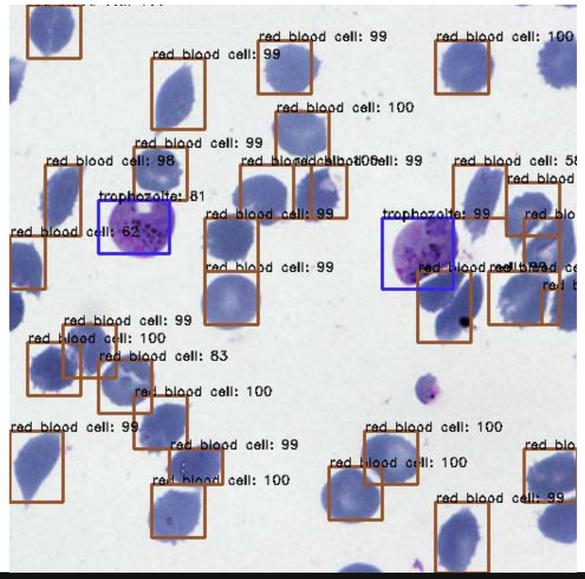
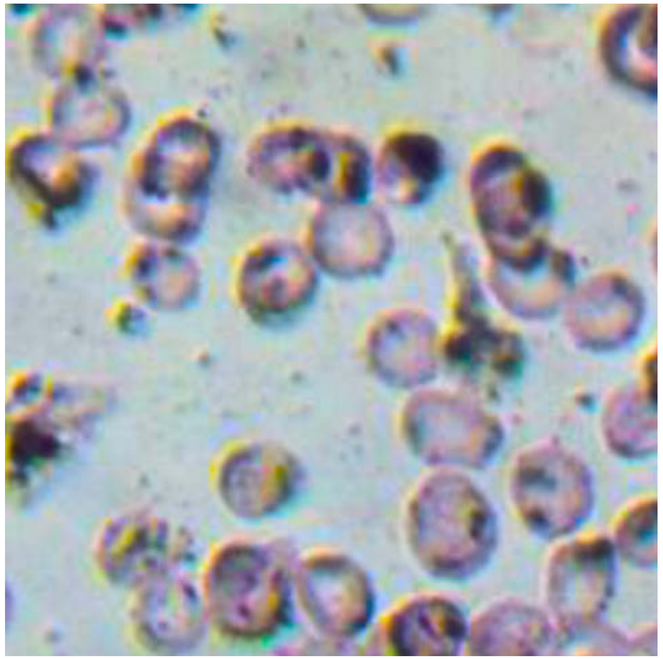
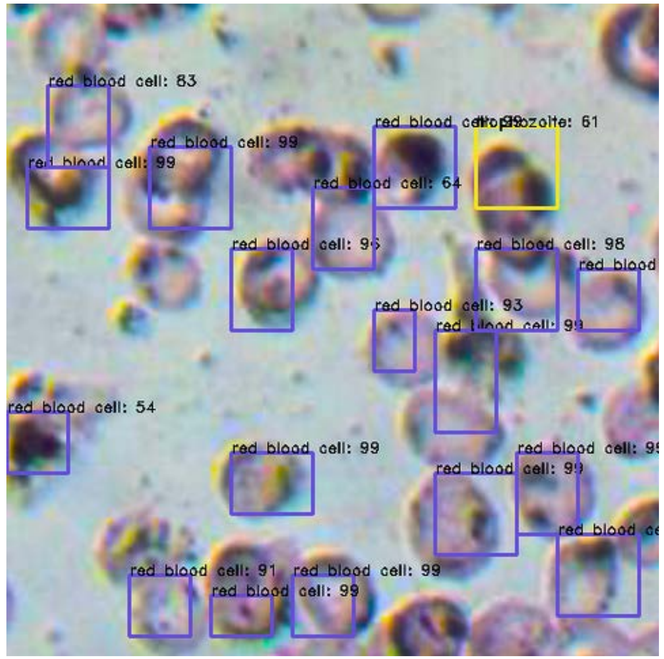


Image quality Progress





This shows that the model that we have trained so far, is already able to recognise cells in images taken by the latest prototype of the device.

Our Competitors

Technological Competitors

Aidx Medical - Netherlands, Africa
Sigtuple Technologies - India
Autoscope (ICMR India)
Mantiscope (Turkey)
Scidogma (Bangalore)
Morphle (Bangalore)

Differentiating factor: Novel microscope design, low cost, larger diseases covered

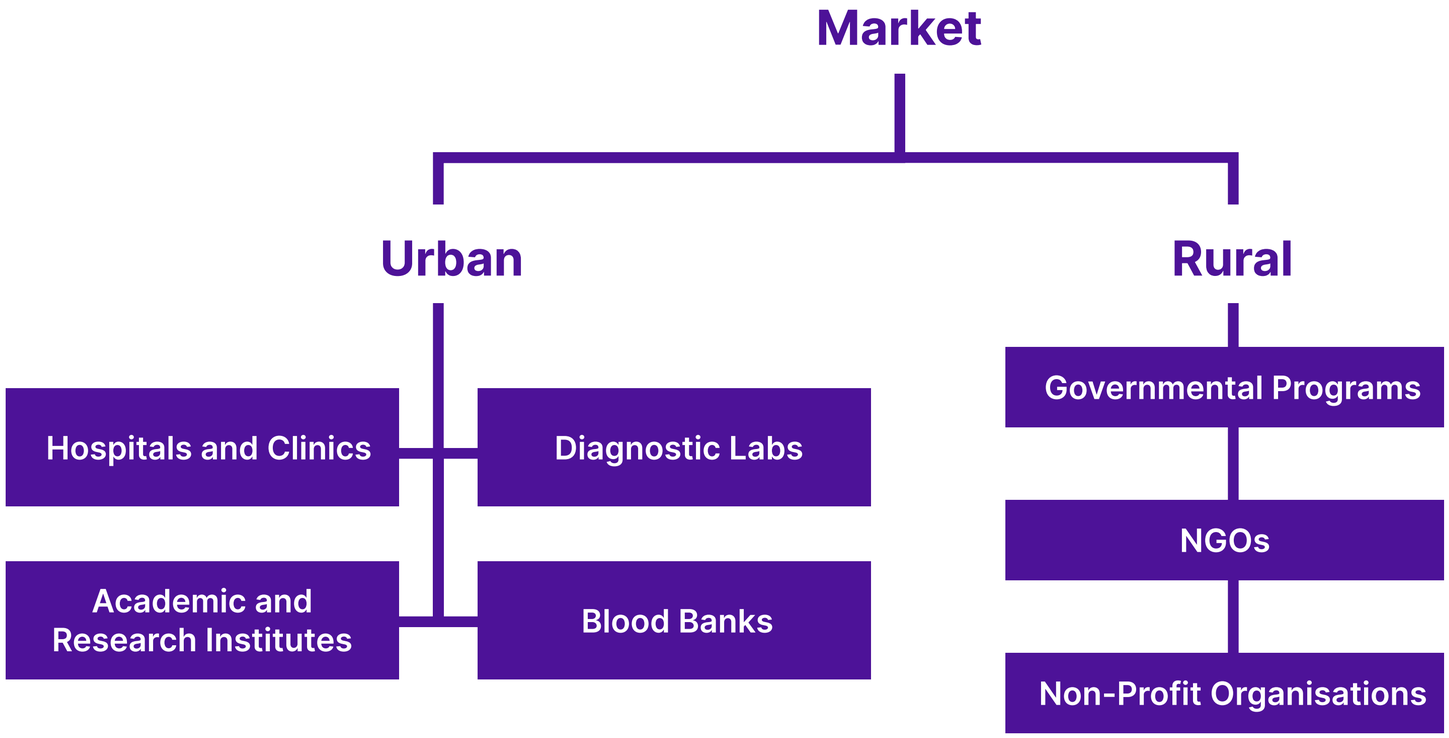
Market Competitors

Lal Path Labs
Disease specific RDTs (rapid diagnostic tests)

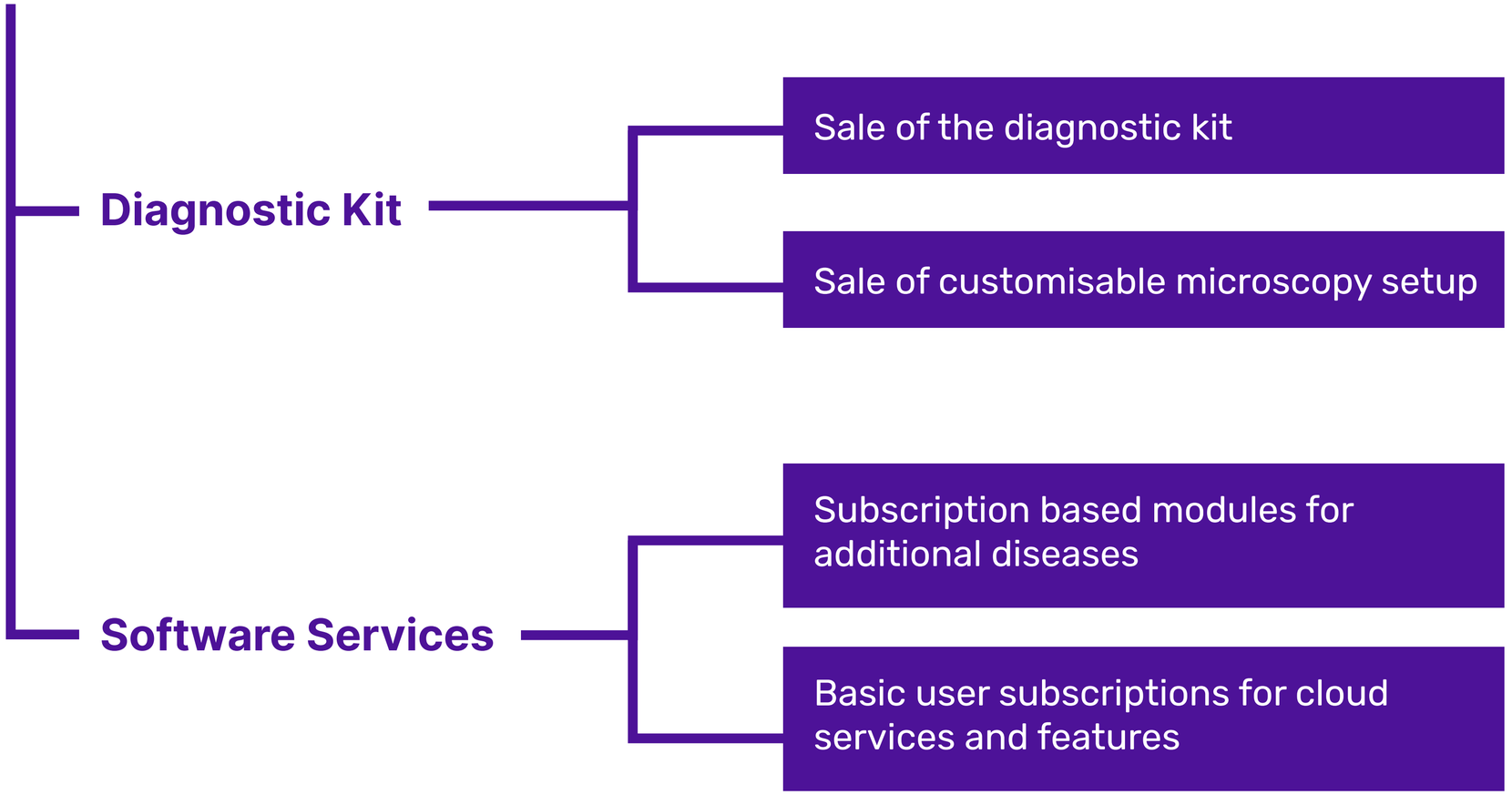
Differentiating factor:
Cheaper, more accurate and faster diagnostic solution

USD 15.14 billion by 2025

Cumulative Market Size Estimate



Revenue Generation



Next Steps & Vision

Diagnostic Kit Development

Jan 2024-Oct 2024

Hardware design and optimisation

Software design

User experience design

Initial Funding pitches

Manufacturing Pipeline

Oct 2024 -April 2025

IP protection - patents and industrial design protection

Clinical Trials

Oct 2024 -April 2025

Pairing up with CROs (contract research orgs) and research groups for Clinical trials

Accuracy, specificity and sensitivity testing

Regulatory Approvals

April 2025 - Oct 2025

Applying for ISO13485 certification for quality standards

Applying for regulatory approvals with the CDSCO for the Indian market

Marketing and Fundraising

ONGOING

To develop marketing and sales strategies

To approach Venture Capitalists for Series A/B/C funding

What we’re looking for from Investors

Monetary investments in the form of **Seed Funding.**

Business Mentorship

Connections/Networks with **Hospitals, Clinics** and **Diagnostic Labs** for **Sample Collection**.

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