

# MechDefect Solutions

Report 2  
Presented by Group 15

Date	Duration of meet	Purpose of Meet	Presentees
8/10/2023	1 hour	Discussing dataset and possible solutions	ALL
11/10/2023	2 hours	Work assignment	ALL

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# Project Title and Objectives

## **Advanced AI-Driven Defect Detection Solutions for Manufacturing Excellence**

### Objectives:

- Develop AI-powered defect detection and classification solutions for industries that cater to the initial stages of manufacturing
- Leverage transfer learning by training our model on different processes (like casting, mining, etc) gaining knowledge from one and applying it to other processes.



# Market Analysis

## Target Market

- B2B - Business to Business
- National Market

Our services target those companies that are involved in the production of metal-based raw materials, specializing in the manufacturing of pipes and billets.

## Market Size

The Global Defect Detection Market size is expected to reach \$5.1 billion by 2027 and is rising at a market growth of 6.6% CAGR during the forecast period.

India has the potential to become one of the leading countries in manufacturing and to make that happen, the quality of product needs to be at par with global standards. We seek to ensure this through our AI-driven services.

## Target Segment

We specialize in providing defect detection solutions for companies involved in early-stage manufacturing processes such as casting and rolling. Companies involved in manufacturing of pipes and billets within India such as Tata Steel, JSW Steel, Jindal Saw, Apollo Pipes, Finolex would be our major targets.

# Market Analysis

## Market Profitability

We seek to provide profitability for our clients in the following way:

- Quality improvement leads to reduced rework, warranty claims and recalls thus saving on manufacturer's substantial costs.
- Reduction of labor costs associated with manual quality control. Moreover, the improved efficiency leads to an improvement in the overall production rate.
- Ensuring that products meet safety and compliance standards is essential. AI can help maintain adherence to these standards thus reducing the risk of costly fines and legal issues

## Market Growth

The manufacturing industry is continually evolving with a growing emphasis on quality as well as production efficiency. This creates opportunities for AI-driven defect detection solutions. Our expertise caters to the specific needs and challenges of the growing market segment enabling manufacturers to consistently product high-quality, defect-free products that are better positioned to expand into new markets increasing revenue potential.

# Competitor Analysis

Major AI defect detection players in metal manufacturing, competing for B2B clients

## Lincode Labs

- Well-established, focus on cutting-edge AI and offers highly customizable solutions
- Lack specialized industry knowledge and their services come at a higher price

## Scortex

- Excel in data integration, provide easily scalable solutions and offer user-friendly interfaces
- Lack specialized industry knowledge and offer less customization

## SwitchON

- Recognized for adaptable and innovative defect detection strategies at budget-friendly price
- Relatively new in the market and lack specialized industry knowledge

# Barriers to Entry

## By us:

1. Amount of data possessed by giants like Google, Amazon, etc.
2. Lack of capital investment (from the perspective of the project) => lack of exposure to proprietary models (which may perform better than open models)
3. Availability of annotated data (with details about the location of defects for localization purposes): A large number of manual efforts will be invested to localize defects & make bounding boxes around them for images provided by the industry (if we want to pinpoint the location of the defect)

## By others:

1. Employees worry about Artificial Intelligence jeopardizing job security.
  - a. Foster a digital culture and augment your staff with innovation
  - b. Consider the idea of augmented intelligence, instead of deploying AI to replace your staff, consider using it to “amplify their capabilities.”
2. Cultural barriers [resistance to change]: company stakeholders are not convinced about the need for AI in particular, and they lack a proper understanding of the related benefits.
3. Initial friction moving from well-established quality monitoring systems to the computer vision-based approach that we try to bring in

# Marketing Plan

- User-friendly website
  - This is to showcase case studies, client testimonials and the efficiency of our AI solutions
- Content Marketing
  - Informative content including blogs and videos to establish our reach to potential clients
- Social Media Strategy
  - Engaging with the target audience on platforms like LinkedIn, Twitter and industry-specific forums to demonstrate thought leadership and build trust
- Partnerships
  - Collaborate with industry leaders and research institutions to showcase credibility
- Free Trials and Demos with Support
  - Offering free trials and product demos allow us to gain the trust of potential clients by making them experience our services and providing after-service customer support