Problem Statement Worksheet (Hypothesis Formation)

How can we enable our customers to reduce their quality control time by 40% by transitioning 80% of their quality inspection processes to AI using Images?

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1 Context

A metal casting company is finding that too much time and human resources are being spent on inspecting the quality of its products. The quality control department is looking for a more robust method to handle the quality control process, aiming to save both time and energy in the long run.

2 Criteria for success

Shift 80% of the quality inspection workflow to AI, aiming to cut quality control time by 40%.

3 Scope of solution space

A quality control plan will be implemented to record product images every hour. A classification model will be utilized to evaluate product quality based on images.

4 Constraints within solution space

- **Capturing images requires stable lighting**
- **Environment data is not recorded such as Temperature and Humidity**

5 Stakeholders to provide key insight

- **Manufacturing Engineer Manager**
- **Quality Control Engineer Header**
- **Data Science Department Manager**
- **Customer Service Manager**

6 Key data sources

The dataset contains a total 7348 image data of casting manufacturing products as the size of (300*300) pixels grey-scaled images. Images has been splitted into training and testing folder and labeled as 'defective' or 'OK'

https://www.kaggle.com/datasets/ravirajsinh45/real-life-industrial-dataset-of-casting-product

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