# Strategies to tackle the problem

Sample forecast is a forecast method what is considered as a miniature version of optimized forecast model. This model will consider a sample of bed and based on that section it will analyse data and show forecast\*.

## Modes of forecast :

Daily forecast: The model will take current day Co2, RH, Air temperature and sample Yield – in near future compost moisture and temperature are going to be considered with more complications added in

Harvest time forecast: The model will take above said parameters on the day prior to harvest day and forecast yield for consecutive 5 days. Daily forecast mode will play as a mean of comparison given being utilised on recurring fashion to achieve 5 days of forecast.

\*Important factor to note Forecast does not necessarily need to include picking. Picking is based on forecast not the other way around. For simplicity picking days are avoided in dataset

## Requirements:

Image data:

A section of the shelf, preferably the middle of a shelf or the front

Environment data:

Daily mean for CO2,RH,Air temperature

Full data structure for the model to grasp on

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Input | | | | Output |  |
| Day | CO2(ppm) | RH(%) | Air temperature(\*C) | Yield(KGs) | Forecast Yield (KGs) |  |
| Day 12 |  |  |  |  |  |  |
| Day 13 |  |  |  |  |  |  |
| Day 14 |  |  |  |  |  |  |
| Day 15 |  |  |  |  |  |  |
| Day 16 |  |  |  |  |  |  |
| Day 22 |  |  |  |  |  |  |
| Day 23 |  |  |  |  |  |  |
| Day 24 |  |  |  |  |  |  |
| Day 30 |  |  |  |  |  |  |
| Day 31 |  |  |  |  |  |  |
| Day 32 |  |  |  |  |  |  |

Forecast model is build on top of *Data processor* which consists of *image analyser* and data filter. Within data processor all sizes starting from *5 to 90*mm are categorized into small size rages to convert the sizes into weight to achieve yield from images.

## Challenges with requirements

Image data:

Option 1: Stitching all 6 camera images for the section selected

Option 2: Getting raw images from 6 cameras filtered and manually stitch them together.Else, get 6 camera images without overlaps and run the image analyser on individual ones.At the end get the analysed data from each and merge them

together.

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| --- | --- | --- | --- |
| Plausible Timeline | | | |
| a Image analysis | 1. Gathering images 2. Perform stitching 3. Segment the mushrooms 4. Registering the mushrooms and getting sizes from segmentation 5. Conclude yield from size weight relationship | 1 ||2 ||3  4  5 | 3 weeks |
| b Data fusion | Env data tabled with yield | >b | 2days |
| c Model design | Experiment with -  Regression  DT  LSTM | >c | 1 week |
| d Performance evaluation | Comparing with real scenario | >d | 1-2 Weeks |

**Full cycle graph :**

**G**rowth rate curve with animation (Analyse from images )

**Q.** Is it possible to track the mushroom beyond that timeline