

## March 18 Ground Truth Ag. Update

Meeting members: Divyesh, Aamir, Brandon, Dillan

### Divyesh Notes:

- Divyesh user test
  - His instinct was to click on other points in the imaging view map. Not implemented yet.
  - He mentioned that the graph would make more sense to take out the subcategory background splits (high quality, average quality, low quality) and replace with one background color for each grade or no background color (just white)
  - Confused by the graph's bars when they are a value of 0 (perfect sample). He mentioned that they currently show a checkmark in that case. We could do something different though.
  - Text choice of grading factors instead of characteristics
  - Zoom out button on the full screen image page is not obvious because he is clicking the bottom left button on the android device to go back.
  -
- Farmers don't know how grain is graded. Some do, most don't.
- 'X' on quick release filters doesn't always recognize tap (expand gesture radius)
- Show ranges of certain grading factors (non DOS)
  - Factors with a percentage (non DOS), we won't know where we sit on the grade (high quality, average quality, low quality). The bar kind of shows you but it's helpful for the use case of blending. If I have a hopper full of almost grade 1 unsprouted grain (grade 2.1), I can put it with my other unsprouted grain to blend for grade 1. Only useful to know where we are relative to the next grade. So we should show the thresholds of the grading factor and where they are.
    - Grade, tolerance chart (color of percent)
- Farmers may not know what all the grading factors are.
- Farmers mostly don't know how their grain is graded. They take issue with the grades they get though.
- Buyers probably don't care if grain is mildewed unless you're making a fine flour because mildew has little black specs.
- They are building their system to primarily work on the edge, they have a wifi router installed on combine so devices could be connected to each other.
- Everything resides on orange pi, Jetson runs all models. Tablet communicates with orange pi, when internet is available, orange pi has a worker that uploads to the cloud. Everything resides on hardware until you can upload to cloud. Once orange pi finds wifi, it can upload. For authentication, they have to be authorized every 7 days.
- Cost benefit is important to talk about on project day. Focus on user benefit. Grading is just a piece of data, we are giving tools to use data effectively. Our app is a feature in

addition to the problem. The market for the product is x, and we are making a feature on top of that.

- Shouldnt filter ergot grade 1 how it currently is
  - When the gradeinfo value is grade 1, it must be contributing  $> 0$  to count.
- Fusarium: Ryley contracts fusarium grade 3 for a certain field each year. If he knows during harvest that he doesn't have any fusarium coming off his field he can change his contract mid harvest. This use case costed him 140k. During harvest, price is very dynamic.

## Aamir notes on data

- Each category count is summary of coco format. Counts of everything in the json. Annotations is the prediction. Total seed count is total seeds in the image (includes the good ones)
- Super category is grouped together. Fly midge combines fly and midge. It is a percentage now (Sk super category percent), grading is done based on super category. If sample is below that tolerance then it is grade x. Ex: a factor may be percentage 0.13 which is greater than 0.04 threshold for grade 3 so it is sample.
- Graph should be based off of categories with lowest grade. Use that key to pull info from gradeinfo. Generally, focus on the factor downgrading it the most.
- If lowest grade is 1 and highest grade is 1 then ignore.
  - Say for lowest grade, it is ergot. Then, overall grade is the value of ergot key in the grade info map. Overall grade is what's downgrading it the most.
- Bar length tells you where it belongs in terms of grade. The percent is based off that factor's threshold.
- Dos tells you the quality of the grade (high, average, low)
- Multiple categories with lowest grade means both those are pushing it down. Use grade info to get data according to key.
- Don't worry about contributions. It is for GTA's models.