**Assignment 2**

**AGRO932**

Levering the Rodene et al., 2022 UAV dataset as we used in lab11 to test a hypothesis regarding the relationship between heritability and fitness (approximately equal to yield in an agriculture setting. In this case, canopy coverage on different dates can be considered as a proxy to reflect different levels of fitness):

1. Use the Github repo from homework1 to host your homework2. If you don’t have the access to your homework1 repo, it is acceptable to create a new repo to host homework2 only. However, the repo should be a light-weighted repo that is not supposed to be nested within some other repo. (10 pts)

**### create new repo for assignment #2**

2. According to the Rodene et al., 2022 paper, identify a number of dates as a proxy of different levels of fitness and clearly specify your hypothesis to test (i.e., early dates of canopy coverage are more related to fitness) and speculate a little bit why that should be the case with or without citations. (20 pts)

**### What do you think are more related with fitness, early or late dates? Write as a hypothesis to test (i.e., early dates of canopy coverage are more related to fitness), do literature review and explain why your hypothesis could be possible. Read the article to have more idea. Then, calculate heritability to test it.**

3. Following the basic steps to estimate genetic variances (VA for the inbred population) and clearly interpret the ANOVA table and variance components in terms of the covariances between relatives. Show results for one date as an example. (50 pts)

**###Use R script already provided to estimate VA, interpretate ANOVA, variance components highlighting COVARIANCES between relatives. Show one date results.**

4. Visualize (for example, a barplot with the x-axis showing the dates and the y-axis showing the h2), interpret your results, and report them in a reproducible manner. (20 pts)

**###Build barplot, interpretate results, report them in markdown file.**