This file guides user to reproduce the results reported in the following study:

Hyperspectral imaging dataset for advancing non-destructive pre-incubation fertility prediction and structural evaluation of chicken eggs.

Data source: link

Code source: link

Spectra visualization

- Remove all columns except spectral variables from the "spectra and reference parameters" dataset file (.csv format).
- Upload the file in "Spectra_Visualization_Dataset" and run the code.

Correlation analysis of mass, major, and minor diameters

- Remove all columns except target variables- Mass (g), Major dia (mm), and Minor dia (mm).
- Upload the file in "Spectra_Visualization_Dataset" and run the code.

Data partitioning

- Upload "*spectra and reference parameters*" csv file into "*Data_partitioning_into_Cal_Val_and_Test_sets.ipynb"* for data partitioning into calibration, validation, and test sets.
- For classification based on fertility information user needs to run *Stratified sampling (for fertility classification)* section of the same code file. Follow directions in the code.

PLSR model development for yolk mass

- Remove extra columns from the partitioned data sets: Remove "Sample ID", "Mass", "Major dia", "Fertilty ", "Thickness", "Shell strength".
- Rename the "Thickness (mm)" column as "Ref" in all sets.
- Run the *PLSR_Model_Dataset* code and change files paths accordingly.

PLS-DA model development for fertility classification

- Remove the "Sample ID" column from the all the partitioned data sets.
- Rename the "Fertility status" column as "Ref" in all sets.
- Run the *PLS_DA_Fertility_model code* and change files paths accordingly.