

Assignment 2 : Feature Extraction

- Applying the following feature extraction methods to plant dataset:
 - Raw image
 - Color histogram
 - Local Binary Pattern
 - Co-occurrence Matrix
 - Gabor Filters
 - Histogram of Oriented Gradient (HoG)
 - Bag-of-Features
- Choose FOUR features from the list.

Kaggle Plant Classification Dataset

- Black-grass
- Charlock
- Cleavers
- Common Chickweed
- Common wheat
- Fat Hen
- Loose Silky-bent
- Maize
- Scentless Mayweed
- Shepherds Purse
- Small-flowered Cranesbill
- Sugar beet



0ace21089.png



0b3e7a7a9.png



0b228a6b8.png



0d4f74f4a.png



0d28c429b.png



0dad57e7f.png



1d39b8f30.png



1e49633e0.png



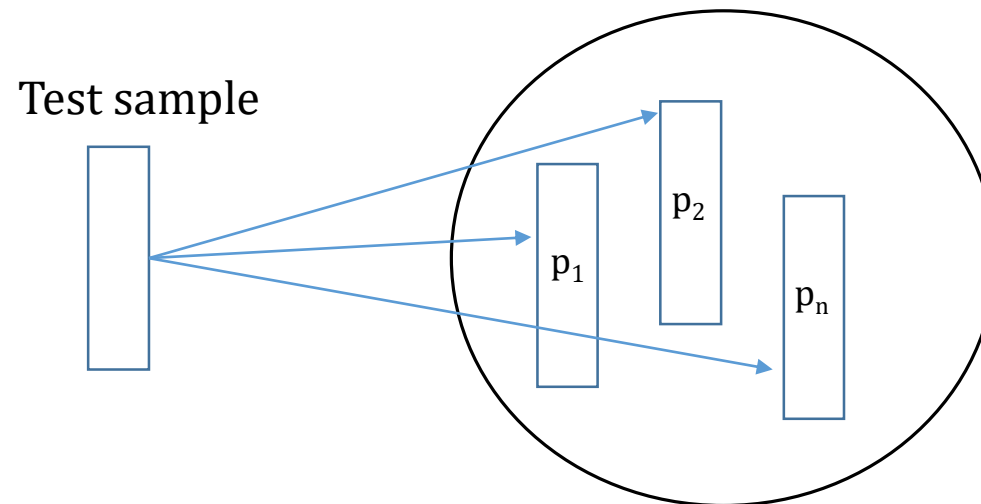
2aa60045d.png

Dataset Details

- Goal
 - to create a classifier capable of determining a plant's species from a photo.
- Task
 - image classification (12 classes)
- Training set
 - 4750 images
- Test set
 - 794 images
- Ref: <https://www.kaggle.com/c/plant-seedlings-classification>

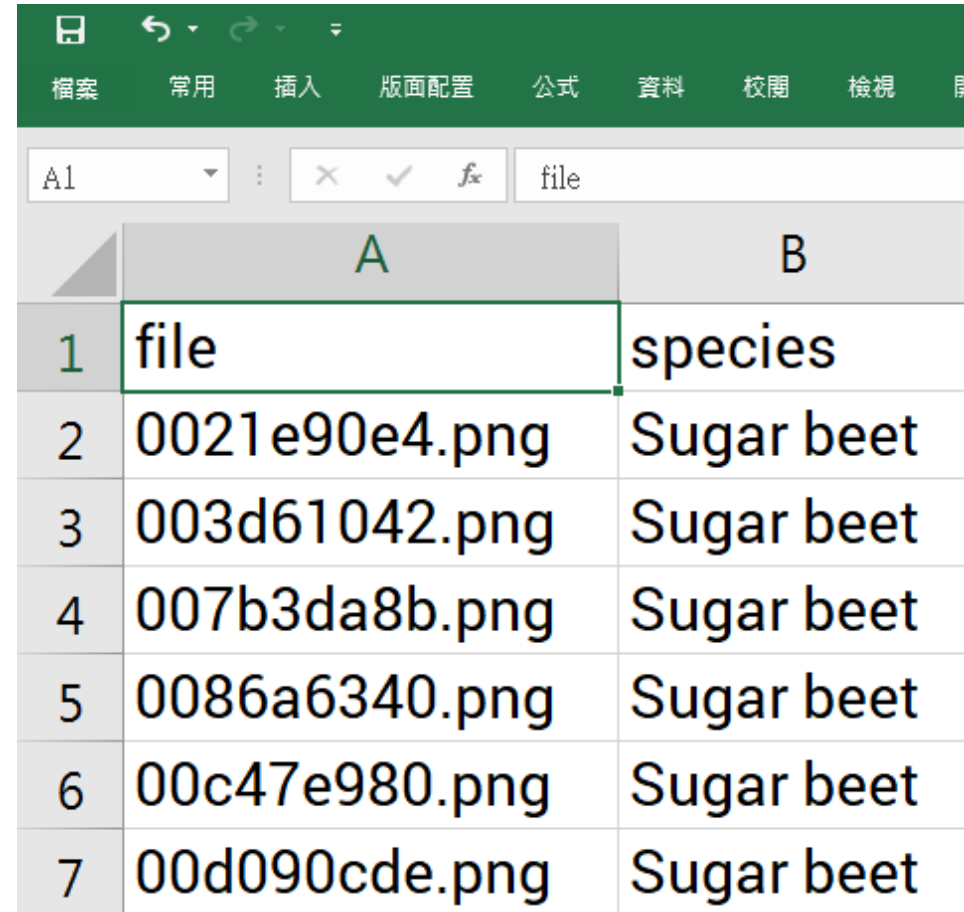
Nearest Neighbor Classification

- For the test sample, find the nearest sample in the training set.
- The nearest neighbor can be found by using
 - SAD – sum of absolute distance
 - SSD – sum of square distance
- Assign the label of the nearest neighbor to the test sample.



Submission Format

- File format: .csv
- Columns: file, species



The image shows a screenshot of a spreadsheet application. The interface includes a green ribbon at the top with tabs for '檔案' (File), '常用' (Home), '插入' (Insert), '版面配置' (Layout), '公式' (Formulas), '資料' (Data), '校閱' (Review), and '檢視' (View). Below the ribbon is a formula bar showing 'file'. The spreadsheet grid has two columns, A and B, and seven rows. The first row contains the headers 'file' and 'species'. The subsequent rows contain file names and the species 'Sugar beet'.

	A	B
1	file	species
2	0021e90e4.png	Sugar beet
3	003d61042.png	Sugar beet
4	007b3da8b.png	Sugar beet
5	0086a6340.png	Sugar beet
6	00c47e980.png	Sugar beet
7	00d090cde.png	Sugar beet

Sample submission.

Results Evaluation

- Use Feature + NN to determine the plant class for each image.
- Testing results from Kaggle
 - Use the whole training dataset and test set to obtain the testing results.

Assignment #2 – Plant Classification

- You need to hand in your source code and report
- The report should cover:
 - Method description – what are your reference codes? How to run your test?
 - Experimental results
 - The comparison of classification accuracy from validation
 - The comparison of ranking from Kaggle for each feature
 - Discussion
 - Problem and difficulties
- Upload assignment #2 before 11/21 (TUE), 23:59pm
- File format – zip all your files into a single file:
studentID_hw2_version, ex: 602410143_hw2_v1

Assignment Rules

- Late policy
 - You will get 20% deduction of your scores per day.
 - It means if the assignment is delayed one day for 80%, two days for 60%,..., five days for 0% .
- No-copy policy
 - Copying is strictly forbidden in our class.
 - Once the assignment is confirmed by TA as COPY, the score will be 0%.