Data & Analytics – Iris Flower

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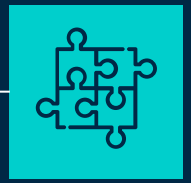
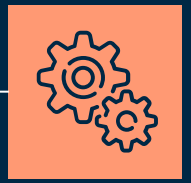


01

Problem & Dataset

-Motivation
-Data Quality
-Data Transformation



02

Data Modelling

-Logistics Regression
-KNN Classifier
-Support Vector Classifier

03

Visualization

-Classification & Similarity
-Limitation

Motivation

Retrieve records of **the most similar** Iris flowers in his garden for any input Iris flower based on historical data

Classify the input data belongs to which class then find nearest neighbors

-Analyse collected data

1) Features
2) Correlations
3) Outliers

-Model selection & Training (Multiclass model)

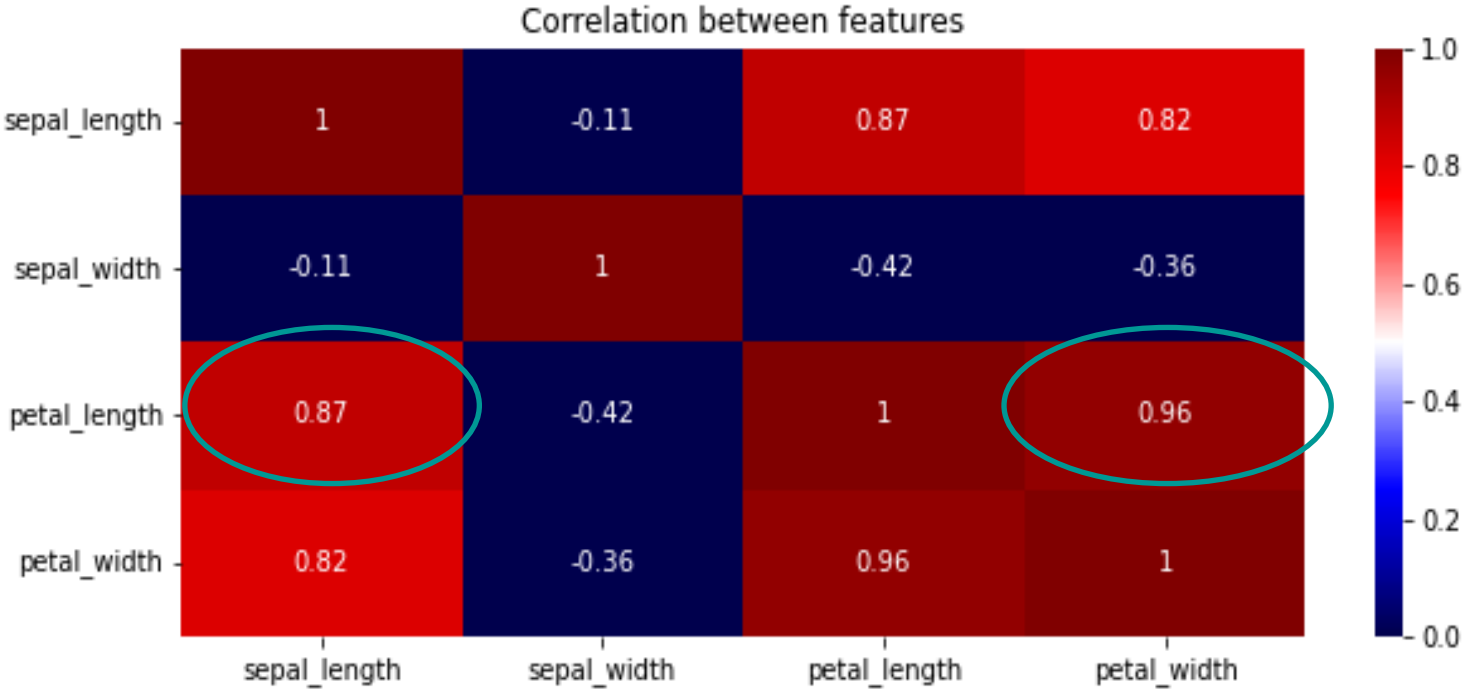
1) Logistics Regression
2) K-nearest neighbours Classifier
3) Support Vector Classifier

-Prediction

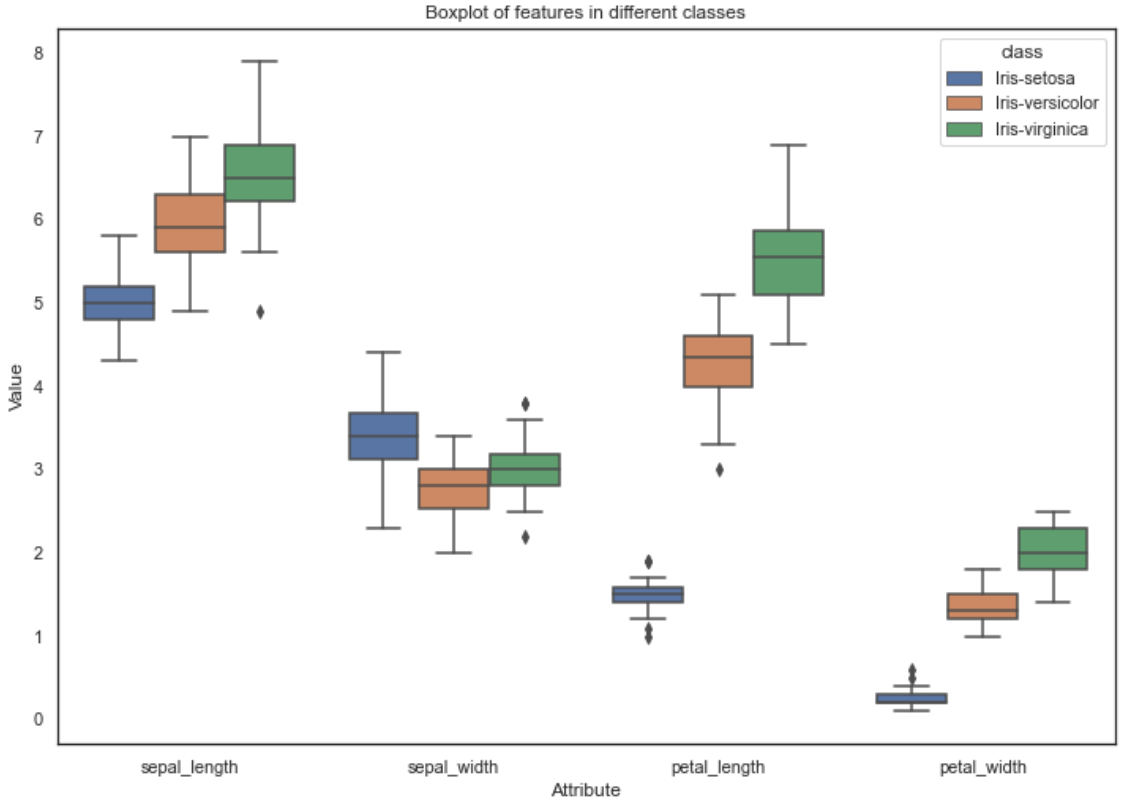
Data Quality

Correlation

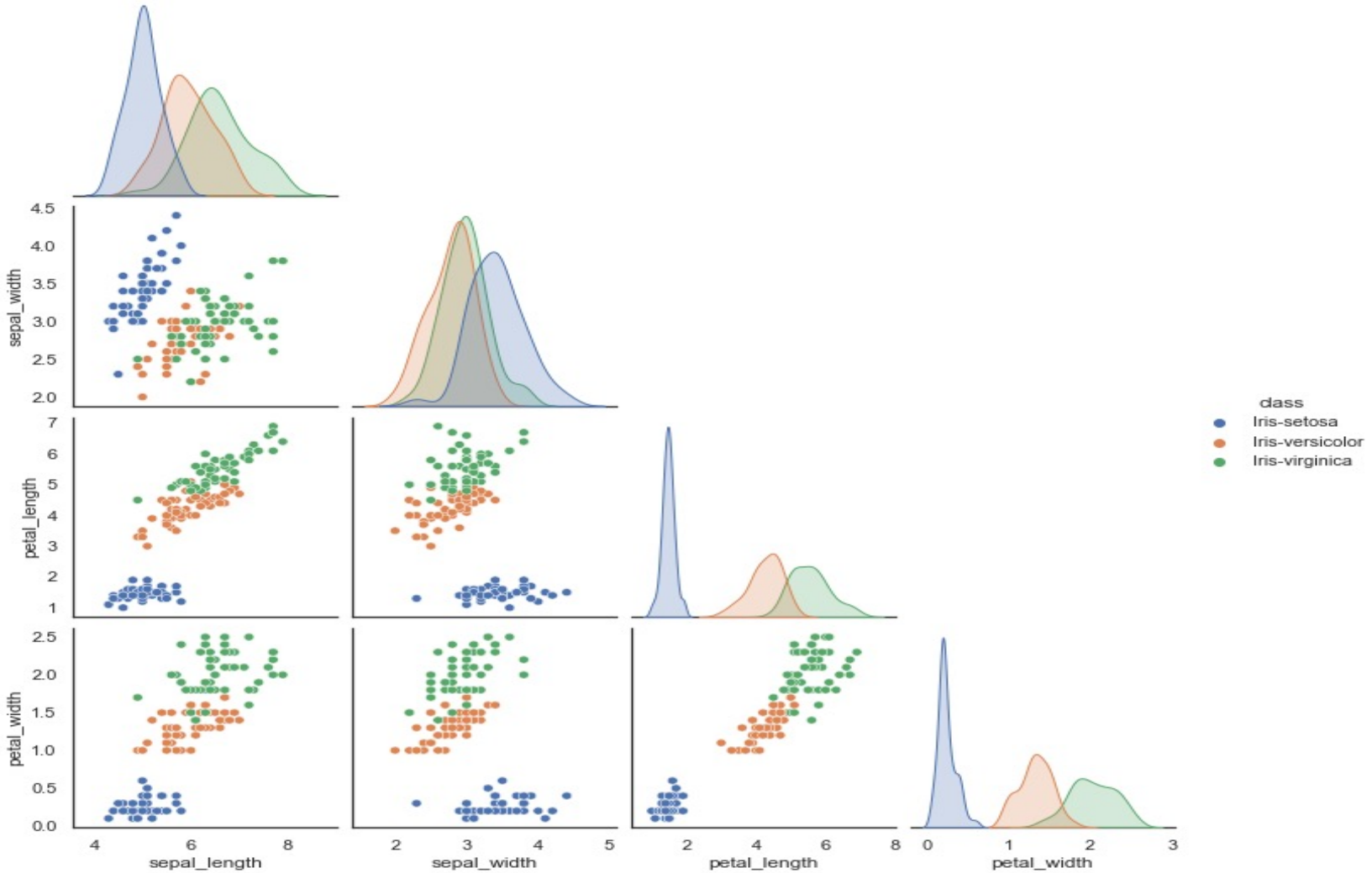
Petal length is highly correlated with petal width & sepal length



Correlation



Abnormal sepal width data of Setosa class


sepal_width
petal_length
petal_width
sepal_length
sepal_width
petal_length
petal_width
class
Iris-setosa
Iris-versicolor
Iris-virginica

Conclusion of data quality

-Sample size too small

-Features are highly correlated

-Abnormality of records

Data Modelling

Split data

Training data

70%

20%?
Accuracy is 1.0

Testing data

30%

Logistics Regression

LR:	precision	recall	f1-score	support
0	1.00	1.00	1.00	16
1	1.00	0.94	0.97	18
2	0.92	1.00	0.96	11
accuracy			0.98	45
macro avg	0.97	0.98	0.98	45
weighted avg	0.98	0.98	0.98	45

LR_ROC_AUC_SCORE: 0.9968457266932212

KNN

KN:	precision	recall	f1-score	support
0	1.00	1.00	1.00	16
1	1.00	0.94	0.97	18
2	0.92	1.00	0.96	11
accuracy			0.98	45
macro avg	0.97	0.98	0.98	45
weighted avg	0.98	0.98	0.98	45

KN_ROC_AUC_SCORE: 0.9842616433030376

SVC

SVC:	precision	recall	f1-score	support
0	1.00	1.00	1.00	16
1	1.00	0.94	0.97	18
2	0.92	1.00	0.96	11
accuracy			0.98	45
macro avg	0.97	0.98	0.98	45
weighted avg	0.98	0.98	0.98	45

SVC_ROC_AUC_SCORE: 0.9968457266932212

Data Visualization

Similar Points within the class

Sepal Length: 4

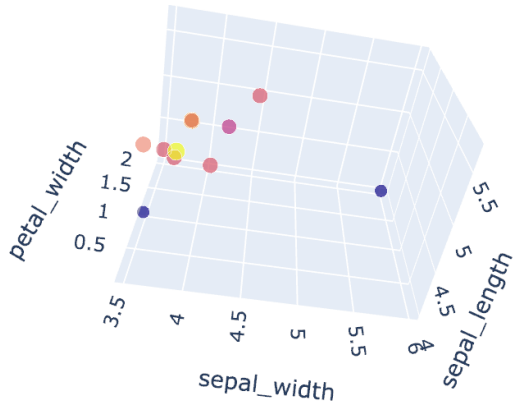
Sepal Width: 6

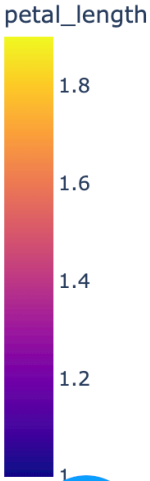
Petal Length: 1

Petal Width: 2

SUBMIT

sepal_length	sepal_width	petal_length	petal_width	class	label
4	6	1	2	Iris-setosa	0
5.7	4.4	1.5	0.4	Iris-setosa	0
5.5	4.2	1.4	0.2	Iris-setosa	0
5.2	4.1	1.5	0.1	Iris-setosa	0
5.4	3.9	1.3	0.4	Iris-setosa	0
5.1	3.8	1.5	0.3	Iris-setosa	0
5.1	3.7	1.5	0.4	Iris-setosa	0
4.6	3.6	1	0.2	Iris-setosa	0
5.1	3.8	1.9	0.4	Iris-setosa	0
5.4	3.9	1.7	0.4	Iris-setosa	0
5	3.5	1.6	0.6	Iris-setosa	0

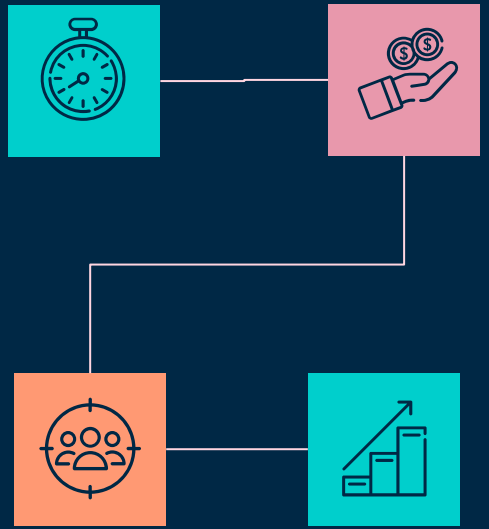

petal_width
2
1.5
1
0.5
3.5
4
4.5
5
5.5
sepal_width
4
4.5
5
5.5
sepal_length


petal_length
1.8
1.6
1.4
1.2
1

Limitations

Over/Underfitting

Cross validation



Other ML models

DecisionTree Classifier
XGBoost
Random Forest
.....

Interface

UI design
Various plots

Accuracy

Split Petal & Sepal into two datasets and build models for each

Questions?

Thank you!