Master of Technology

U2/6: Computational Intelligence I

SVM Workshop

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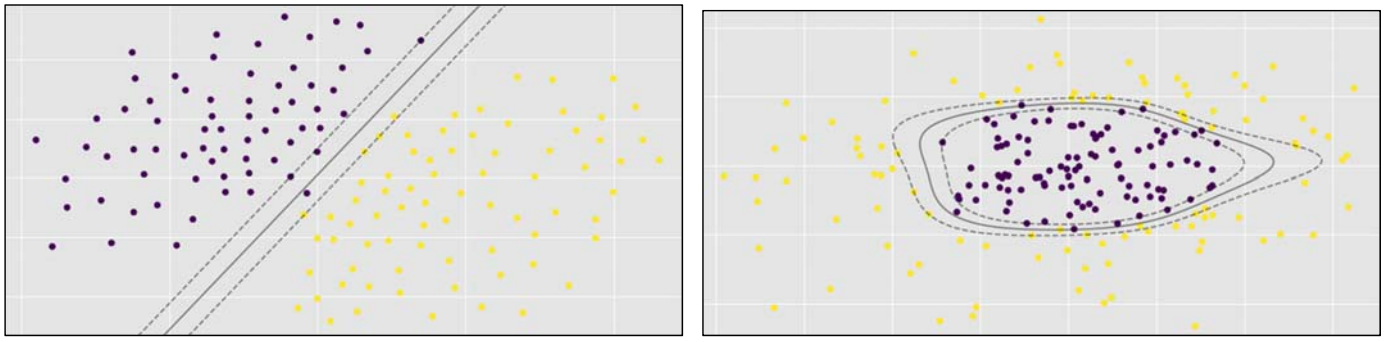
Outline

- Demos in various visualization tools
- Workshop 1: Classification using SVM
  - » Hands-on programming experience using Python
- Workshop 2: Feature engineering + SVM for classification
  - » An example on HOG+SVM for digit image classification
  - » Hands-on programming experience using Python

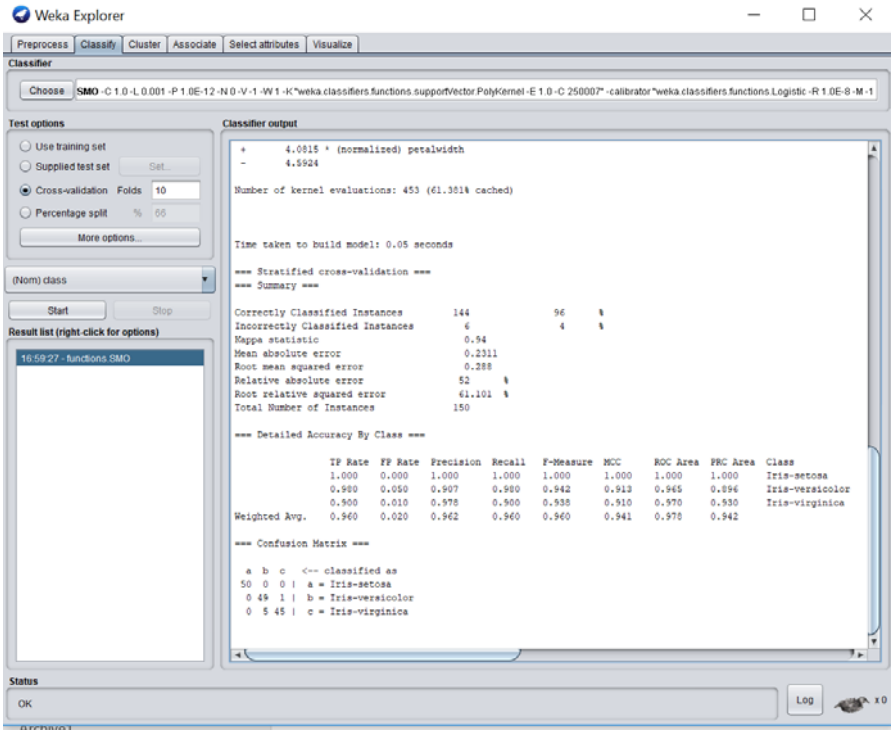
Demo: Python

- Linear classification and nonlinear classification
- Parameter tuning
- Two demo files:
  - » demo_svm_linear_draw.py
  - » demo_svm_rbf_draw.py

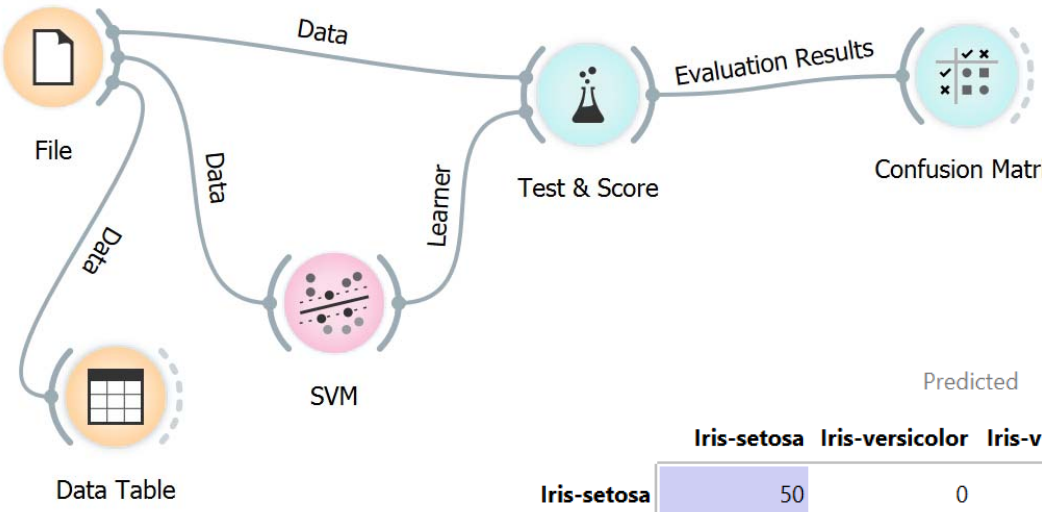


Source: https://github.com/mubaris/studious-eureka

Demo: WEKA



Demo: Orange3



Predicted

Actual	Iris-setosa	Iris-versicolor	Iris-virginica	Σ
Iris-setosa	50	0	0	50
Iris-versicolor	0	46	4	50
Iris-virginica	0	2	48	50
Σ	50	48	52	150

Workshop 1

- Task: Classification using SVM
- Objective: To learn how to perform linear and nonlinear SVM classification in Python.
- Key reference: Géron, Aurélien, Hands-on machine learning with scikit-learn and tensorFlow concepts, tools, and techniques to build, O'Reilly Media, 2017. Code available at https://github.com/ageron/handson-ml

Instructions

Experiment 1

- Linear classification

Experiment 2

- Nonlinear classification

Experiment 3

- Parameter tuning and model performance evaluation

Workshop 2

- Task: Feature engineering + SVM for classification
- Objective: To apply feature extraction method to extract features from the input data and then perform SVM classification
- Key reference
  - » HOG features, http://www.vlfeat.org/overview/hog.html
  - » Image classification, https://github.com/pavitrakumar78/Python-Custom-Digit-Recognition

Instructions

Experiment 1

- Extract HOG features from the image

Experiment 2

- Perform classification using the extracted HOG features

Open discussion

SVM Workshop

Thank you!

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