galvanize

Greg Simpson SupportVectorMachine-CancerClassification

GALVANIZE DATA SCIENCE FELLOW

IBM DATA SCIENTIST (SOON)

Motivation and Background

Long career in software

- Many Big name companies; several small companies
- Lots of different roles
- Plenty of success
  - GPS-OCX ground station contract win
- Too many “less than successes”

Looking for something new to keep me interested

After Galvanize

3 GOALS for Capstone

- HealthCare Domain
- Data Science Methods
- IBM Watson Tools

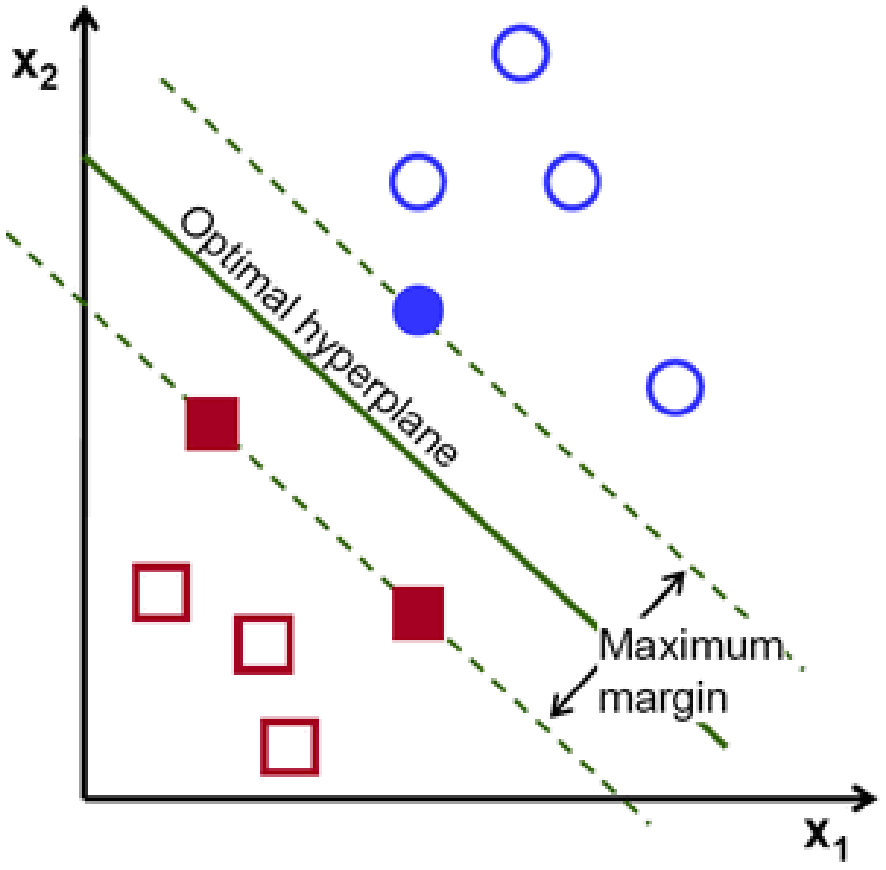
HealthCare Domain

Breast Cancer Study from the University of Wisconsin

- Publicly available data
- 700 records
- 10 features – cell characteristic measurements
- 1 actual result
  - 2 – benign
  - 4 – malignant

Goal is to compare the results of your classifier against the actual result

Support Vector Machine (SVM)

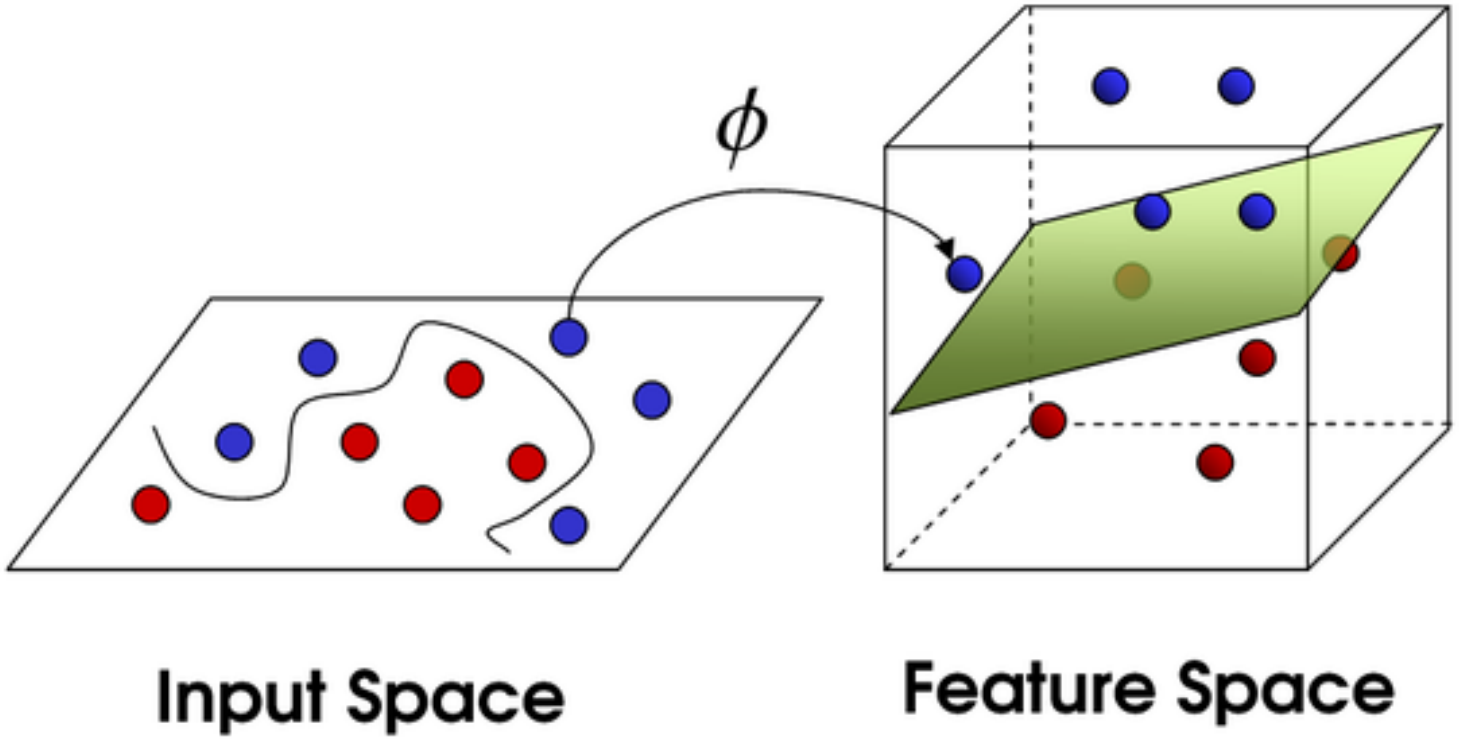


Hyperplane

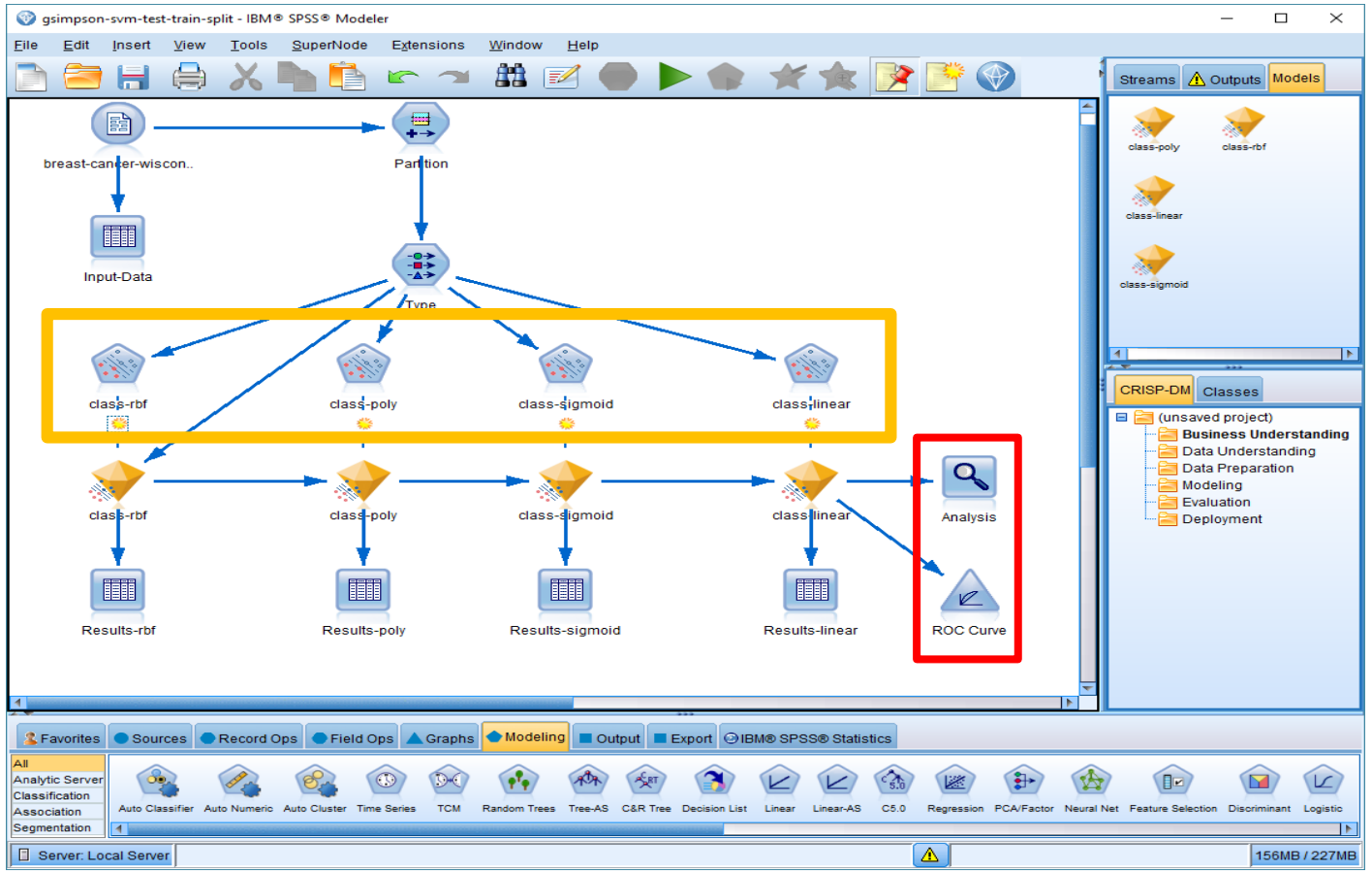
- best separates two classes of points with the maximum margin.

  - https://www.quora.com/What-does-support-vector-machine-SVM-mean-in-laymans-terms

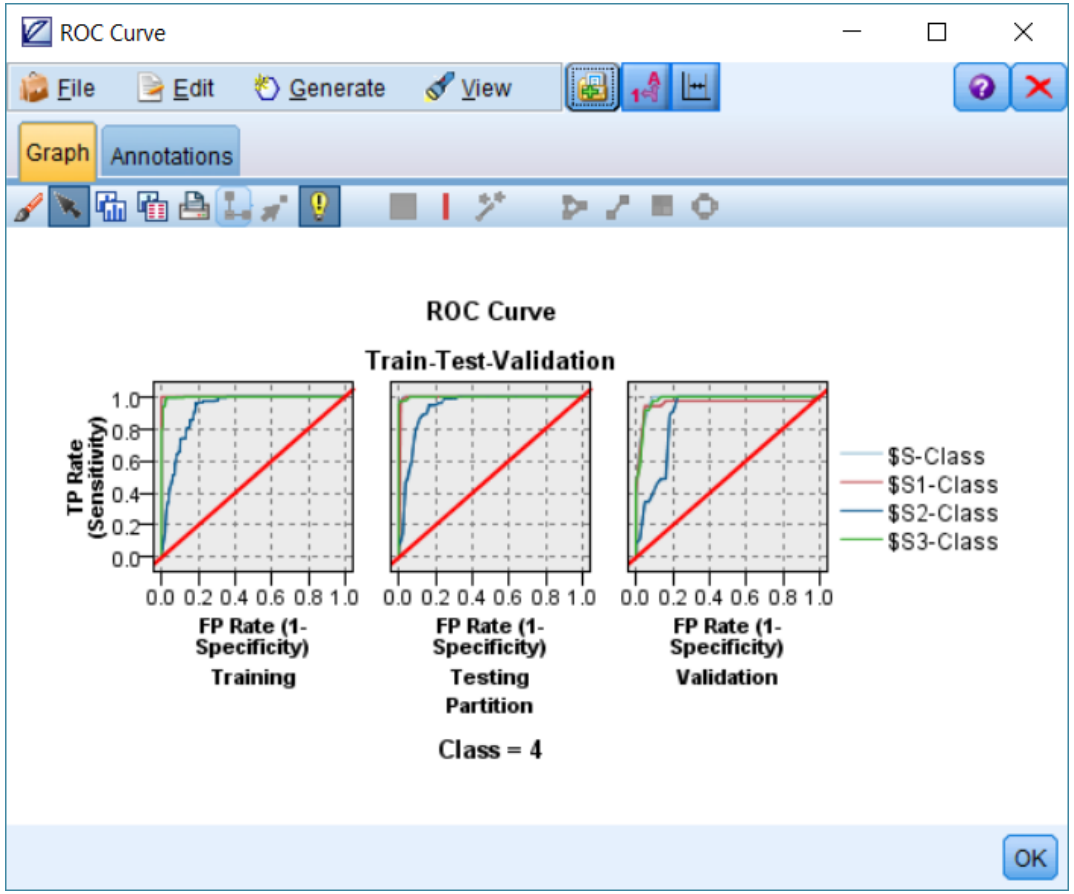
Kernels Project Data to Increase Separation



IBM SPSS Stream Screen Shot



IBM SPSS ROC Curve



Model Results

Train (correct / incorrect)

- Polynomial : 100% / 0%

Test (correct / incorrect)

- Rbf (Radial basis function) : 96.89% / 3.11%

Validation (correct / incorrect)

- Linear : 92.41% / 7.59%

Which one to choose

Test (correct / incorrect)

- Rbf (Radial basis function) : 96.89% / 3.11%

The prediction accuracy obtained from the unknown set more precisely reflects the performance on classifying an independent data set. An improved version of this procedure is known as cross-validation.

- http://www.csie.ntu.edu.tw/%7Ecjlin/papers/guide/guide.pdf

Questions and Contact

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