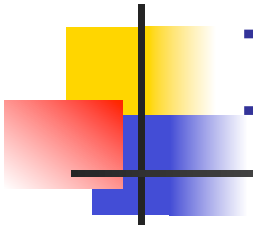
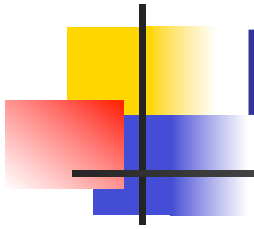
WEKA

By Joshua Hirtz



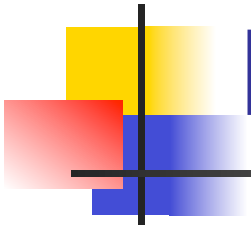
Introduction

- History
- Objectives
- Features
- Dataset
- Examples
- Problems
- SPSS Comparison
- Overview



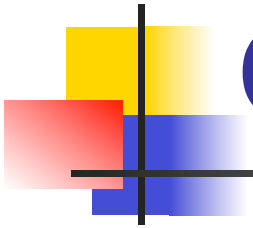
History

- Waikato Environment for Knowledge Analysis a.k.a. (WEKA)
- Created in New Zealand by the University of New Zealand's Computer Science Department



History (Cont.)

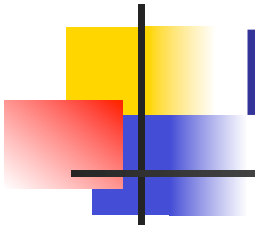
- Current versions
  - The book version is currently locked in 3-4 so that is may stay constant with the book
  - The developer version is currently in 3-5



Objectives

- Our objectives are to
  - make ML techniques generally available;
  - apply them to practical problems that matter to New Zealand industry;
  - develop new machine learning algorithms and give them to the world;
  - contribute to a theoretical framework for the field.

Taken from http://
www.cs.waikato.ac.nz/~ml/
index.html



Features

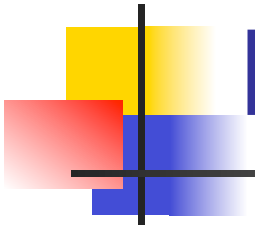
- CLI – offers a simple *Weka shell* with separated commandline and output.
- Explorer – an easy to use graphical user interface that harnesses the power of the Weka software.

Taken from http://
weka.sourceforge.net/wekadoc/
index.php/

Features (Cont.)

- Experimenter – enables the user to create, run, modify, and analyse experiments in a more convenient manner than is possible when processing the schemes individually.
- Knowledge flow - an alternative to the Explorer as a graphical front end to WEKA's core algorithms.

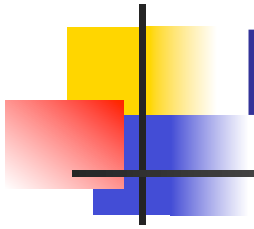
Taken from http://weka.sourceforge.net/wekadoc/index.php/



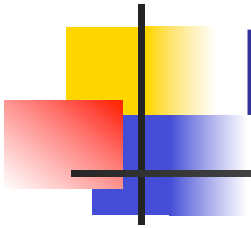
Dataset

- Uses the .arff extension
- @RELATION *name* – denotes the name of the file
- @ATTRIBUTE *name type*– denotes the name of the attribute
  - *type* consists of numeric, nominal, string, and date

Dataset (Cont.)

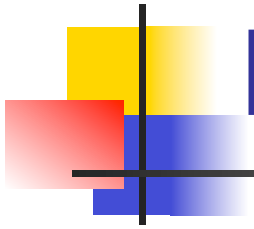


- @DATA – denotes the beginning of the data
- *data,data,data* – data is then entered with attributes separated by commas and different instances separated by lines



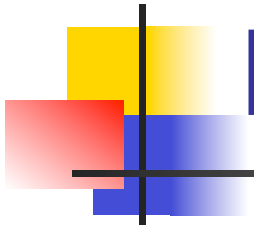
Dataset (Example)

```
@RELATION iris

@ATTRIBUTE sepallength  REAL
@ATTRIBUTE sepalwidth   REAL
@ATTRIBUTE petallength  REAL
@ATTRIBUTE petalwidth   REAL
@ATTRIBUTE class        {Iris-setosa,Iris-versicolor,Iris-virginica}

@DATA
5.1,3.5,1.4,0.2,Iris-setosa
4.9,3.0,1.4,0.2,Iris-setosa
4.7,3.2,1.3,0.2,Iris-setosa
4.6,3.1,1.5,0.2,Iris-setosa
5.0,3.6,1.4,0.2,Iris-setosa
```



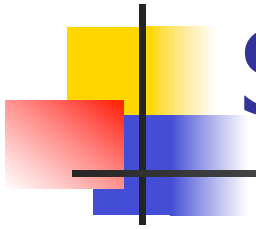
Examples

- A quick example with the Explorer and KnowledgeFlow to show how they work.



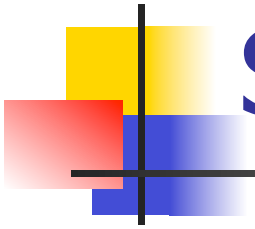
Problems

- Large datasets cause problems
- Data needs to be in main data for traditional algorithms.



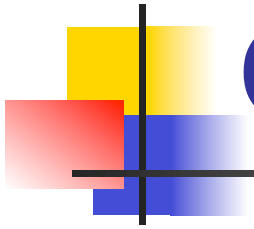
SPSS Comparison

- WEKA
  - GPU – General Public License
  - Problems with large datasets
  - Comes in a book and developer version
- SPSS – Clementine
  - Expensive
  - Created to handle large datasets
  - Comes in various versions to cover various environments
    - Base, Server, Batch, etc.



SPSS Comparison (Conclusion)

- WEKA is a cheaper solution for smaller datasets, however it lacks seems to lack the power, customer support, and system flexibility of SPSS Clementine.



Overview

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- Objectives
- Features
- Dataset
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- Problems
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References

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