Other Toolkits

MATLAB and WEKA
MATLAB

- Commercial software for computation
- Statistics toolbox contains a lot of machine learning algorithms
MATLAB considerations

Advantages

- Good for quick prototyping
- Easy to use
- Everything is in one place
- Good with large datasets
- Good documentation

Disadvantages

- MATLAB can be expensive
- Closed source
- Difficult to integrate in stand alone applications
- Slow in real-time applications
Installation

MIT provides free MATLAB for students at http://ist.mit.edu/software-hardware

Statistics toolbox contains machine learning stuff

Mac and PC versions
Example

% Load the dataset. It is included in MATLAB
load fisheriris

% Use data from two classes only
xdata = meas(51:end,3:4);
group = species(51:end);

% Train and plot SVM
svmStruct = svmtrain(xdata,group,'showplot',true);

% Classify new data point
species = svmclassify(svmStruct,[5 2], 'showplot',true)

% Plot the new data point
hold on;
plot(5,2,'ro','MarkerSize',16);
hold off
WEKA

- Waikato Environment for Knowledge Analysis (also flightless bird)
- From University of Waikato, New Zealand
- Open source Java-based machine learning algorithms
- Libraries can be used in provided GUI or stand-alone Java applications
WEKA Considerations

Advantages

- Open source
- Can be integrated into any Java app, including Android phone app
- Good for real-time applications
- Cross platform
- Good for interfacing with hardware

Disadvantages

- Takes time to learn and understand
- Uses specialized file format
- Need to know Java
Example Using WEKA GUI

Executable included in download.

Download weka-3-7-10 (Developer version)
Using Java Library Directly

- Download [Eclipse IDE for Java Developers](https://www.eclipse.org/ide/)
- Create new Java project (File -> New -> Java Project)
- Create Class (File -> New -> Class) Check: `public static void main(String[] args)`
- Add Weka Library: Right click on your project: Build Path -> Add External Archives… Add weka.jar from Weka downloaded from website
- Add `import weka. classifiers.functions.SMO;` to the code (e.x. `import weka. classifiers.functions.SMO;`
Data Format

The vector: @relation Rel

@attribute height numeric
@attribute weight numeric
@attribute location {australia,africa,america}
@attribute class {cat,elephant}

@data
0.3,6,america,cat
10,500,africa,elephant
Example Code

https://github.com/adementyev/WEKA-example