

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
```

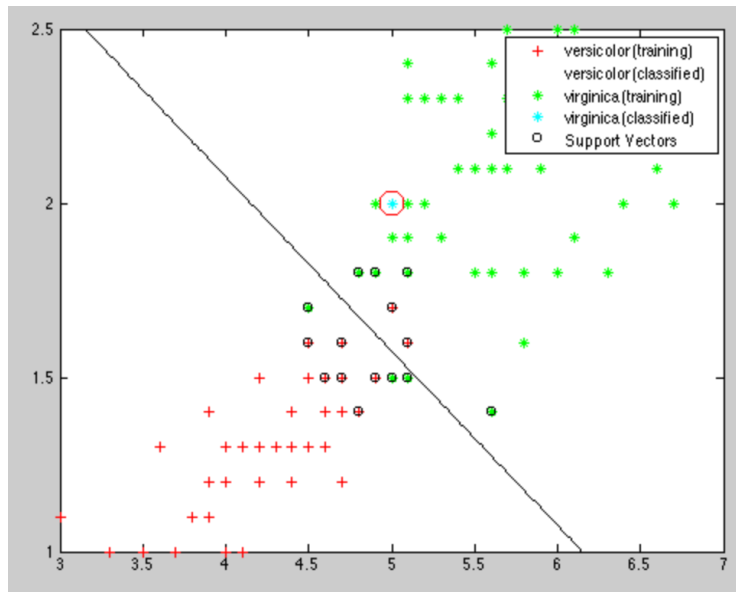
```
species = svmclassify(svmStruct,[5 2],'showplot',true)
```

```
%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](#)
- 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. 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}

Attributes



@data

0.3,6,america,cat

10,500,africa,elephant

Instances



Example Code

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