Background
- Provides an implementation library for support vector machines (SVMs) learning models
- Enables the use of (supervised) learning algorithms that analyze data and recognize patterns
- Used for linear classification, non-linear classification, and regression analysis

Selected Algorithms
- Support vector classification (C-SVC, nu-SVC)
- Regression (epsilon-SVR, nu-SVR)
- Distribution estimation (one-class SVM)
- Supports multi-class classification

Implemented SVM Kernel Methods
- Linear Kernel; Polynomial Kernel; Radial Basis Function; Sigmoid

LIBSVM Usage
- Provides a simple interface for users in order to easily link it with their own programs
- Offers interfaces for Python, R, MATLAB, Ruby, WEKA, Common LISP, and PHP
- Enables the usage in C#.NET environments and GPGPU environments (CUDA extension)
- Supports the use of SVMs under Windows (see video [2]) via command line client tools

LIBSVM Data Sets & Format
- Offers web page with classification, regression and multi-label data sets in LIBVM format
- Provides datasets often obtained from UCI, Statlog, StatLib and other data sets collections

Technical Short Description
- C++ and Java sources are available
- No direct package or support for Message Passing Interface or High Performance Computing

Example of an SVM with margin (from [3])
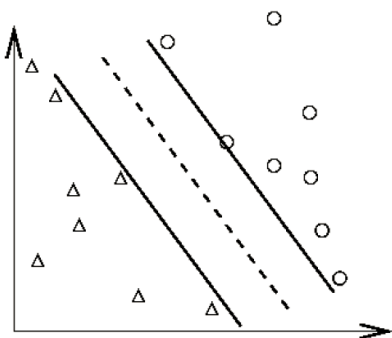
Download and availability
- LIBSVM - Version 3.17 (April 2013)
- Download tar.gz or zip file @ Web page[1]

References

[1] LIBSVM Home page with Documentation, Online: http://www.csie.ntu.edu.tw/~cjlin/libsvm/

[2] 'How to use LIBSVM on Windows', Online: http://www.youtube.com/watch?v=gePWtNAQcK8

[3] LIBSVM Guide, Online: http://www.csie.ntu.edu.tw/~cjlin/papers/guide/guide.pdf

Tags: **Support Vector Machines, Multi-Class Classification, Regression, Learning Algorithms, LIBSVM Library**