



+ Follow 0

Vote

## How can I determine feature importance of an SVM classifier?

Asked by **MathWorks Support Team** **STAFF** on 14 Jun 2018

**Latest activity** Answered by **MathWorks Support Team** **STAFF** on 20 Jun 2018

Accepted Answer by **MathWorks Support Team** **STAFF**

346 views (last 30 days)

I would like to calculate feature importance for a SVM classifier, e.g. by using the metric "mean decrease accuracy".  
This means I need to know how the accuracy of my classifier (calculated by cross validation) changes if I leave out features one by one.  
I found functions for classification trees, but not for SVM. How could I calculate this for SVMs?

1 Answer



Vote

0

Link

Answer by **MathWorks Support Team** **STAFF** on 19 Feb 2019

✓ Accepted Answer

In general, unless you are using a linear kernel SVM, it is not possible to use the parameters of an SVM model to analyze the importance of your features. You can refer to the following external discussions for more information about this reasoning:

<https://stackoverflow.com/questions/41592661/determining-the-most-contributing-features-for-svm-classifier-in-sklearn>

<https://stackoverflow.com/questions/21260691/scikits-learn-how-to-obtain-features-weight>

Nevertheless, you can still analyze the feature importance for your classification problem (not specific to SVM) by doing some dimensional reduction or feature extraction.

For instance, you can perform neighborhood component analysis using the "fscnca" function in MATLAB to identify relevant features for your classification:

<https://www.mathworks.com/help/stats/fscnca.html>

Another popular technique for feature selection is sequential feature selection which can help you select features for classifying high dimensional data:

<https://www.mathworks.com/help/stats/examples/selecting-features-for-classifying-high-dimensional-data.html>

## See Also

MATLAB Answers

[Feature Selection by NCA for an SVM classifier](#)

1 Answer

[Using feature extraction methods and a classification tree](#)

1 Answer

[Does "feature selection" consider the interdependence between multiple parameters, e.g. quotient, difference, etc., as meaningful...](#)

1 Answer

Entire Website

[Bayesian Classifier \(How many features is best ?\)](#)

File Exchange

[PCA for dimension reduction in 1D data](#)

File Exchange

[Choose Classifier Options](#)

Documentation

## Tags

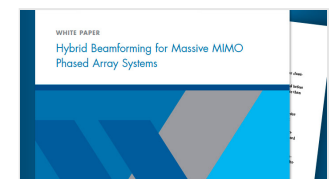
No tags entered yet.

## Products

[Statistics and Machine Learning Toolbox](#)

## Release

R2016b



You can also refer to the following documentation link for other dimensionality reduction and feature extraction techniques in MATLAB:  
<https://www.mathworks.com/help/stats/dimensionality-reduction.html>

 0 Comments

[Sign in](#) to comment.

Hybrid  
Beamforming  
for Massive  
MIMO  
Phased Array  
Systems

» [Download white  
paper](#)

[Sign in](#) to answer this question.

mathworks.com

© 1994-2019 The MathWorks, Inc. MATLAB and Simulink are registered trademarks of The MathWorks, Inc. See [mathworks.com/trademarks](https://www.mathworks.com/trademarks) for a list of additional trademarks. Other product or brand names may be trademarks or registered trademarks of their respective holders.