

Sound classification based on feature extraction

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Goal

- ✓ Show that selected set of features extracted from the sound are enough for its classification
- ✓ Implementation of callable module.
- ✓ Minimalize number of features

General audio results

- KNN accuracy: 84.6%
 - features: MFCC, SB
- NB accuracy : 73%
 - features: MFCC, LPC, SC

Datasets

General audio:

- environment
- animals
- people

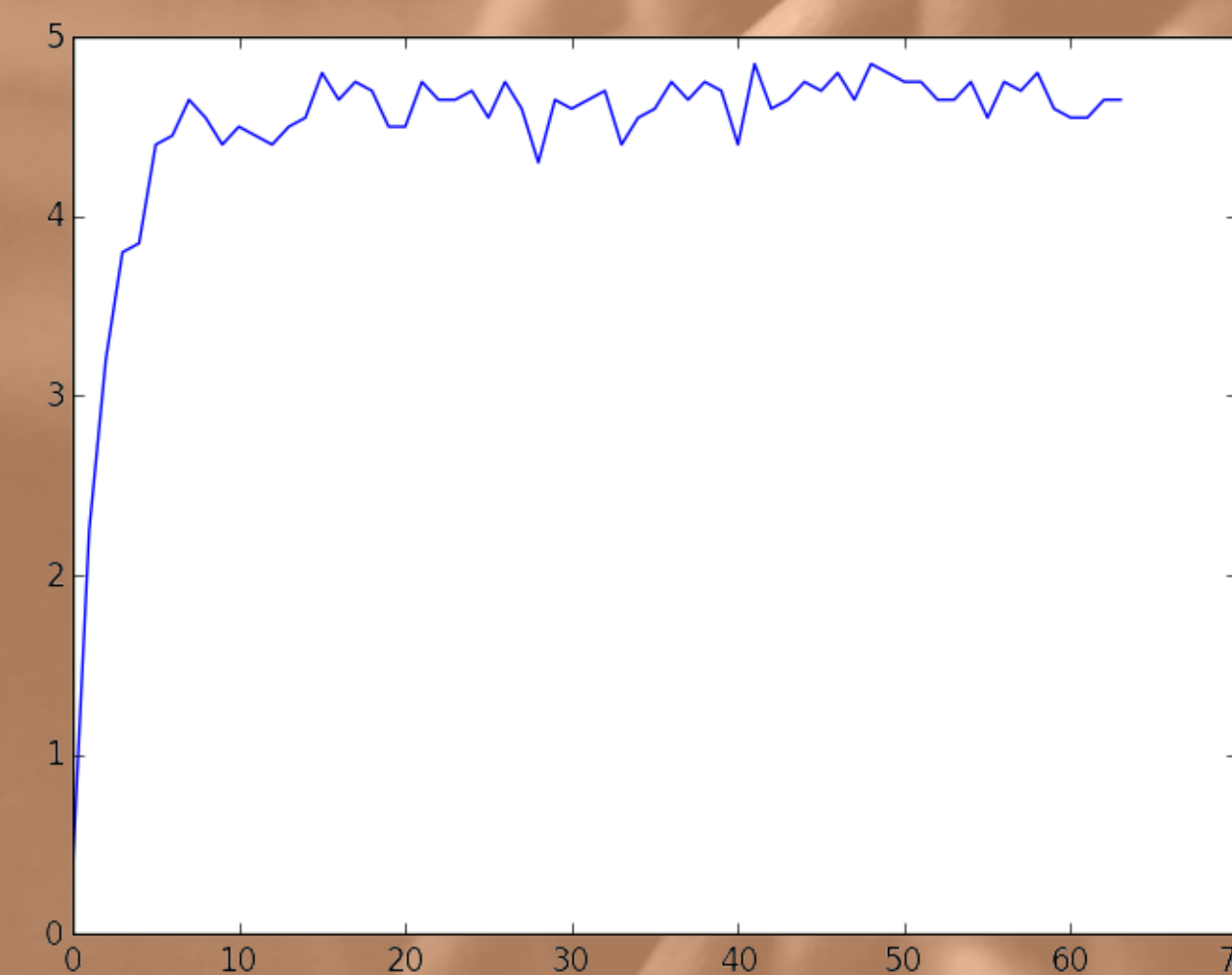
Sound commands:

- syllables
- whistle
- noise

Sound recognizer

1. sound recording
2. segmentation
3. feature extraction
4. reduction of features
5. normalization
6. noise filtering
7. detection of command position
 - a. at the beginning
 - b. in the middle
 - c. at the end
8. classification
9. waiting

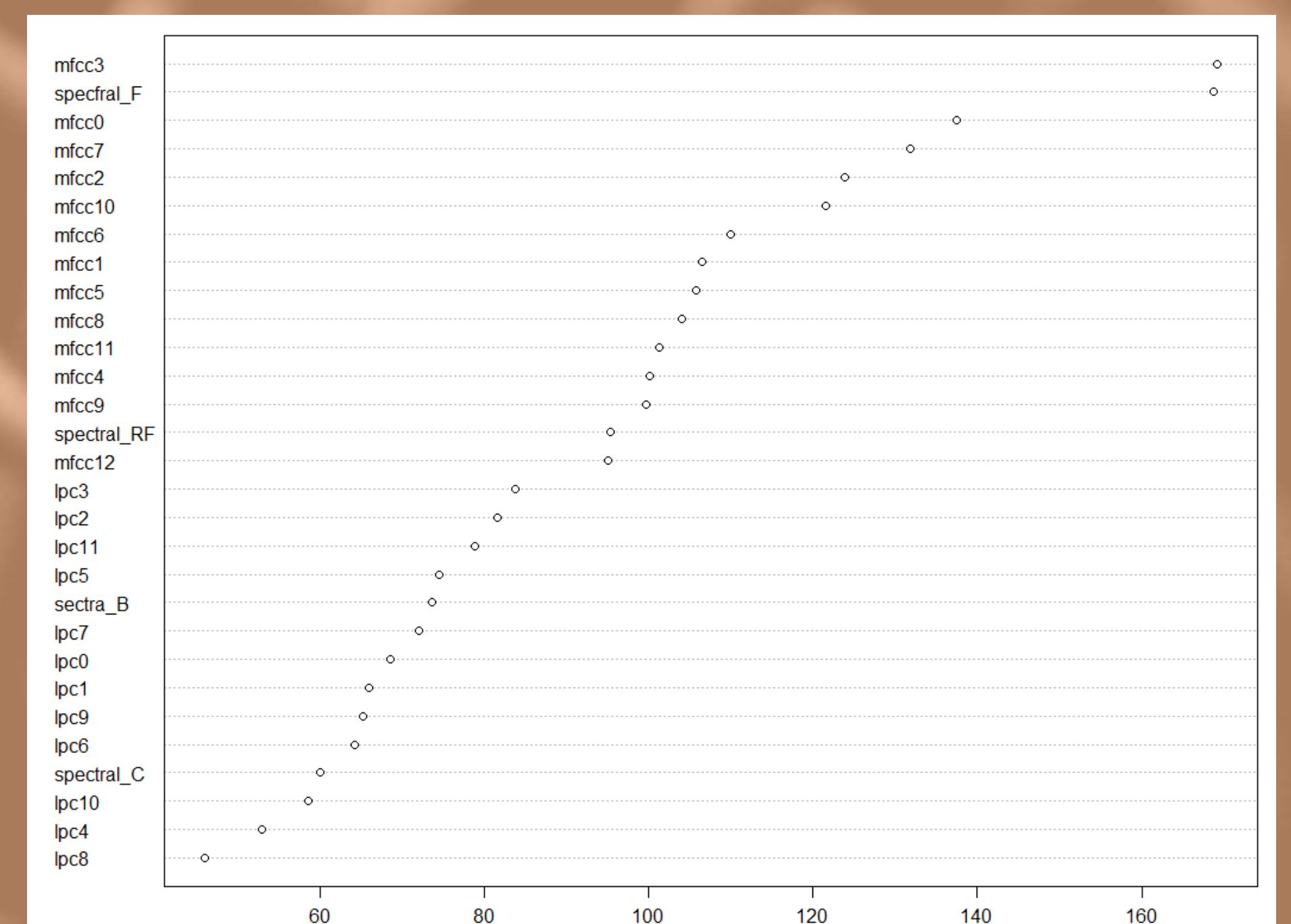
Change in method accuracy with growing number of samples



Effect of features on particular classifiers

	MFCC	LPC	SCG	SB	SF	SR
Naive Bayesian	↑	↑	↑	↑	↑	↓
K-NN	↑	↓	↓	↑	↓	↓

The most characteristic features



Final results

- KNN
- features: MFCC(reduced), SB
- command accuracy: 90,15 %
- silence accuracy: 66.45%