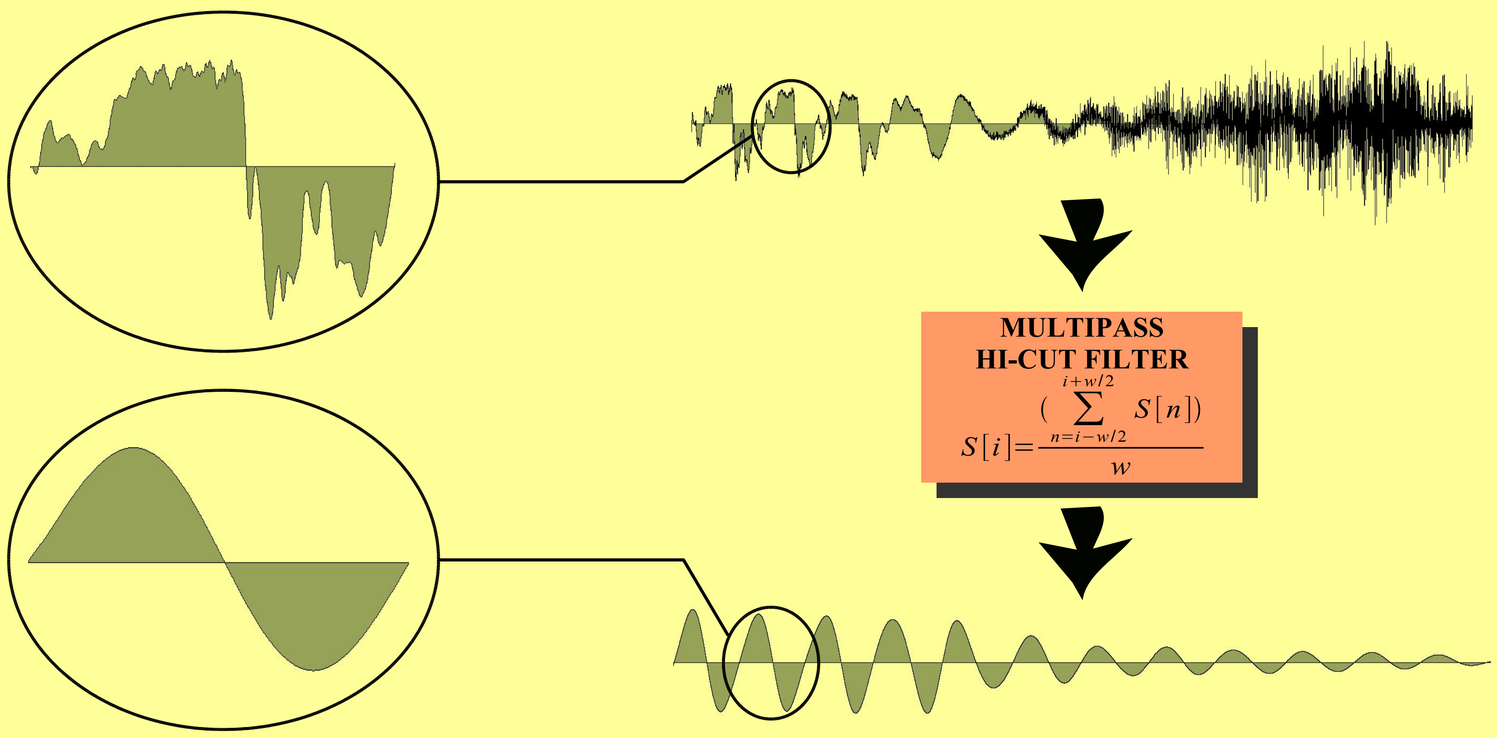
PITCH DETECTOR

Pavel Křivák
xkrivak@fi.muni.cz

Masaryk University in Brno, Czech republic

L S D
Laboratory of Speech and Dialogue

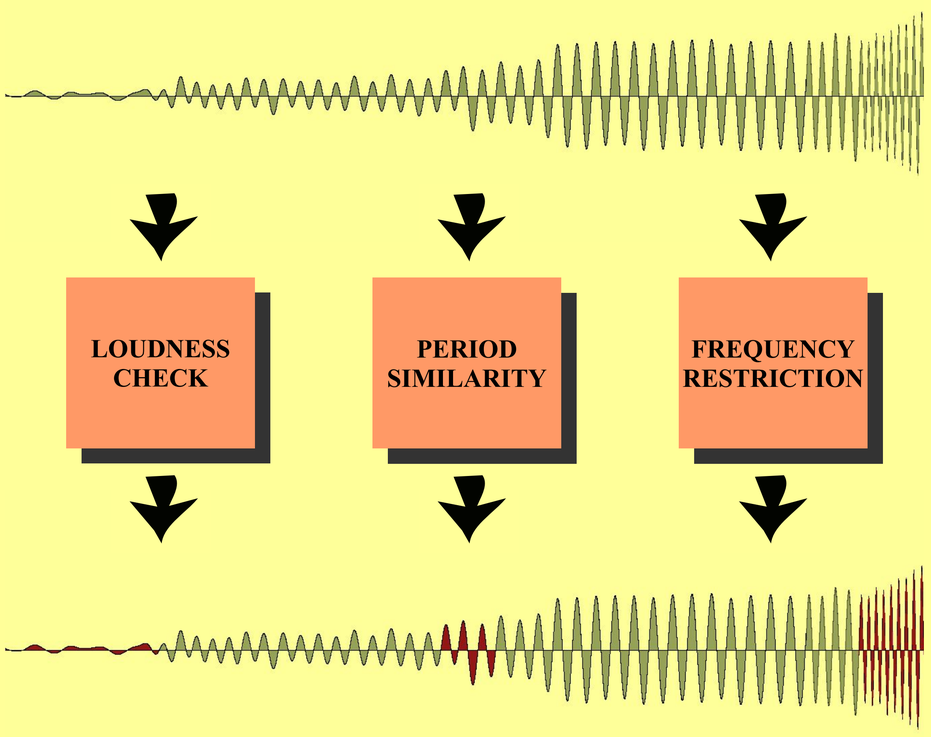
Among many speech recognition difficulties there is a pitch detection which helps us to get a set of prosodic information: speaker's intonation. Pitch Detector is an application for presenting and testing one of the pitch detection algorithms.



The whole wave buffer must be filtered prior to pitch detection.

This hi-cut filter takes every sample of the buffer and changes it to the average value of adjacent samples.

The picture on the left illustrates how does the filter function get rid of the high frequencies which are unwanted. As a result we get a periodically looking wave with characteristics close to sine curve.

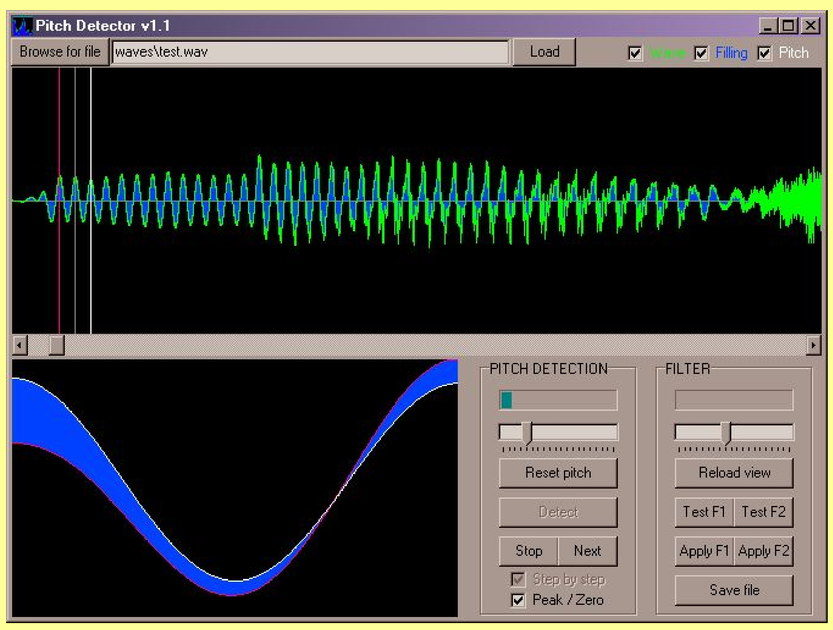


The filtered buffer is consequently checked for sonancy. There are three different procedures that can mark some parts as voiceless. For those parts (in the sample picture red coloured) we don't detect intonation curve.

LOUDNESS CHECK
After the filtration some parts of the buffer can be too low. That happens in case of voiceless sibilants which were filtered off.

PERIOD SIMILARITY
There is a function comparing two adjacent waves and measuring its difference. If the difference is too high we don't detect this segment (produced usually by explodents).

FREQUENCY RESTRICTION
Those parts of buffer that contain too high or too low frequencies are not accepted as well.



PITCH DETECTOR – MAIN FEATURES AND FUNCTIONS

- **loading a wav file, positioning and zooming**
- **two different filters for testing and application**
- **filter and detection parameter setting**
- **selection reloading**
- **overall and step-by-step pitch detection**
- **pitch curve moving and reseting**
- **saving filtered data as a wav file**
- **selection playback**

For more information and download see my web: **http://www.fi.muni.cz/~xkrivak/bc/**