

REAL-TIME PITCH MODIFICATION SYSTEM FOR SPEECH AND SINGING VOICE

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1. Introduction

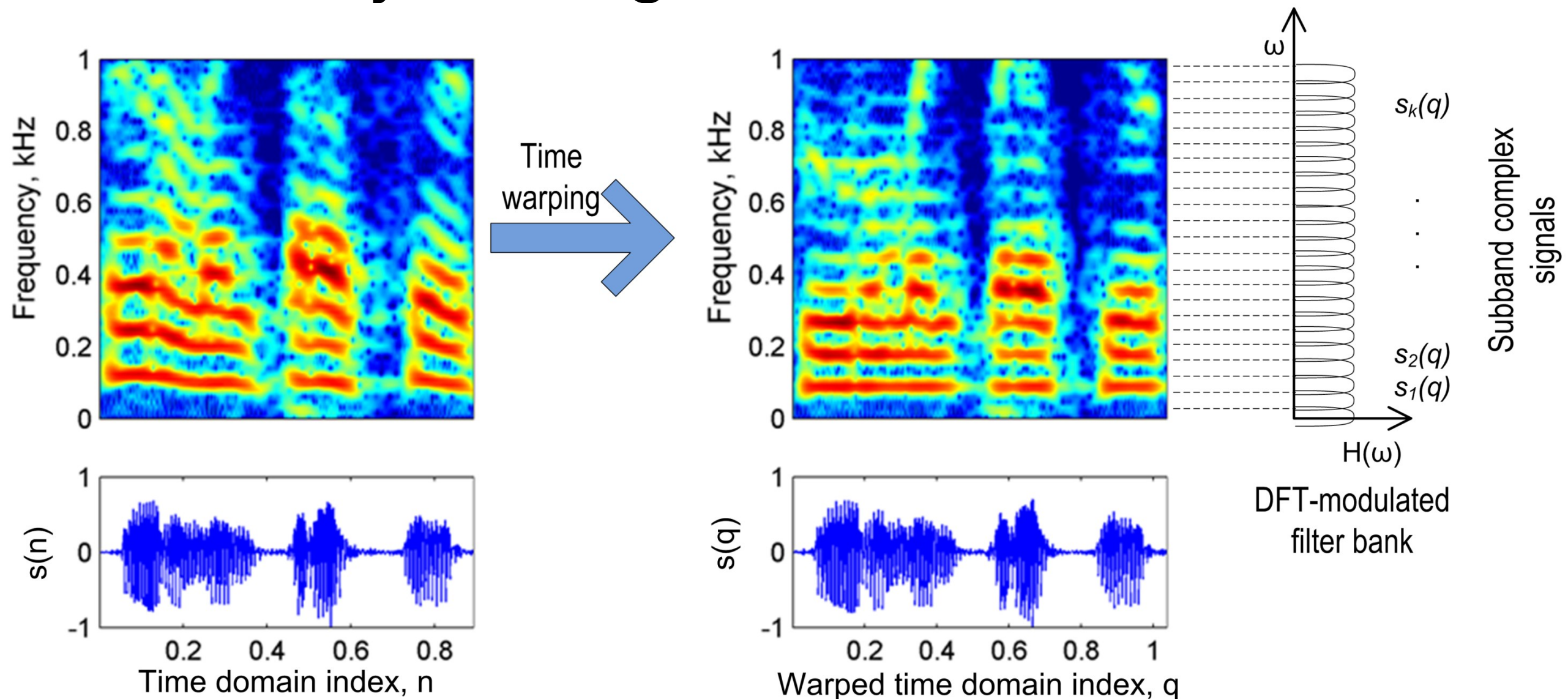
The demonstration presents a real-time pitch modification system for speech and singing voice.

Main features:

- hybrid deterministic/stochastic decomposition;
- analysis in warped time domain;
- parametrical morphing;

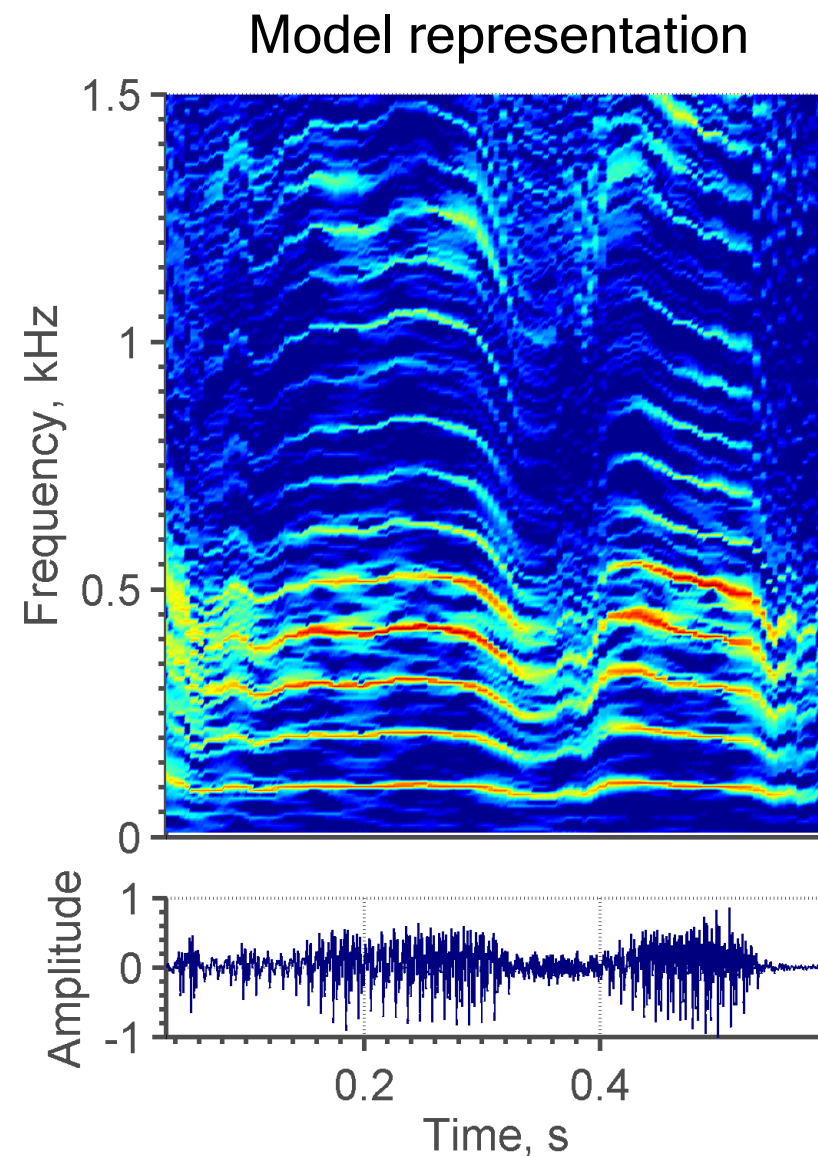
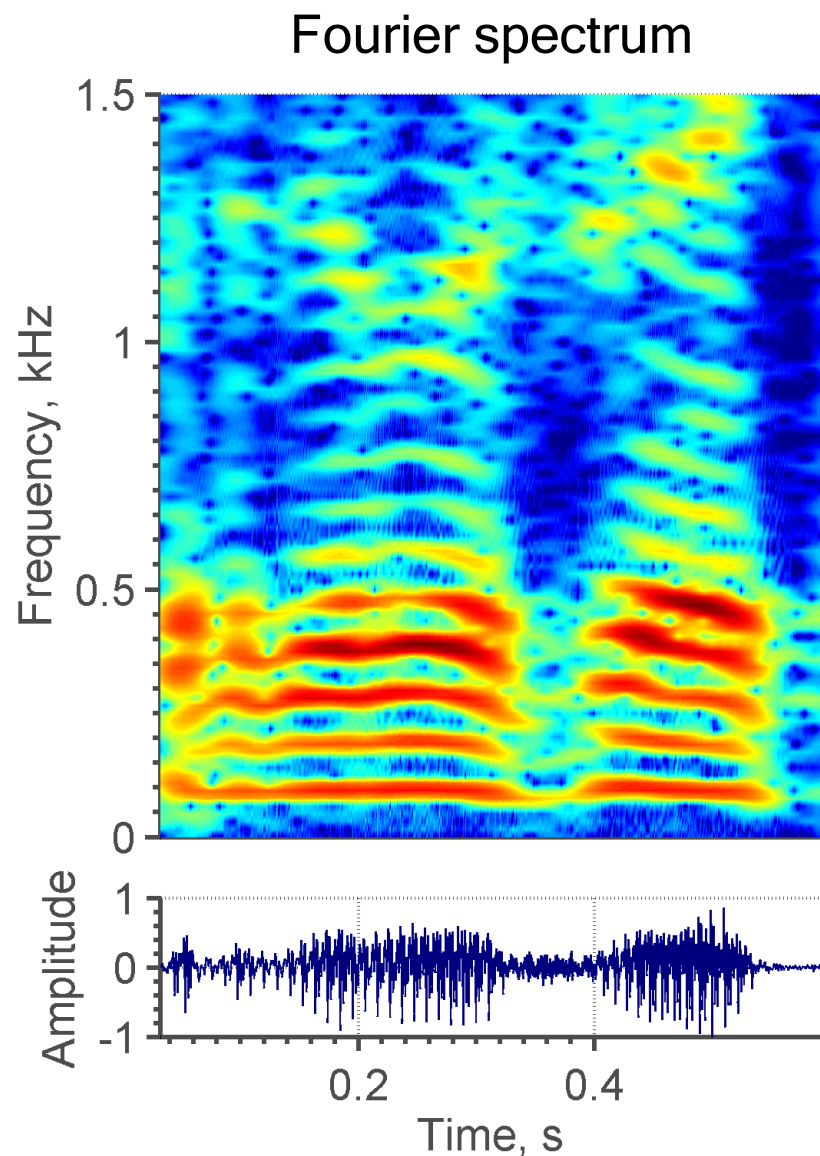
2. Time warping and subband filtering

Time axis of speech is warped in order to get a constant pitch signal. Then an analysis DFT-modulated filter bank is applied to get subband analytical signals.



3. Parametric modeling

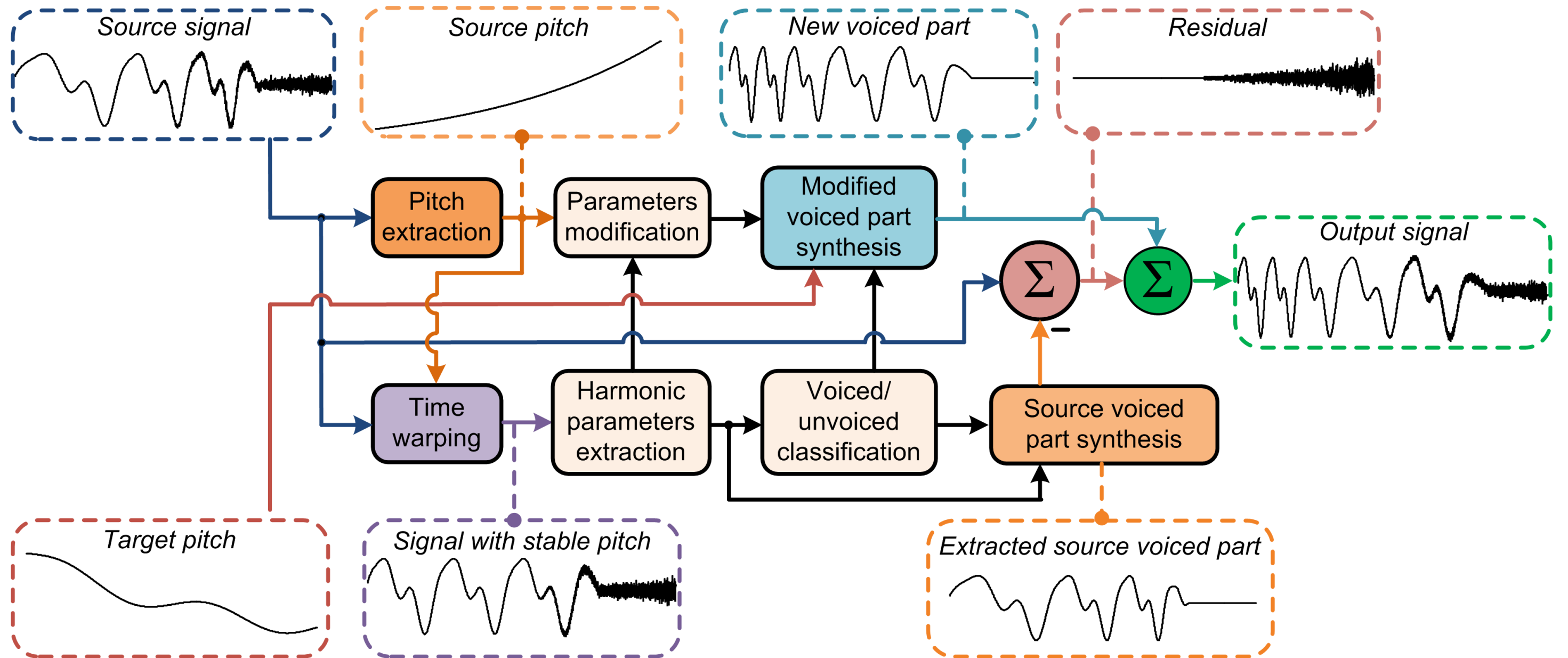
Applying time-warping and long analysis windows it is possible to extract stable instantaneous frequency of harmonic components.



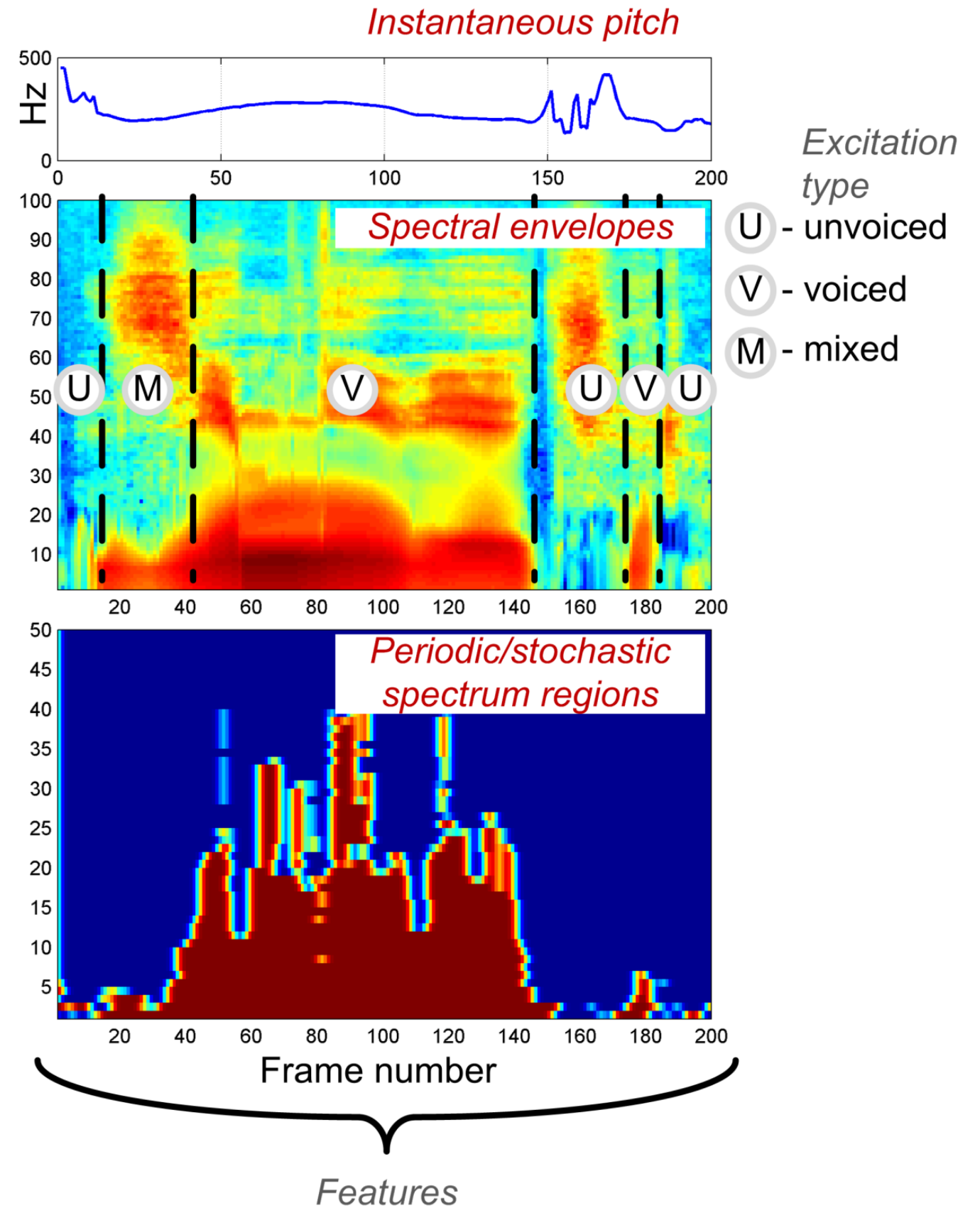
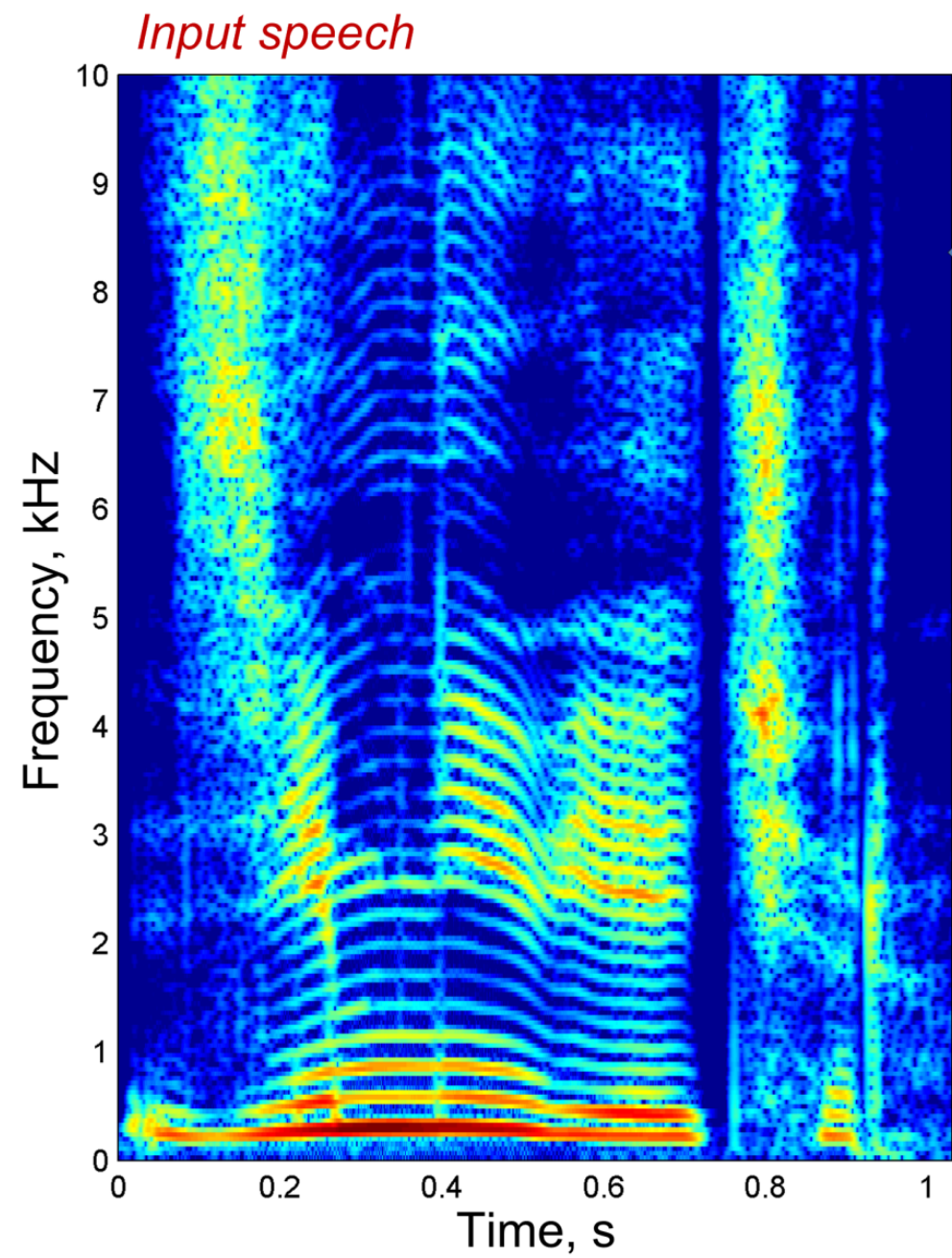
up to 16 pitch periods are used for analysis

(35-320 ms for pitch range 450-50 Hz)

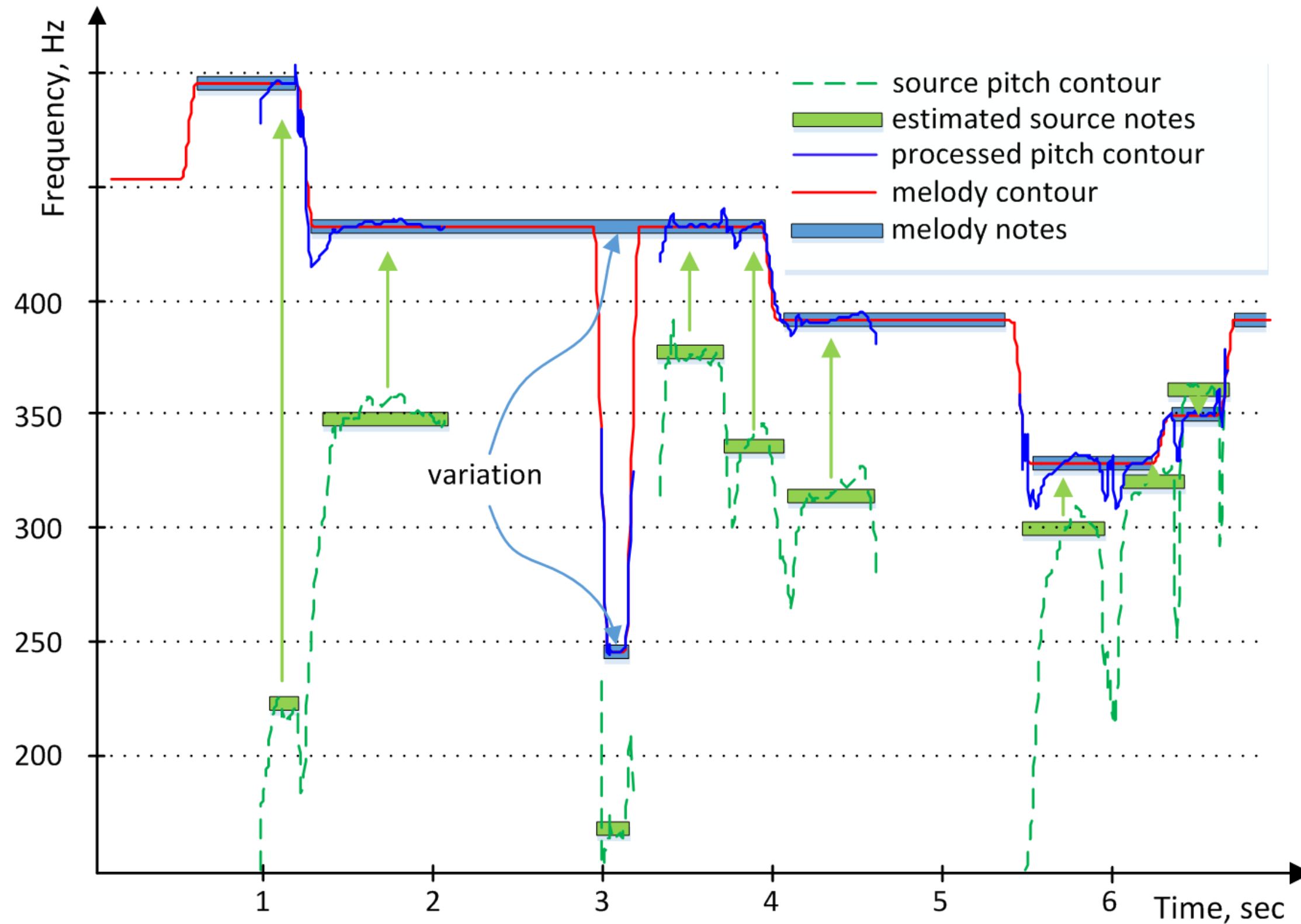
4. Voice processing scheme



5. Feature extraction



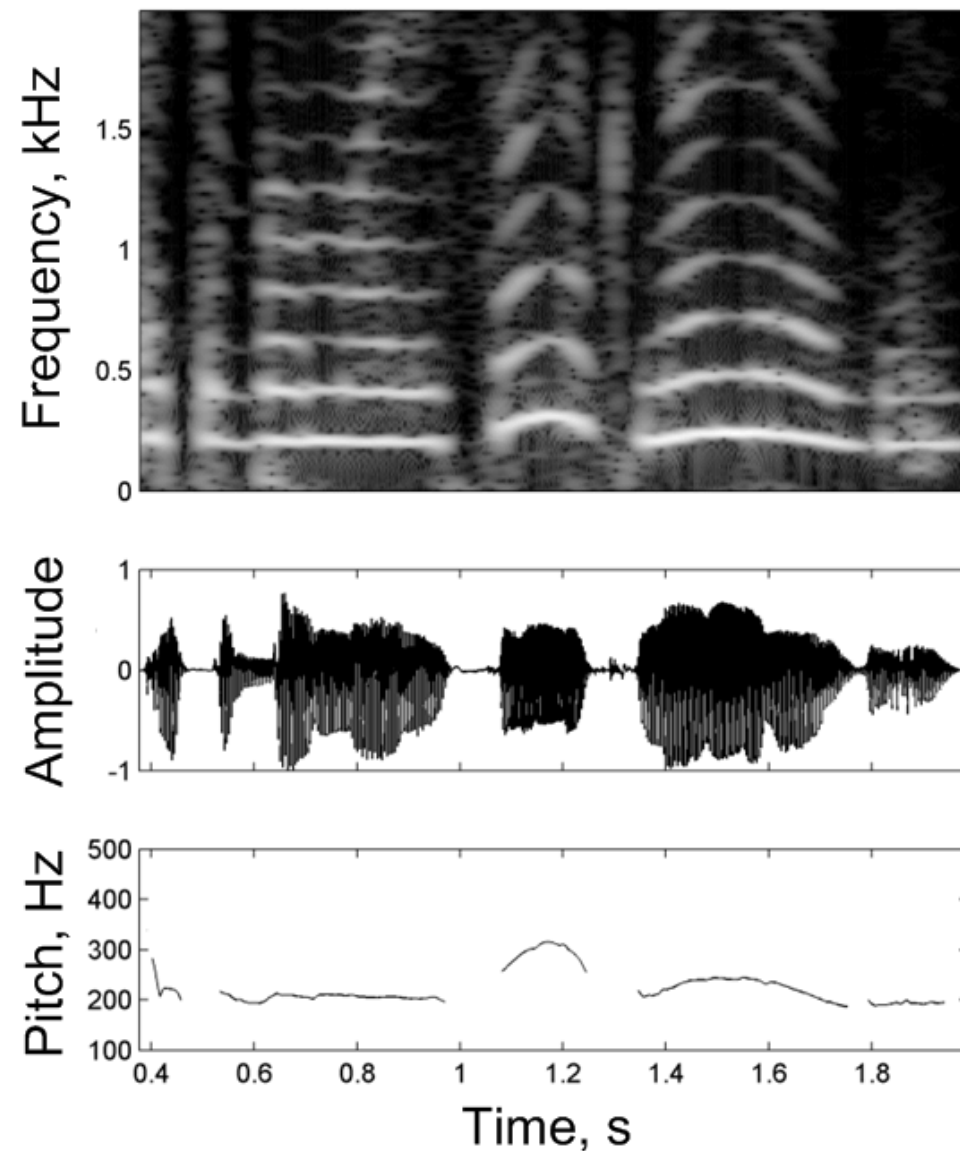
6. Automated pitch correction



7. Speech processing example (tremolo)

In speech processing mode the pitch is changed according to one of predefined patterns.

Input speech



Output speech

