

# Tymofii Sharii, PhD.



Thesis: "The Information Technology of Speech Data Processing Based on Fuzzy Cognitive Models" (2011)

## Scientific Interests and Skills:

### Digital Signal Processing

- Signal Transforms: Fourier, Mellin, Fresnel
- Digital Filtering, Adaptive Filtering
- Linear Prediction
- Pitch estimation
- Modulation Spectrum

### Artificial Intelligence

- Fuzzy Logic
- Neural Networks
- Cognitive Models
- Genetic Algorithms
- Probabilistic Models

### Sound Synthesis

- Sound Effects
- Musical Synthesis
- Speech Synthesis

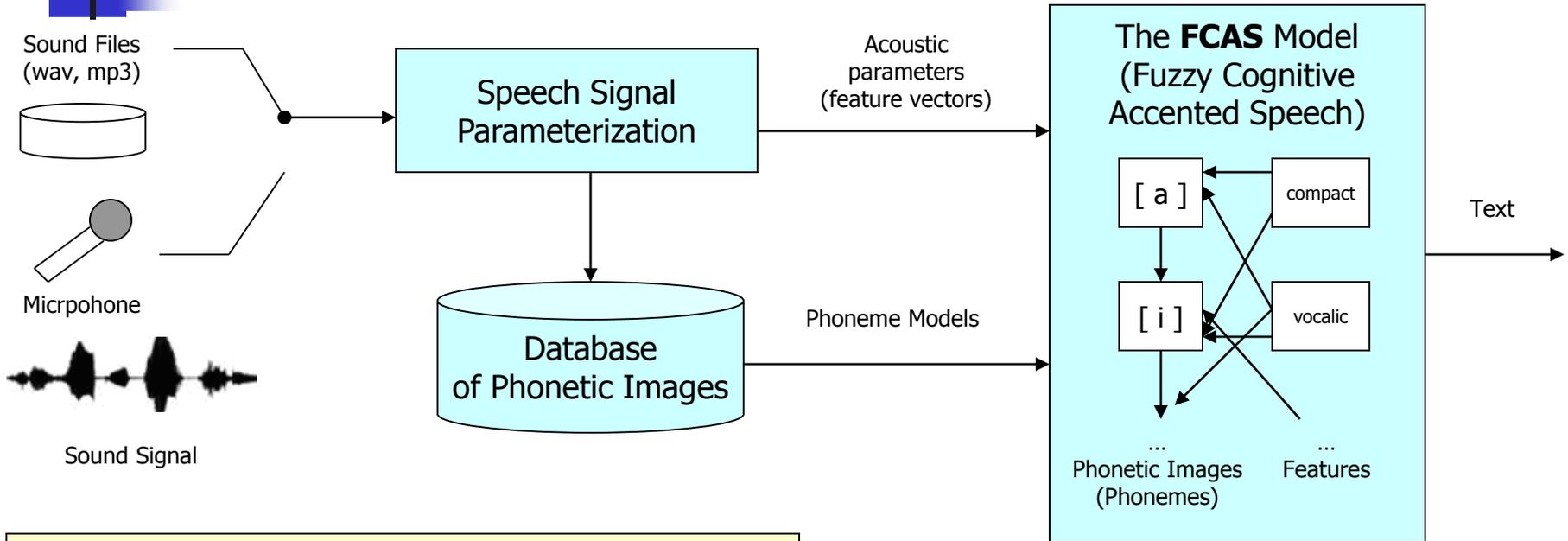
## Programming Skills:

Languages: C++, C#, Matlab, Java

Technologies: .NET, MFC, Win32API, UML

# Automatic Word Recognition System

(Project supported by Ministry of Education and Science, Youth and Sports of Ukraine, National Academy of Sciences of Ukraine)



## Key features of the proposed technology:

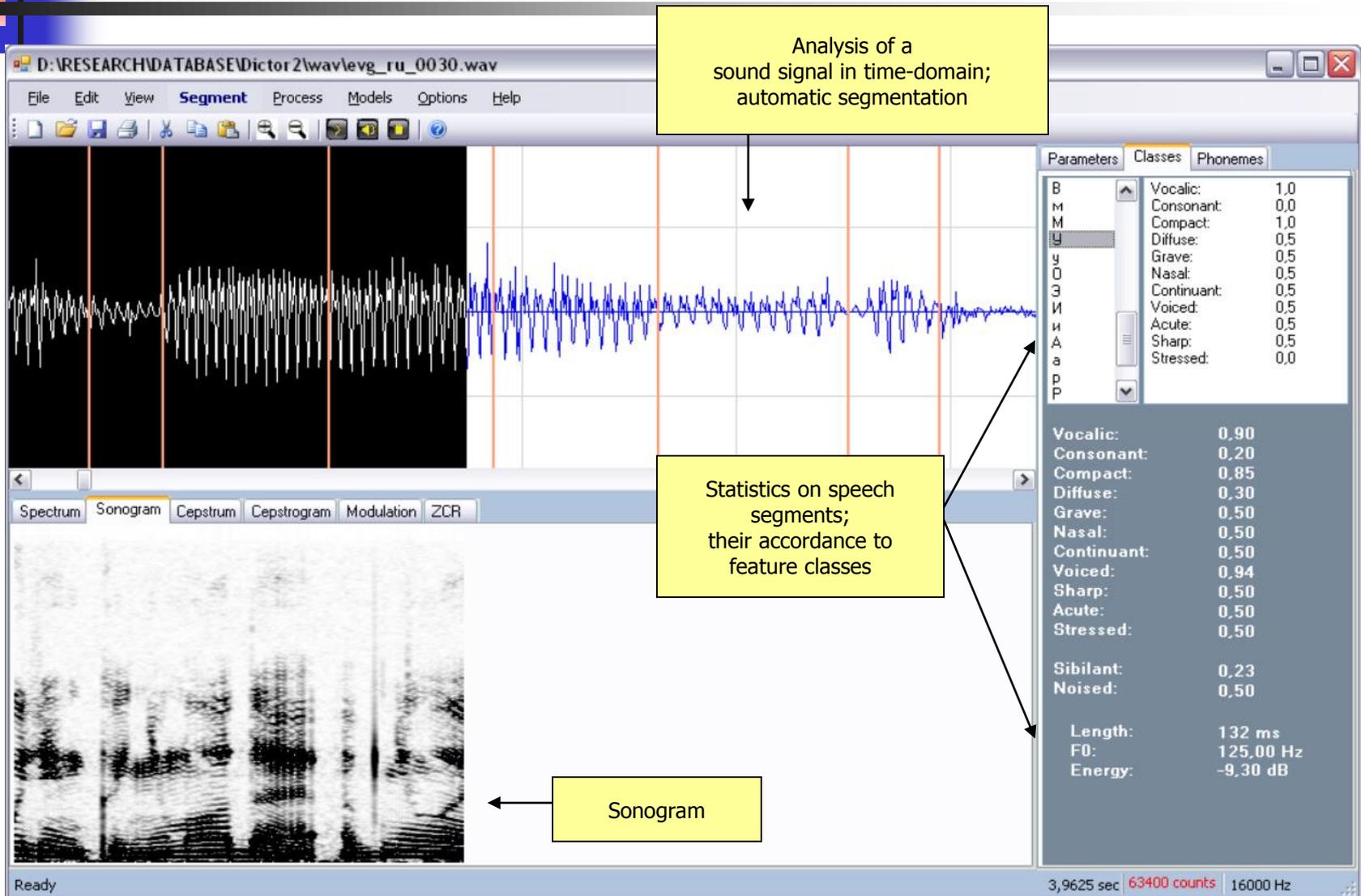
- it segments a speech signal automatically on basis of Mel-Frequency Cepstrum and Jacobson's differential features;
- it evaluates weights of speech segments depending on their perception by human (prosodic features are analyzed);
- it estimates current rate of speech;
- it post-processes acoustic parameters using Principal Component Analysis;
- it processes speech information at several levels: acoustic level, Jacobson feature level, phoneme level and word level.

The model has been tested on Russian words but it can be applied to any other language.

Experiments showed that the proposed technology can be used for a word recognition (with small vocabularies) and for a word search in speech signals.

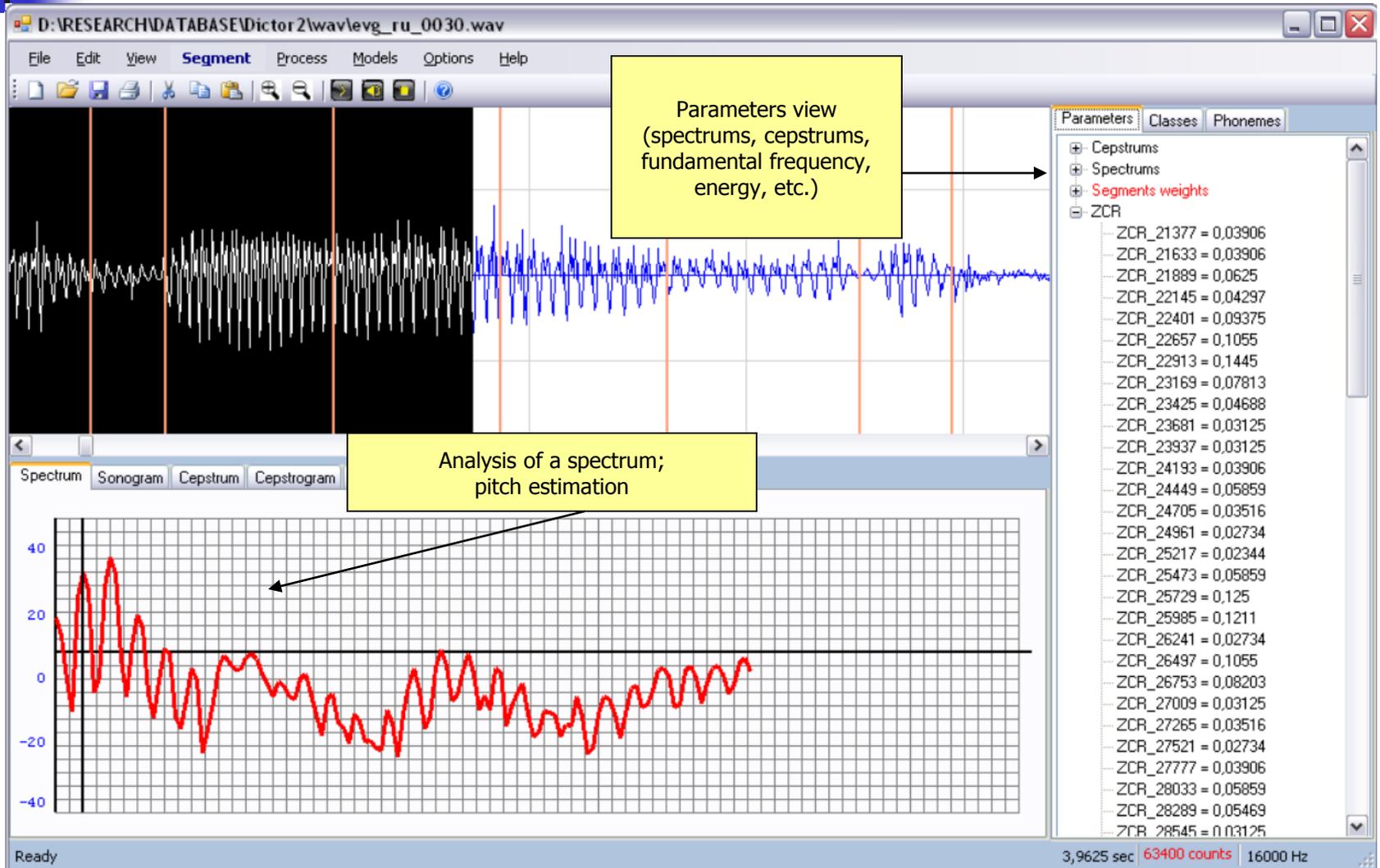
# The "SoundAnalyzer" Software Module

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