TOPIC OF RESEARCH

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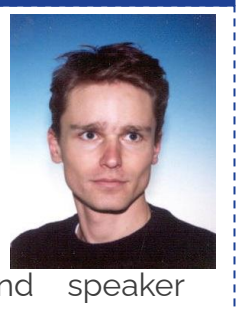
PERSONAL INFORMATION



- Male, 44
- Degree: Assoc. Prof. (2015)
- Position: teacher/ scientist
- Research interests: speech and speaker recognition, machine learning, signal processing
- Current job: Institute of Multimedia Information and Communication Technologies, FEI STU, (since 2001)
- Other jobs and cooperations: Centire Research, Sitronics telecom solutions
- Number of articles: 60
- Number of supervised diploma theses: 30
- Member of international projects: CEEPUS, ASMID-DAAD, IMProVET - Leonardo, HBB-next -7FP
- Member of national projects: VEGA, KEGA, APVV

TOP REFERENCES

KAČUR, Juraj - ROZINAJ, Gregor. Practical Issues of Building Robust HMM Models Using HTK and SPHINX Systems. In *Speech Recognition. Technologies and Applications*. Vienna : InTech, 2008, s.171-193. ISBN 978-953-7619-29-9.

KAČUR, Juraj - ROZINAJ, Gregor. Building Accurate and Robust HMM Models for Practical ASR Systems. In *Telecommunication Systems*. Vol. 52, No. 3 (2013), s.1683-1696. ISSN 1018-4864 (2013: 1.163 - IF, Q2 - JCR Best Q, 0.319 - SJR, Q2 - SJR Best Q). V databáze: SCOPUS.

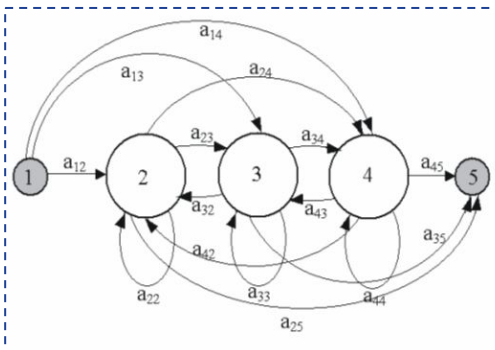
KAČUR, Juraj - POLEC, Jaroslav - SMOLEJOVÁ, Eva - HERETIK, Anton. An analysis of eye-tracking features and modelling methods for free-viewed standard stimulus: Application for schizophrenia detection. In *IEEE Journal of Biomedical and Health Informatics*. Vol. 24, No. 11 (2020), s. 3055-3065. ISSN 2168-2194 (2019: 5.223 - IF, Q1 - JCR Best Q, 1.306 - SJR, Q1 - SJR Best Q). V databáze: IEEE: 9115864 ; DOI: 10.1109/JBHI.2020.3002097.

MARMOL, F. G. - ROZINAJ, Gregor - SCHUMANN, Sebastian - LABAJ, Ondrej - KAČUR, Juraj. Smart AppStore: expanding the frontiers of smartphone ecosystems. In Computer. Vol. 47, No. 6 (2014), s. 42-47. ISSN 0018-9162 (2014: 1.443 - IF, Q2 - JCR Best Q, 0.542 - SJR, Q1 - SJR Best Q). V databáze: SCOPUS.

RESEARCH

SPEECH RECOGNITION

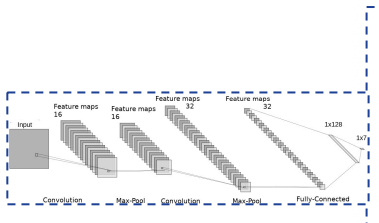
Technologies:
Dynamic time warping
Hidden Markov models
Neural Networks

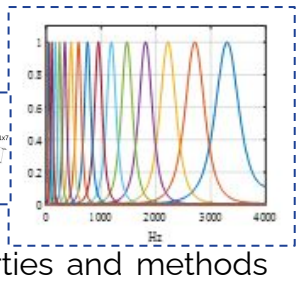


Achievements:
-Improving / enhancing MASPER training algorithm: background models, discriminative training, semi tied covariance matrices (HLDA)
-Optimization of speech decoding (Viterbi) process using evolutionary strategies
-Topological invariants as speech feature for speech recognition

SPEECH EMOTION RECOGNITION

Technologies:
Neural Networks

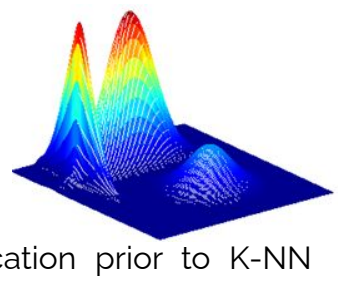




Achievements:
-ML based analysis of basic speech properties and methods for SER

SPEAKER RECOGNITION

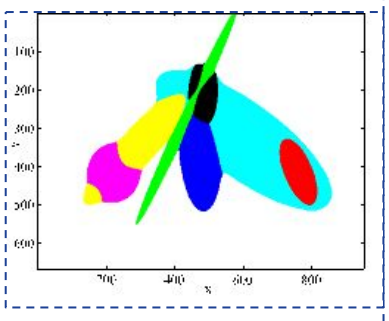
Technologies:
KNN
GMM
Neural Networks



Achievements:
- PCA and LDA local application prior to K-NN classification
- Gradual GMM enhancement
- Practical realization of real-time speaker identification system

BIOMEDICINE

Technologies:
Markov chain
HMM
GMM (generative, discriminative)
KNN
Neural Networks (CNN, LSTM)
eye-tracking



Achievements:
-ML based analysis of eye-tracking signals for detection of cognitive disorder (schizophrenia) using ROR test
-Design of a system for detection of schizophrenia using ROR test achieving (10% improvement to known solutions)