

Biomedical Electronics and Signal Processing Group of Physical and Biomedical Electronics Department of National Technical University of Ukraine “Kyiv Polytechnic Institute”

Area of research is development of methodology, algorithms, software and hardware for biomedical electronic systems for diagnosing various human diseases, e-health applications.

Actual interests in educational activity

- Electronic and information biomedical systems
- Biosignal analysis and processing

Scientific interests

- brain electrical activity analysis, epilepsy diagnostics, epileptic patterns' localization
- heart rate variability analysis
- depth of anesthesia monitoring
- adaptive signal decompositions, overcomplete basis function's dictionaries
- pattern recognition, adapted templates, metrics and similarity measures
- adaptive signal and image processing, wavelet transform, new signal transforms in diagnostics, therapy and monitoring
- nonstationary signals' analysis, higher-order spectral analysis
- chaoticity of brain dynamics with applications to diagnostics
- structural analysis of EEG and ECG
- respiratory sounds analysis
- nano-bio-sensors simulation technique

Main achievements

- Technique for epileptiform pattern automatic localization
- Technique for automatic hearing diagnostics based on auditory brain response potentials
- High-resolution ECG analysis system
- Technique for power-line noise adaptive suppression
- Technique for EEG signal simulation for various conditions
- Biopotential electrodes modeling in non-normal conditions
- Technique for HRV multiscale analysis
- Model of immune nanotube-based FET sensor

Collaboration

- Institute of Neurosurgery of the Academy of Medical Sciences of Ukraine, Department of Functional Diagnostics
- UTAS Co.
- Institute of Cybernetics of Ukrainian Academy of Sciences
- Nano Device Laboratory, Korea University, South Korea
- Institute for Biomedical Engineering, TU Dresden, Germany

All information and contacts:

<http://biowave.org.ua/>