PROPOSAL OF THESIS TOPIC FOR MGR INŻ. (MSE) PROGRAMME
IN TELECOMMUNICATIONS AND COMPUTER SCIENCE

Topic: Assessment of psychophysical state (fatigue, drowsiness, stress) on the basis of heart rate variability analysis

Topic in Polish: Ocena stanu psychofizycznego (zmęczenie, senność, stress) na podstawie analizy zmienności rytmu serca

Supervisor: dr hab. inż. Paweł Strumiłło, prof. PL

Auxiliary supervisor: mgr inż. Krzysztof Kudryński

Goals and scope of the work:

Analysis of the heart rhythm reflects the mechanisms of functioning of the human autonomous system. The goal of the work is to establish parameters for assessment of fatigue, stress, sleepiness etc. from the recorded heart rhythm. The data is given in the form of heart rate variability series, i.e. a series of intervals between successive heart beats. The parameters should be derived from time, spectral and/or time-frequency analysis. Assessment of psychophysical state has wide applications ranging from driver’s fatigue monitoring to detection of deceptive statements.

Prerequisites (e.g. experience in writing programs in a computer language or knowledge of a foreign language):

- signal processing techniques (spectral analysis, filtering etc.)
- Matlab programming (optionally other programming languages)

Literature:

Will be delivered by the supervisors.

Łódź, 2009-05-29

Supervisor’s signature