

2008 Signal Processing Algorithms, Architectures, Arrangements, and Applications

(SPA 2008)

**Poznan, Poland
25-27 September 2008**



**IEEE Catalog Number: CFP0807D-PRT
ISBN: 978-1-4577-1660-9**

Table of Contents

General Information	5
SESSION 1: Action recognition	
1. Volker Krüger, Dennis Herzog, PARAMETRIC HMMS FOR MOVEMENT RECOGNITION AND SYNTHESIS (Tutorial 1)	9
2. Grzegorz Szwoch, Piotr Dalka, Andrzej Czyżewski, OBJECTS CLASSIFICATION BASED ON THEIR PHYSICAL SIZES FOR DETECTION OF EVENTS IN CAMERA IMAGES	15
SESSION 2 and 3: Image Processing	
3. Łukasz Saganowski, VIDEO COMPRESSION BASED ON DICTIONARY OF BASE FUNCTIONS (Tutorial 2)	21
4. Reza Shoja Ghiass, Emad Fatemizadeh, MULTI-VIEW FACE DETECTION AND RECOGNITION UNDER VARYING ILLUMINATION CONDITIONS BY DESIGNING AN ILLUMINATION EFFECT CANCELLING FILTER	27
5. Paweł Wróblewski, Michał Strzelecki, AUTOMATIC DETECTION OF PANCREATIC ISLETS IN MAGNETIC RESONANCE RAT LIVER IMAGES	33
SESSION 4: Audio Processing	
6. Zbigniew Kulka, Marcin Lewandowski, AN FPGA-BASED SIGMA-DELTA AUDIO DAC	39
7. Przemysław Plaskota, Andrzej Dobrucki, THE INFLUENCE OF PINNA FLARE ANGLE ON HEAD-RELATED TRANSFER FUNCTION	43
8. Maurycy J. Kin, Stanisław Maleczek, COMPARATIVE EVALUATION OF THE ACOUSTIC TUBE AMPLIFIER SOUND QUALITY BY MEANS OF LISTENING TESTS	47
9. Aleksandra Młyńska, REED FUNCTION IN CLARINET PHYSICAL MODEL	51
SESSION 5: Sound and Speech Processing – part 1	
10. Halina Portalska, Marek Portalski, SELECTED ASPECTS OF THE USE OF DIGITAL SIGNAL PROCESSING IN THE SOUND THERAPY (Tutorial 3)	55
11. Magdalena Kaniewska, ON THE USE OF INSTANTANEOUS COMPLEX FREQUENCY FOR PITCH AND FORMANT TRACKING	61
12. Grażyna Demenko et al., LVCSR SPEECH DATABASE – JURISDIC	67
13. Ricardo Sousa, Aníbal Ferreira, EVALUATION OF EXISTING HARMONIC-TO-NOISE RATIO METHODS FOR VOICE ASSESSMENT	73
14. Szymon Drgas, Damian Cetnarowicz, Adam Dąbrowski, SPEAKER VERIFICATION BASED ON PROSODIC FEATURES	79
SESSION 6: Sound and Speech Processing – part 2	
15. Michał Papaj, SILENCE/NOISE DETECTION FOR SPEECH AND MUSIC SIGNALS	83
16. Andrzej Meyer, Irena Chmielewska, WORD ENDPOINT DETECTION/EXTRACTION METHOD FOR SPEAKER IDENTIFICATION PURPOSES	89
17. Tomasz Marciniak, Roman Rochówniak, Adam Dąbrowski, SUBBAND WAVELET SIGNAL DENOISING FOR VOICE ACTIVITY DETECTION	93
18. Andrzej Meyer, Halina Portalska, Marek Portalski, RESEARCH OF THE ANISOTROPY OF THE SOUND BOWLS	97
19. Andrzej Meyer, Halina Portalska, Marek Portalski, Adam Konieczka, Julian Balcerek, VISUALIZATION OF SOUND BOWL ACOUSTIC FIELD	103

SESSION 7: DSP Theory and Implementation – part 1

20. T. Koal, Heinrich T. Vierhaus, LOGIC SELF REPAIR BASED ON REGULAR BUILDING BLOCKS (Tutorial 4)	109
21. Łukasz Zbydniewski, Tomasz Zieliński, PERFORMANCE OF WAVELET-OFDM AND CIRCULAR WAVELET-OFDM IN POWER LINE COMMUNICATIONS	115
22. Ryszard Wojtyna, A CONCEPT OF CURRENT-MODE LONG-TERM ANALOG MEMORY FOR NEURAL- NETWORK LEARNING ON SILICON	121
23. Khaled Salah Mohammed, DESIGN AND FPGA IMPLEMENTATION OF NON-DATA AIDED TIMING AND CARRIER RECOVERY TECHNIQUES FOR EDR BLUETOOTH STANDARD	127
24. Andrzej Czyżewski, Bartosz Kunka, Mariusz Kurkowski, Robert Branchat, COMPARISON OF DEVELOPED GAZE POINT ESTIMATION METHODS	133

SESSION 8: DSP Theory and Implementation – part 2

25. Jochen Hahn, FILTER DESIGN FOR PSYCHOACOUSTICAL IN-BAND NOISE SHAPERS	137
26. Przemysław Korohoda, Adam Dąbrowski, THE DISCRETE TRIGONOMETRIC TRANSFORMS FOR STILL IMAGE WATERMARKING IN THE TRANSFORM DOMAIN – A COMPARATIVE STUDY	143
27. Felicja Wysocka-Schillak, APPROXIMATION OF FIR BY IIR FILTERS USING HYBRID GENETIC ALGORITHM	149
28. Ewa Hermanowicz, Mirosław Rojewski, SELF-ADJUSTING SUB-SAMPLE DELAY ESTIMATOR BASED ON FRACTIONAL DELAYING HILBERT TRANSFORM FILTER	155
29. Przemysław Brylski, Michał Strzelecki, NETWORK OF SYNCHRONIZED OSCILLATORS - DIGITAL APPROACH	161
30. Perumalsamy Venkatakrishnan, S. Sangeetha, R. Sukanesh, BISPECTRAL ANALYSIS OF HUMAN ELECTROENCEPHALOGRAM (EEG) SIGNALS DURING VARIOUS SLEEP STAGES	165

SESSION 9: Video Coding and Television

31. Marcin Dąbrowski, Józef Modelski, DVB-T2 VERSUS DVB-T. WHAT HAS BEEN CHANGED AND WHY? (Tutorial 5)	169
32. Adam Kupryjanow, Andrzej Czyżewski, AUTOMATIC SYSTEM FOR AUDIO-VIDEO MATERIAL RECONSTRUCTION AND ARCHIVING	173
33. Mariusz Jakubowski, Grzegorz Pastuszak, A HARDWARE-ORIENTED VARIABLE BLOCK-SIZE MOTION ESTIMATION METHOD FOR H.264/AVC VIDEO CODING	177
34. Grzegorz Pastuszak, Andrzej Pietrasiewicz, MACROBLOCK-LEVEL RATE CONTROL BASED ON THE LINEAR RD MODEL FOR H.264/AVC	183
35. Marcos Medeiros, Luis Cruz, ITERATIVE DISPARITY ESTIMATION FOR MULTIVIEW VIDEO APPLICATIONS	189

SESSION 10: Image Processing – part 3

36. Michał Choraś, PERSPECTIVE METHODS OF BIOMETRIC HUMAN IDENTIFICATION (Tutorial 6)	195
37. Ewa Łukasik, RECONSTRUCTING MUSICAL INSTRUMENTS IN MIXED REALITY	201
38. Antoine B. Abche, Aldo Maalouf, Elie Karam, A FAST APPROACH FOR ULTRASOUND IMAGE RECONSTRUCTION	207
39. Paweł Pawłowski, Dawid Prószyński, Adam Dąbrowski, RECOGNITION OF ROAD SIGNS FROM VIDEO	213
40. Julian Balcerek, Adam Dąbrowski, Adam Konieczka, SIMPLE EFFICIENT TECHNIQUES FOR CREATING EFFECTIVE 3D IMPRESSIONS FROM 2D ORIGINAL IMAGES	219
41. Filip Misiorek, Adam Dąbrowski, Paweł Pawłowski, THE ABILITY TO USE PARALLEL PROGRAMING ON GRAPHICS PROCESSOR UNIT IN DIGITAL SIGNAL PROCESSING	225