2010 Symposium on Security Detection and Information Processing

Procedia Engineering Volume 7

Hefei, China 12-14 November 2010

Editors:

Minqiang Li Daoyang Yu

ISBN: 978-1-62748-552-4

ISSN: 1877-7058

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© by Elsevier B.V. All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact Elsevier B.V. at the address below.

Elsevier B.V. Radarweg 29 Amsterdam 1043 NX The Netherlands

Phone: +31 20 485 3911 Fax: +31 20 485 2457

http://www.elsevierpublishingsolutions.com/contact.asp

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400

Phone: 845-758-0400 Fax: 845-758-2634

Email: curran@proceedings.com Web: www.proceedings.com

Contents

R. Liu and H. Wang Detection and localization of improvised explosive devices based on 3-axis magnetic sensor array system	1
F. Zhao, L. Xie and N. Wu Fast algorithm for rotation and translation two-dimensional computed tomography accurate reconstruction	10
R. Pan, S. Zhao and J. Shen Terahertz spectra applications in identification of illicit drugs using support vector machines	15
T. Wan, D. Yu, T. Zhang, X. Zhang and J. Zhou A rapid method for detection of gunshot residue using microwave plasma torch-mass spectrometry	22
T. Hu, Z. Xiao, J. Xu and L. Wu Methods of personnel screening for concealed contraband detection by millimeter-wave radiometric imaging	28
Y. Wang and J. Zheng Knowledge management performance evaluation based on triangular fuzzy number	38
Q. Guo and H. Xia Multi-sensor data correlation D-S realization based on nuclear instrument and control system	46
N. He, J. Tao and S. Xua A new reconstruction approach in diffraction ultrasound tomography: Combine transmission mode with reflection mode tomography	51
K. Zhu, T. Su, X. He and J. Niu SVD for enhanced explosives detection using NQR	57
H. Qu, F. Xu, X. Hu, H. Miao, T. Xiao and Z. Zhang SR-CT filter-back-projection algorithm and application in detection of microstructure evolution	63
Y. Li, F. Xu, X. Hu, H. Qu, Z. Zhang and T. Xiao The development of a novel SR-CT technique-originated equipment for microwave sintering	72
G. Chen, Z. Yang and J. Sun Applying Bayesian networks in nuclear power plant safety analysis	81
Q. Fu, H. Wan and F. Qiu Pipeline leak detection based on fiber optic early-warning system	88
Y. Mao and G. Fu Specific measures of emporium fire loss prevention ability improvement	94
F. Meng, Y. Chen, J. Liu, Z. Jin, Y. Sun and J. Liu Novel nanoparticle detection method using electrochemical device based on anodic aluminum oxide nanopore membrane	100
F. Chen, P. Chen, Y. Han and J. Pan X-ray spectrum sampling technology in the CT projection simulation	106
P. Chen, F.l. Chen, Y. Han and J. Pan The effect analyze of the CT algorithm based on direct characteristic reconstruction	115
J. Liu, Y. Wan, D. Yu, F. Meng, Z. Jin, L. Kong and J. Liu Comparison on gas-sensing properties of single- and multi-layered SnO ₂ nanostructures in drug- precursors detection	123
W. Li, Y. Zhong, Y. Zhang, D. Yu, B. Sun, M. Li and J. Liu Partial least-squares regression for identification of liquid materials	130

Y. Zhong, B. Sun, D. Yu, W. Li, Y. Zhang, M. Li and J. Liu Identification of liquid materials using energy dispersive X-ray scattering	135
H. Liu, S. Wei, Y. Tao, L. Yang and J. Liu Synchrotron radiation circular dichroism: a new tool for identification of point-mutation protein	143
L. Li, M. Li, B. Sun, Jh. Liu and F. Zhang Confirm of the optimum detection angles of several substances using energy dispersive X-ray diffraction	147
F. Zhang, M. Li, W. Li, Y. Zhong and J. Liu Research and analysis of non-destructive detection of heroin hidden in human body	151
D. Qu, D. Yu, W. Li, Y. Zhang, B. Sun, Y. Zhong, M. Li and J. Liu Identification of pure liquid precursor chemicals based on coherence function and fourier transform using energy dispersive X-ray diffraction scattering	158
D. Yu, M. Li, W. Li, F. Zhang, B. Sun and J. Liu Energy dispersive X-ray diffraction research using coherence function	165
H. Li, F. Meng, Y. Sun, J. Liu, Y. Wan, B. Sun and J. Liu Mesoporous SnO ₂ sensor prepared by carbon nanotubes as template and its sensing properties to indoor air pollutants	172
Q. Zheng, Yc. Fu and Jq. Xu Advances in the chemical sensors for the detection of DMMP — A simulant for nerve agent sarin	179
Y. Zhang, M. Li, Y. Zhong, W. Li, B. Sun, D. Yu and J. Liu Analysis of skin influence in identification of heroin using singular value decomposition	185
J. Wu, W. Zhang and X. Miao New X-ray source system design	190
B. Sun, M. Li, F. Zhang, Y. Zhong, D. Yu, W. Lu, G. Pan and J. Liu The influence of X-ray wavelength and the simulative human skin and muscle obstruction on the detection of human body-hidden drugs by non-intrusive X-ray diffraction method	195
W. Zhang, X. Li and Z. Xu Feasibility study on application of CT using γ -ray with double energy to container security inspection	203
S. Guo, J. Wu, M. Xiang and S. Wei Study of control system for X-ray generator	209
D. Liu, F. Gao and C. Jin High linearity 32-channel CMOS X-ray readout integrated circuit	213
X. Zhao, Q. Qi and R. Li The establishment and application of fuzzy comprehensive model with weight based on entropy technology for air quality assessment	217
Y. Xiao, S. Xiang, Z. Zhao and Z. Qian Design of high reliability nuclear logging probe	223
T. Yang, T. Su and X. He NQR signal processing based on multi-stage Wiener filter	229
C. Xue, Q. Zhang, G. Zhang, L. Wu and X. Wu A simple optical sequential illumination for microcantilever array	235
S. Yang, Z. Song, Z. Fang and J. Yang A novel affine attack robust blind watermarking algorithm	239
G. Yan, C. Chen and J. Guo Study of blasting vibration safety security criterion method based on response spectrum	247

X. Tian, Y. Huang and C. Zhang The tuning principle of adaptive fuzzy fractional-order PID controller parameters	251
M. Huang Improved ant colony algorithm in the distribution of reactive power compensation device and optimization	256
Y. Xiao, Z. Zhao, Z. Qian and H. Zhou A high isolation switching unit for MRI system	265
D. Wang and P. Zhang The technology research of remote automatic detection and fault diagnosis based on JTAG boundary scan	270
F. Zhang, R. Li and S. Liu Contour extraction of gait recognition	275
C. He, Q. Liu, H. Li and H. Wang Multimodal medical image fusion based on IHS and PCA	280
L. Wang, X. Jin and Y. Fei Image noise reduction based on superposition algorithm used in Xray imager	286
X. Zhao, B. Liu and C. Yang A new calibration method for linear CCD camera	290
X. Fan, B. Hu, Z. Li, X. Chen and Y. Han Real-time compression system research based on DMD hadamard transform spectrometer	297
Z. Guan, Y. Liu, Y. Shi, K. Wei, J. Wang, H. Liang and H. Zhang Problems and developing direction of anti-collision technology in the dense well pattern area	304
J. Fan, Q. Luo and D. Ma Localization estimation of sound source by microphones array	312
H. Liu and C. Wu A new approach to detect fire source underground mine for preventing spontaneous combustion of sulfide ores	318
Y. Wu and W. Li Study on technology of electromagnetic radiation of sensitive index to forecast the coal and gas hazards	327
S. Xu, J. Tao and N. He An improved extrapolation method and its application in ultrasound computerized tomography	335
Y. Zhang and J. Huang Study on theoretical analysis of buffer blasting	342
Z. Wei, J. Li, X. Ji and Y. Bo A calibration method based on multi-linear structured light	345
L. Chengcheng and L. Naiwen The relation among coalminer's self-efficacy, safety attitude and risk-taking behavior	352
J. Li, X. Fan and X. Wang An improved attribute reduction algorithm based on importance of attribute value	356
Y. Zeng and J. Qian Designs of a fire detecting and fire pre-warning system based on single chip microcomputer	360
J. Li, X. Wang and S. Xu Prediction of customer classification based on rough set theory	366

Y. Chen, Y. Xu, Z. Ma and Y. Sun Detection of bone density with ultrasound	371
J. Niu, T. Su, X. He, K. Zhu and H. Wu Weak NQR signal detection based on generalized matched filter	377
J. Li, X. Wang and Y. Hu Application of rough set theory in apple disease diagnosis	383
M. Deng and Q. Chen Coal and gas outburst monitoring system based on WSN	387
F. Peng, T. Luoa, Y. Yuan and L. Qiu Performance of optimized TVOCs sensor	392
H. Zhang, M. Zhou, C. Song and D. Wu Research on coal mine gas sensor systems based on near infrared spectrum	399
T. Han and J. Liu Facile synthesis of palmitic acid polyacrylamide and its application for steel protection from corrosion using electrochemical determination	404
T. Xing, Y. Bai and Y. Fang Study on detecting lumber damage using acoustic radiation	410
F. Zhang, X. Zhang and R. Li Digital watermarking algorithm based on space-time coding	416
J. Li, X. Wang and J. Chen Grain output prediction based on rough set	422
X. Zhang, F. Zhang and R. Li DSA image registration based on 3D space-time detection	426
Y. Deng and G. Liu Surface plasmons resonance detection based on the attenuated total reflection geometry	432
Y. Hao, Y. Hao, Y. Lu and Z. Jia A new type of intelligent wells Seal Plug Controller	436
W. Wang and P. Zhao Application of kalman filter in the CNC servo control system	442
Q. Niu Clutch control during starting of AMT	447
C. Hong Yu Modifying conducted interference in low-frequency stage based on improving the way of wilding of planar voltage transformer	453
Y. Zheng, Y. Zhang, Z. Ma and Y. Sun Predicting Arterial Stiffness from radial Pulse Waveform using support vector machines	458
P. Liang, Y. Li, D. Jiang and Y. Wei Signal processing in portable ion mobility spectroscopy	463
J. Li, X. Wang and X. Fan Improved binary discernibility matrix attribute reduction algorithm in customer relationship management	473
C. Ma and Z. Zhang Design of thermostatic tank and control system	477
X. Cheng, W. Lin, E. Liu and D. Gu Highway traffic incident detection based on BPNN	482