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Micro-Facial Movement Detection Using Individualised Baselines and Histogram-Based Descriptors .................................................. 1864
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SMC: Cybernetics - CYB-10

Multiple Kernel Multivariate Performance Learning Using Cutting Plane Algorithm .......................................................... 1870
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FIM-Based Pairwise Selection for Active Learning on Imbalanced Datasets .......................................................... 1876
Lixing Chen, Xuemin Tian, and Lianfang Cai

Supervised Cross-Modal Factor Analysis for Multiple Modal Data Classification .......................................................... 1882
Jingbin Wang, Yihua Zhou, Kanghong Duan, Jim Jing-Yan Wang, and Halima Bensmail

Incremental Extreme Learning Machine Based on Cascade Neural Networks .......................................................... 1889
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Enhancement of Medical Named Entity Recognition Using Graph-Based Features .......................................................... 1895
Sara Keretna, Chee Peng Lim, and Doug Creighton

Flexible Concept Matching for Medical Information Retrieval .......................................................... 1901
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Dynamic Texture Synthesis via Image Reconstruction .......................................................... 1907
Weigang Guo, Xinge You, Ziqi Zhu, Weiyong Xue, Shujian Yu, and Xiabao Jiang

SMC: Cybernetics - CYB-11

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A Dyna-Q (Lambda) Approach to Flocking with Fixed-Wing UAVs in a Stochastic Environment ..................................................................................................................................................................................1918

Shao-Ming Hung, Sidney N. Givigi, and Aboelmagd Noureldin

Pseudo-Supervised Latent Dirichlet Allocation for Image Annotation ..................................................................................................................................................................................1924

Huynh Thi Pham and Seungjin Choi

Multiresolution Local Autocorrelation of Optical Flows over Time for Action Recognition ......................................................1930

Novanto Yudistira and Takio Kurita

Fuzzy Correspondences and Kernel Density Estimation for Contaminated Point Set Registration ..................................................1936

Gang Wang, Zhicheng Wang, Yufei Chen, Weidong Zhao, and Xianhui Liu

Edge Flow ......................................................................................................................................................................................1942

Gruffydd Morris and Plamen Angelov

Behavior Recognition and Analysis in Smart Environments for Context-Aware Applications ..............................................................1949

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SMC: Cybernetics - CYB-12

PSO Algorithm with Transition Probability Based on Hamming Distance for Graph Coloring Problem ..................................................................................................................................................................................1956

Takuya Aoki, Claus Aranha, and Hitoshi Kanoh

Distributed Multistart Hybrid Iterative Tabu Search ..................................................................................................................................................................................1962

Omar Abdelkafi, Lhassane Idoumghar, and Julien Lepagnot

HArCo: Hierarchical Fiducial Markers for Pose Estimation in Helicopter Landing Tasks ..........................................................1968

Hao Wang, Xiongfeng Wang, Geng Lu, and Yisheng Zhong

An Analysis of Binary Particle Swarm Optimizers for Task Assigning Problem in Wireless Sensor Networks ..................................................................................................................................................................................1974

Xu-Long Zeng, Wei-Neng Chen, and Jun Zhang

A Hardware Implementation of Particle Swarm Optimization with a Control of Velocity for Training Neural Network ..................................................................................................................................................................................1980

Tuan Linh Dang and Yukinobu Hoshino


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Performance Analysis of Distributed Speech Recognition Using Analysis-by-Synthesis Frame

Reduced Front End under Packet Loss Conditions ..................................................................................................................................................................................1992

Lee-Min Lee, Fu-Rong Jean, and Tan-Hsu Tan

Recommending Hashtags to Forthcoming Tweets in Microblogging..................................................................................................................................................................................1998

Shuangyong Song, Yao Meng, and Zhongguang Zheng

Removing Smoothing Effects for Color Image Segmentation ..................................................................................................................................................................................2004

Wen-Chang Cheng and Hua-Hung Tseng

Packet Process with Deficit Round Robin ASIC for ATM/Ethernet Bridge ..................................................................................................................................................................................2010

Guo-Ming Sung, Wen-Duen Chou, and Xing-Xi Chen
The Implementation of Smart Electronic Locking System Based on Z-Wave and Internet ........................................2015
Ching-Chuan Wei, Yan-Ming Chen, Chao-Chieh Chang, and Chi-Han Yu

Three Dimensional Gestures Interface Based on Complex Background for Intelligent Internet Systems ........................................................................................................................................................................................................2018
Yu-Cheng Fan, Chun-Hung Wang, and Chun-Chang Lu

SQL-to-NoSQL Schema Denormalization and Migration: A Study on Content Management Systems ........................................................................................................................................................................................................2022
Chao-Hsien Lee and Yu-Lin Zheng

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