

# **2019 Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC 2019)**

**Lanzhou, China  
18 – 21 November 2019**

**Pages 1-677**



**IEEE Catalog Number: CFP1914U-POD  
ISBN: 978-1-7281-3249-5**

**Copyright © 2019 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1914U-POD
ISBN (Print-On-Demand):	978-1-7281-3249-5
ISBN (Online):	978-1-7281-3248-8
ISSN:	2640-009X

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# TABLE OF CONTENTS

<b>DYNAMIC THRESHOLD FOR DDOS MITIGATION IN SDN ENVIRONMENT</b> .....	1
<i>Guo-Chih Hong ; Chung-Nan Lee ; Ming-Feng Lee</i>	
<b>LARGE-SCALE AND HIGH-DIMENSIONAL CELL OUTAGE DETECTION IN 5G SELF-ORGANIZING NETWORKS</b> .....	8
<i>Po-Chiang Lin</i>	
<b>IMPLEMENTATION OF MULTIPLE ROUTING CONFIGURATIONS ON SOFTWARE-DEFINED NETWORKS WITH P4</b> .....	13
<i>Kouji Hirata ; Takuji Tachibana</i>	
<b>EVALUATION OF COUNTERMEASURE AGAINST FUTURE MALWARE EVOLUTION WITH DETERMINISTIC MODELING</b> .....	17
<i>Koki Shimizu ; Yuya Kumai ; Kimiko Motonaka ; Tomotaka Kimura ; Kouji Hirata</i>	
<b>NUMAP: NUMA-AWARE MULTI-CORE PINNING AND PAIRING FOR NETWORK SLICING AT THE 5G MOBILE EDGE</b> .....	22
<i>Wen-Ping Lai ; Kuan-Chun Chiu</i>	
<b>APPROACH USING TRANSFORMING STRUCTURAL DATA INTO IMAGE FOR DETECTION OF MALICIOUS MS-DOC FILES BASED ON DEEP LEARNING MODELS</b> .....	28
<i>Shaojie Yang ; Wenbo Chen ; Shanxi Li ; Qingxiang Xu</i>	
<b>EDGE MINING ON IOT DEVICES USING ANOMALY DETECTION</b> .....	33
<i>Kavin Kamaraj ; Behnam Dezfouli ; Yuhong Liu</i>	
<b>A HYBRID FEATURE SELECTION ALGORITHM APPLIED TO HIGH-DIMENSIONAL IMBALANCED SMALL-SAMPLE DATA CLASSIFICATION</b> .....	41
<i>Fang Feng ; Qingquan Lv ; Mingsong Wang ; Xuhui Yang ; Qingguo Zhou ; Rui Zhou</i>	
<b>BLOCKCHAIN-BASED COMPLETE SELF-TALLYING E-VOTING PROTOCOL</b> .....	47
<i>Yikang Lin ; Peng Zhang</i>	
<b>IMAGE COMPRESSION WITH DEEPER LEARNED TRANSFORMER</b> .....	53
<i>Licheng Xiao ; Hairong Wang ; Nam Ling</i>	
<b>MODELING THE VIEWS OF WECHAT ARTICLES BY BRANCHING PROCESSES</b> .....	58
<i>Lin Zhang ; Yuhong Liu</i>	
<b>LIGHTWEIGHT MODELS FOR WEATHER IDENTIFICATION</b> .....	64
<i>Congcong Wang ; Pengyu Liu ; Kebin Jia ; Siwei Chen</i>	
<b>STOCHASTIC FUSION FOR MULTI-STREAM NEURAL NETWORK IN VIDEO CLASSIFICATION</b> .....	69
<i>Yu-Min Huang ; Huan-Hsin Tsengt ; Jen-Tzung Chien</i>	
<b>DYNAMIC ATTENTION LOSS FOR SMALL-SAMPLE IMAGE CLASSIFICATION</b> .....	75
<i>Jie Cao ; Yinping Qiu ; Dongliang Chang ; Xiaoxu Li ; Zhanyu Ma</i>	
<b>MIXED ATTENTION MECHANISM FOR SMALL-SAMPLE FINE-GRAINED IMAGE CLASSIFICATION</b> .....	80
<i>Xiaoxu Li ; Jijie Wu ; Dongliang Chang ; Weifeng Huang ; Zhanyu Ma ; Jie Cao</i>	
<b>A LOSS WITH MIXED PENALTY FOR SPEECH ENHANCEMENT GENERATIVE ADVERSARIAL NETWORK</b> .....	86
<i>Jie Cao ; Yaofeng Zhou ; Hong Yu ; Xiaoxu Li ; Dan Wang ; Zhanyu Ma</i>	
<b>SMALL-SAMPLE IMAGE CLASSIFICATION METHOD OF COMBINING PROTOTYPE AND MARGIN LEARNING</b> .....	91
<i>Xiaoxu Li ; Liyun Yu ; Jie Cao ; Dongliang Chang ; Zhanyu Ma ; Nian Liu</i>	
<b>RECURRENT NEURAL NETWORK FOR WEB SERVICES PERFORMANCE FORECASTING, RANKING AND REGRESSION TESTING</b> .....	96
<i>Muhammad Hasnain ; Muhammad Fermi Pasha ; Chern Hong Lim ; Imran Ghan</i>	
<b>NON-PARALLEL VOICE CONVERSION WITH CONTROLLABLE SPEAKER INDIVIDUALITY USING VARIATIONAL AUTOENCODER</b> .....	106
<i>Tuan Vu Ho ; Masato Akagi</i>	
<b>SINGAN: SINGING VOICE CONVERSION WITH GENERATIVE ADVERSARIAL NETWORKS</b> .....	112
<i>Berrak Sisman ; Karthika Vijayan ; Minghui Dong ; Haizhou Li</i>	
<b>EXPERIMENTAL INVESTIGATION ON THE EFFICACY OF AFFINE-DTW IN THE QUALITY OF VOICE CONVERSION</b> .....	119
<i>Gaku Kotani ; Hitoshi Suda ; Daisuke Saito ; Nobuaki Minematsu</i>	

<b>NON-PARALLEL MANY-TO-MANY SINGING VOICE CONVERSION BY ADVERSARIAL LEARNING</b> .....	125
<i>Jinsen Hu ; Chunyan Yu ; Faqian Guan</i>	
<b>EVALUATION OF THE LOMBARD EFFECT MODEL ON SYNTHESIZING LOMBARD SPEECH IN VARYING NOISE LEVEL ENVIRONMENTS WITH LIMITED DATA</b> .....	133
<i>Thuan Van Ngo ; Rieko Kubo ; Masato Akagi</i>	
<b>DNN-BASED VOICE CONVERSION WITH AUXILIARY PHONEMIC INFORMATION TO IMPROVE INTELLIGIBILITY OF GLOSSECTOMY PATIENTS' SPEECH</b> .....	138
<i>Hiroki Murakami ; Sunao Hara ; Masanobu Abe</i>	
<b>SPEECH-LIKE EMOTIONAL SOUND GENERATOR BY WAVENET</b> .....	143
<i>Kento Matsumoto ; Sunao Hara ; Masanobu Abe</i>	
<b>DNN-BASED STATISTICAL PARAMETRIC SPEECH SYNTHESIS INCORPORATING NON-NEGATIVE MATRIX FACTORIZATION</b> .....	148
<i>Shunsuke Goto ; Daisuke Saito ; Nobuaki Minematsu</i>	
<b>EFFICIENT QUANTIZATION OF VOCODED SPEECH PARAMETERS WITHOUT DEGRADATION</b> .....	154
<i>Masanori Morise ; Genta Miyashita</i>	
<b>SPEAKER-INDEPENDENT SPECTRAL MAPPING FOR SPEECH-TO-SINGING CONVERSION</b> .....	159
<i>Xiaoxue Gao ; Xiaohai Tian ; Rohan Kumar Das ; Yi Zhou ; Haizhou Li</i>	
<b>A PROSODIC MANDARIN TEXT-TO-SPEECH SYSTEM BASED ON TACOTRON</b> .....	165
<i>Chuxiong Zhang ; Sheng Zhang ; Haibing Zhong</i>	
<b>DISTILLING KNOWLEDGE FOR DISTANT SPEECH RECOGNITION VIA PARALLEL DATA</b> .....	170
<i>Jiangyan Yi ; Jianhua Tao</i>	
<b>BATCH NORMALIZATION BASED UNSUPERVISED SPEAKER ADAPTATION FOR ACOUSTIC MODELS</b> .....	176
<i>Jiangyan Yi ; Jianhua Tao</i>	
<b>ROBUST SPEECH RECOGNITION BASED ON MULTI-OBJECTIVE LEARNING WITH GRU NETWORK</b> .....	181
<i>Ming Liu ; Yujun Wang ; Zhaoyu Yan ; Jing Wang ; Xiang Xie</i>	
<b>REVISITING DYNAMIC ADJUSTMENT OF LANGUAGE MODEL SCALING FACTOR FOR AUTOMATIC SPEECH RECOGNITION</b> .....	186
<i>Hiroshi Sato ; Takafumi Moriya ; Yusuke Shinohara ; Ryo Masumura ; Takaaki Fukutomi ; Kiyooki Matsui ; Takanori Ashihara ; Yoshikazu Yamaguchi ; Yushi Aono</i>	
<b>A LANGUAGE MODEL-BASED DESIGN OF REDUCED PHONEME SET FOR ACOUSTIC MODEL</b> .....	192
<i>Shuji Komeiji ; Toshihisa Tanaka</i>	
<b>AUDIO CODEC SIMULATION BASED DATA AUGMENTATION FOR TELEPHONY SPEECH RECOGNITION</b> .....	198
<i>Thi-Ly Vu ; Zhiping Zeng ; Haihua Xu ; Eng-Siong Chng</i>	
<b>SECURITY AND EFFICIENCY OF BIOMETRIC TEMPLATE PROTECTION FOR IDENTIFICATION</b> .....	210
<i>Wataru Nakamura ; Yosuke Kaga ; Masakazu Fujio ; Kenta Takahashi</i>	
<b>SECURITY ENHANCEMENT FOR TOUCH PANEL BASED USER AUTHENTICATION ON SMARTPHONES</b> .....	218
<i>Daiki Izumoto ; Yasushi Yamazaki</i>	
<b>EFFICIENT SPOOFING ATTACK DETECTION AGAINST UNKNOWN SAMPLE USING END-TO-END ANOMALY DETECTION</b> .....	224
<i>Tetsushi Ohki ; Vishu Gupta ; Masakatsu Nishigaki</i>	
<b>EYE-BLINK BASED PERSONAL AUTHENTICATION USING TIME-SERIES DIRECTIONAL FEATURES AND WAVEFORM FEATURES</b> .....	231
<i>Keisuke Takano ; Hironobu Takano</i>	
<b>PERSONAL AUTHENTICATION WITH EYE MOVEMENT FEATURES DURING PIN INPUT</b> .....	236
<i>Shion Tagawa ; Hironobu Takano</i>	
<b>ATTRIBUTE ESTIMATION USING MULTI-CNNs FROM HAND IMAGES</b> .....	241
<i>Yi-Chun Lin ; Yusei Suzuki ; Hiroya Kawai ; Koichi Ito ; Hwann-Tzong Chen ; Takafumi Aoki</i>	
<b>DICTIONARY BASED COMPRESSION TYPE CLASSIFICATION USING A CNN ARCHITECTURE</b> .....	245
<i>Hyewon Song ; Beom Kwon ; Seongmin Lee ; Sanghoon Lee</i>	
<b>INVESTIGATION OF MONAURAL FRONT-END PROCESSING FOR ROBUST SPEECH RECOGNITION WITHOUT RETRAINING OR JOINT-TRAINING</b> .....	249
<i>Zhihao Du ; Xueliang Zhang ; Jiqing Han</i>	

<b>A SEQUENTIAL PREDICTION METHOD OF QUASI-PERIODICITY BASED ON GAUSSIAN PROCESS STATE SPACE MODEL .....</b>	<b>255</b>
<i>Akira Tamamori ; Tomoko Matsui</i>	
<b>AUTOMATIC ONTOLOGY POPULATION USING DEEP LEARNING FOR TRIPLE EXTRACTION .....</b>	<b>262</b>
<i>Ming-Hsiang Su ; Chung-Hsien Wu ; Po-Chen Shih</i>	
<b>TRANSFER LEARNING FOR PUNCTUATION PREDICTION.....</b>	<b>268</b>
<i>Karan Makhija ; Thi-Nga Ho ; Eng-Siong Chng</i>	
<b>A LSTM-BASED JOINT PROGRESSIVE LEARNING FRAMEWORK FOR SIMULTANEOUS SPEECH DEREVERBERATION AND DENOISING.....</b>	<b>274</b>
<i>Xin Tang ; Jun Du ; Li Chai ; Yannan Wang ; Qing Wang ; Chin-Hui Lee</i>	
<b>LOCATION-INDEPENDENT MULTI-CHANNEL ACOUSTIC SCENE CLASSIFICATION USING BLIND DEREVERBERATION, BLIND SOURCE SEPARATION, AND MODEL ENSEMBLE .....</b>	<b>279</b>
<i>Ryo Tanabe ; Takashi Endo ; Yuki Nikaido ; Kenji Ichige ; Nguyen Phong ; Yohei Kawaguchi ; Koichi Hamada</i>	
<b>PHONETIC-ATTENTION SCORING FOR DEEP SPEAKER FEATURES IN SPEAKER VERIFICATION .....</b>	<b>284</b>
<i>Lantian Li ; Zhiyuan Tang ; Ying Shi ; Dong Wang</i>	
<b>DEMENTIA DETECTION BY ANALYZING SPONTANEOUS MANDARIN SPEECH .....</b>	<b>289</b>
<i>Zhaoci Liu ; Zhiqiang Guo ; Zhenhua Ling ; Shijin Wang ; Lingjing Jin ; Yunxia Li</i>	
<b>DYNAMIC-ATTENTION BASED ENCODER-DECODER MODEL FOR SPEAKER EXTRACTION WITH ANCHOR SPEECH.....</b>	<b>297</b>
<i>Hao Li ; Xueliang Zhang ; Guanglai Gao</i>	
<b>CLASSIFICATION OF CAUSES OF SPEECH RECOGNITION ERRORS USING ATTENTION- BASED BIDIRECTIONAL LONG SHORT-TERM MEMORY AND MODULATION SPECTRUM .....</b>	<b>302</b>
<i>Jennifer Santoso ; Takeshi Yamada ; Shoji Makino</i>	
<b>SEMI-COPRIME MICROPHONE ARRAYS FOR ESTIMATING DIRECTION OF ARRIVAL OF SPEECH SOURCES.....</b>	<b>308</b>
<i>Jiahong Zhao ; Christian Ritz</i>	
<b>SPEAKER-DISCRIMINATIVE EMBEDDING LEARNING VIA AFFINITY MATRIX FOR SHORT UTTERANCE SPEAKER VERIFICATION .....</b>	<b>314</b>
<i>Junyi Peng ; Rongzhi Gu ; Yuexian Zou ; Wenwu Wang</i>	
<b>PROSODIC STRUCTURE PREDICTION USING DEEP SELF-ATTENTION NEURAL NETWORK.....</b>	<b>320</b>
<i>Yao Du ; Zhiyong Wu ; Shiyin Kang ; Dan Su ; Dong Yu ; Helen Meng</i>	
<b>ALLEVIATE CROSS-CHUNK PERMUTATION THROUGH CHUNK-LEVEL SPEAKER EMBEDDING FOR BLIND SPEECH SEPARATION.....</b>	<b>325</b>
<i>Rongzhi Gu ; Junyi Peng ; Yuexian Zou ; Dong Yu</i>	
<b>ACCELERATION OF RANK-CONSTRAINED SPATIAL COVARIANCE MATRIX ESTIMATION FOR BLIND SPEECH EXTRACTION .....</b>	<b>332</b>
<i>Yuki Kubo ; Norihiro Takamune ; Daichi Kitamura ; Hiroshi Saruwatari</i>	
<b>IMPROVING AUTOMATIC JAZZ MELODY GENERATION BY TRANSFER LEARNING TECHNIQUES.....</b>	<b>339</b>
<i>Hsiao-Tzu Hung ; Chung-Yang Wang ; Yi-Hsuan Yang ; Hsin-Min Wang</i>	
<b>SPEECH LOSS COMPENSATION BY GENERATIVE ADVERSARIAL NETWORKS .....</b>	<b>347</b>
<i>Yupeng Shi ; Nengheng Zheng ; Yuyong Kang ; Weicong Rong</i>	
<b>SNORING SOUND CLASSIFICATION USING MULTICLASS CLASSIFIER UNDER ACTUAL ENVIRONMENTS .....</b>	<b>352</b>
<i>Keisuke Nishijima ; Ken'Ichi Furuya</i>	
<b>NONLINEAR ECHO CANCELLATION BASED ON POLYPHASE FILTER BANK.....</b>	<b>357</b>
<i>Meng Liang ; Zhong-Hua Fu ; Xiang Zhao ; Jinglei Zhou ; Haikun Wang</i>	
<b>QUESTION MARK PREDICTION BY BERT .....</b>	<b>363</b>
<i>Yunqi Cai ; Dong Wang</i>	
<b>PART-BASED BILINEAR CNN FOR PERSON RE-IDENTIFICATION .....</b>	<b>368</b>
<i>Li Li ; Jianwu Dang ; Yangping Wang ; Song Wang ; Zhenhai Zhang</i>	
<b>POLYPHONIC VOICING OPTIMIZATION FOR AUTOMATIC MUSIC COMPLETION .....</b>	<b>375</b>
<i>Christoph M. Wilk ; Shigeki Sagayama</i>	
<b>ONLINE LAYERED MULTIPLE OBJECT TRACKING USING RESIDUAL-RESIDUAL NETWORKS.....</b>	<b>383</b>
<i>Bo-Cheng Jiang ; Chung-Nan Lee</i>	
<b>RAIL SURFACE DEFECT RECOGNITION METHOD BASED ON ADABOOST MULTI- CLASSIFIER COMBINATION.....</b>	<b>391</b>
<i>Biao Yue ; Yangping Wang ; Yongzhi Min ; Zhenhai Zhang ; Wenrun Wang ; Jiu Yong</i>	

<b>FOCAL LOSS FOR END-TO-END SHORT UTTERANCES CHINESE DIALECT IDENTIFICATION</b> .....	397
<i>Qiuxian Zhang ; Jiangan Yi ; Jianhua Tao ; Mingliang Gu ; Yong Ma</i>	
<b>SPEECH REPRESENTATION BASED ON TENSOR FACTOR ANALYSIS AND ITS APPLICATION TO SPEAKER RECOGNITION AND LANGUAGE IDENTIFICATION</b> .....	402
<i>Daisuke Saito ; So Suzuki ; Nobuaki Minematsu</i>	
<b>OPTIMIZING LEARNED OBJECT DETECTION ON POINT CLOUDS FROM 3D LIDARS THROUGH RANGE AND SPARSITY INFORMATION</b> .....	407
<i>Jacob Lambert ; Eijiro Takeuchi ; Kazuya Takeda</i>	
<b>THROUGH THE EYES OF VIEWERS: A COMMENT-ENHANCED MEDIA CONTENT REPRESENTATION FOR TED TALKS IMPRESSION RECOGNITION</b> .....	414
<i>Huan-Yu Chen ; Yun-Shao Lin ; Chi-Chun Lee</i>	
<b>END-TO-END AUTONOMOUS DRIVING BASED ON THE CONVOLUTION NEURAL NETWORK MODEL</b> .....	419
<i>Yuanfang Zhao ; Yunli Chen</i>	
<b>DSNET: AN EFFICIENT CNN FOR ROAD SCENE SEGMENTATION</b> .....	424
<i>Ping-Rong Chen ; Hsueh-Ming Hang ; Sheng-Wei Chan ; Jing-Jhih Lin</i>	
<b>PHONE-AWARE MULTI-TASK LEARNING AND LENGTH EXPANDING FOR SHORT-DURATION LANGUAGE RECOGNITION</b> .....	433
<i>Miao Zhao ; Rongjin Li ; Shijiang Yan ; Zheng Li ; Hao Lu ; Shipeng Xia ; Qingyang Hong ; Lin Li</i>	
<b>SDBF-NET: SEMANTIC AND DISPARITY BIDIRECTIONAL FUSION NETWORK FOR 3D SEMANTIC DETECTION ON INCIDENTAL SATELLITE IMAGES</b> .....	438
<i>Zhibo Rao ; Mingyi He ; Zhidong Zhu ; Yuchao Dai ; Renjie He</i>	
<b>A STUDY ON ANGULAR BASED EMBEDDING LEARNING FOR TEXT-INDEPENDENT SPEAKER VERIFICATION</b> .....	445
<i>Zhiyong Chen ; Zongze Ren ; Shugong Xu</i>	
<b>SPEAKER EMBEDDING EXTRACTION WITH MULTI-FEATURE INTEGRATION STRUCTURE</b> .....	450
<i>Zheng Li ; Hao Lu ; Jianfeng Zhou ; Lin Li ; Qingyang Hong</i>	
<b>AN EFFECTIVE ROAD EXTRACTION METHOD FROM REMOTE SENSING IMAGES BASED ON SELF-ADAPTIVE THRESHOLD FUNCTION</b> .....	455
<i>Zhuozheng Wang ; Meng Zhang ; Wei Liu</i>	
<b>STRUCTURE GROWTH FOR SMALL-FOOTPRINT SPEECH RECOGNITION</b> .....	461
<i>Jiayao Wu ; Zhiyuan Tang ; Dong Wang</i>	
<b>ON ENERGY COMPACTION OF 2D SAAB IMAGE TRANSFORMS</b> .....	466
<i>Na Li ; Yongfei Zhang ; Yun Zhang ; C.-C. Jay Kuo</i>	
<b>MEASURING THE HAZARD OF MALICIOUS NODES IN INFORMATION DIFFUSION OVER SOCIAL NETWORKS</b> .....	476
<i>Hangjing Zhang ; Yuejiang Li ; Yang Hu ; Yan Chen ; H. Vicky Zhao</i>	
<b>CONTROLLING INFORMATION DIFFUSION WITH IRRATIONAL USERS</b> .....	482
<i>Benliu Qiu ; Yuejiang Li ; Yan Chen ; H. Vicky Zhao</i>	
<b>MODELING MULTI-SOURCE INFORMATION DIFFUSION: A GRAPHICAL EVOLUTIONARY GAME APPROACH</b> .....	486
<i>Hong Hu ; Yuejiang Li ; H. V. Zhao ; Yan Chen</i>	
<b>A UNIVERSAL INTELLIGENCE MEASUREMENT METHOD BASED ON META-ANALYSIS</b> .....	493
<i>Zheming Yang ; Wen Ji</i>	
<b>MODELING CONTENT INTERACTION IN INFORMATION DIFFUSION WITH PRE-TRAINED SENTENCE EMBEDDING</b> .....	499
<i>Qinyuan Ye ; Yuejiang Li ; Yan Chen ; H. Vicky Zhao</i>	
<b>PAIN VERSUS AFFECT? AN INVESTIGATION IN THE RELATIONSHIP BETWEEN OBSERVED EMOTIONAL STATES AND SELF-REPORTED PAIN</b> .....	508
<i>Fu-Sheng Tsai ; Yi-Ming Weng ; Chip-Jin Ng ; Chi-Chun Lee</i>	
<b>SPEAKER TO EMOTION: DOMAIN ADAPTATION FOR SPEECH EMOTION RECOGNITION WITH RESIDUAL ADAPTERS</b> .....	513
<i>Yuxuan Xi ; Pengcheng Li ; Yan Song ; Yiheng Jiang ; Lirong Dai</i>	
<b>SPEECH EMOTION RECOGNITION USING SPEECH FEATURE AND WORD EMBEDDING</b> .....	519
<i>Bagus Tris Atmaja ; Kiyooki Shirai ; Masato Akagi</i>	
<b>DIMENSIONAL EMOTION RECOGNITION FROM SPEECH USING MODULATION SPECTRAL FEATURES AND RECURRENT NEURAL NETWORKS</b> .....	524
<i>Zhichao Peng ; Zhi Zhu ; Masashi Unoki ; Jianwu Dang ; Masato Akagi</i>	

<b>ADVERSARIAL DATA AUGMENTATION NETWORK FOR SPEECH EMOTION RECOGNITION</b> .....	529
<i>Lu Yi ; Man-Wai Mak</i>	
<b>VAE-BASED DOMAIN ADAPTATION FOR SPEAKER VERIFICATION</b> .....	535
<i>Xueyi Wang ; Lantian Li ; Dong Wang</i>	
<b>REPLAY DETECTION USING CQT-BASED MODIFIED GROUP DELAY FEATURE AND RESNEWT NETWORK IN ASVSPOOF 2019</b> .....	540
<i>Xingliang Cheng ; Mingxing Xu ; Thomas Fang Zheng</i>	
<b>SHNU ANTI-SPOOFING SYSTEMS FOR ASVSPOOF 2019 CHALLENGE</b> .....	548
<i>Zhimin Feng ; Qiqi Tong ; Yanhua Long ; Shuang Wei ; Chunxia Yang ; Qiaozheng Zhang</i>	
<b>CLUSTERING-BASED SCORE NORMALIZATION FOR SPEAKER VERIFICATION</b> .....	553
<i>Bin Gu ; Wu Guo ; Yao Liu ; Jian Sun</i>	
<b>TRIPLET BASED EMBEDDING DISTANCE AND SIMILARITY LEARNING FOR TEXT-INDEPENDENT SPEAKER VERIFICATION</b> .....	558
<i>Zongze Ren ; Zhiyong Chen ; Shugong Xu</i>	
<b>AUTOMATIC HANDWRITING VERIFICATION AND SUSPECT IDENTIFICATION FOR CHINESE CHARACTERS USING SPACE AND FREQUENCY DOMAIN FEATURES</b> .....	563
<i>Wei-Cheng Liao ; Jian-Jiun Ding</i>	
<b>ROBUST CHANGE DETECTION IN HIGH RESOLUTION SATELLITE IMAGES WITH GEOMETRIC DISTORTIONS</b> .....	572
<i>Dongkwon Jin ; Kyungsun Lim ; Chang-Su Kim</i>	
<b>MSDC-NET: MULTI-SCALE DENSE AND CONTEXTUAL NETWORKS FOR STEREO MATCHING</b> .....	578
<i>Zhibo Rao ; Mingyi He ; Yuchao Dai ; Zhidong Zhu ; Bo Li ; Renjie He</i>	
<b>CLASSIFICATION OF POLARIMETRIC SAR IMAGE BASED ON IMPROVED FUZZY CLUSTERING</b> .....	584
<i>Zheng Cheng ; Ping Han ; Binbin Han ; Jiahui Sun</i>	
<b>INTENSITY-AWARE GAN FOR SINGLE IMAGE REFLECTION REMOVAL</b> .....	590
<i>Nien-Hsin Chou ; Li-Chung Chuang ; Ming-Sui Lee</i>	
<b>CNN WITH ICA-PCA-DCT JOINT PREPROCESSING FOR HYPERSPECTRAL IMAGE CLASSIFICATION</b> .....	595
<i>Aamir Naveed Abbasi ; Mingyi He</i>	
<b>DONGXIANG SPEECH SYNTHESIS BASED ON STATISTICAL PARAMETER METHOD</b> .....	601
<i>Man Wang ; Fangkun Qi ; Hongwu Yang ; Jingwen Sun</i>	
<b>HUMAN-IN-THE-LOOP SPEECH-DESIGN SYSTEM AND ITS EVALUATION</b> .....	608
<i>Daichi Kondo ; Masanori Morise</i>	
<b>HIGH-QUALITY WAVEFORM GENERATOR FROM FUNDAMENTAL FREQUENCY, SPECTRAL ENVELOPE, AND BAND APERIODICITY</b> .....	613
<i>Masanori Morise ; Takuro Shono</i>	
<b>A STUDY ON ACOUSTIC PARAMETER SELECTION STRATEGIES TO IMPROVE DEEP LEARNING-BASED SPEECH SYNTHESIS</b> .....	618
<i>Hyeonjoo Kang ; Young-Sun Joo ; Inseon Jang ; Chung Hyun Ahn ; Hong-Goo Kang</i>	
<b>END-TO-END EMOTIONAL SPEECH SYNTHESIS USING STYLE TOKENS AND SEMI-SUPERVISED TRAINING</b> .....	623
<i>Pengfei Wu ; Zhenhua Ling ; Lijuan Liu ; Yuan Jiang ; Hongchuan Wu ; Lirong Dai</i>	
<b>END-TO-END TIBETAN AND DIALECT SPEECH RECOGNITION BASED ON HYBRID CTC/ATTENTION ARCHITECTURE</b> .....	628
<i>Jingwen Sun ; Gang Zhou ; Hongwu Yang ; Man Wang</i>	
<b>MULTIPLE FIXED BEAMFORMERS WITH A SPACIAL WIENER-FORM POSTFILTER FOR FAR-FIELD SPEECH RECOGNITION</b> .....	633
<i>Sining Sun ; Shuran Zhou ; Mei-Yuh Hwang ; Lei Xie ; Qin Li ; Xin Lei</i>	
<b>TEACHER-STUDENT BLSTM MASK MODEL FOR ROBUST ACOUSTIC BEAMFORMING</b> .....	638
<i>Zhaoyi Liu ; Yuexian Zou</i>	
<b>USING CONVOLUTION AND SEQUENCE-DISCRIMINATIVE TRAINING TO IMPROVING CHILDREN SPEECH RECOGNITION</b> .....	644
<i>Fanchang Meng ; Shouye Peng ; Guohui Zhang</i>	
<b>SPEECH RECOGNITION BASED ON DEEP TENSOR NEURAL NETWORK AND MULTIFACTOR FEATURE</b> .....	650
<i>Yahui Shan ; Min Liu ; Qingran Zhan ; Shixuan Du ; Jing Wang ; Xiang Xie</i>	
<b>CAN WE SIMULATE GENERATIVE PROCESS OF ACOUSTIC MODELING DATA? TOWARDS DATA RESTORATION FOR ACOUSTIC MODELING</b> .....	655
<i>Ryo Masumura ; Yusuke Ijima ; Satoshi Kobashikawa ; Takanobu Oba ; Yushi Aono</i>	

<b>NOISE PRIOR KNOWLEDGE LEARNING FOR SPEECH ENHANCEMENT VIA GATED CONVOLUTIONAL GENERATIVE ADVERSARIAL NETWORK</b> .....	662
<i>Cunhang Fan ; Bin Liu ; Jianhua Tao ; Jiangan Yi ; Zhengqi Wen ; Ye Bai</i>	
<b>DOMAIN ADVERSARIAL TRAINING FOR SPEECH ENHANCEMENT</b> .....	667
<i>Nana Hou ; Chenglin Xu ; Eng Siong Chng ; Haizhou Li</i>	
<b>SUBJECTIVE FEEDBACK-BASED NEURAL NETWORK PRUNING FOR SPEECH ENHANCEMENT</b> .....	673
<i>Fuqiang Ye ; Yu Tsao ; Fei Chen</i>	
<b>COMPRESSED MULTIMODAL HIERARCHICAL EXTREME LEARNING MACHINE FOR SPEECH ENHANCEMENT</b> .....	678
<i>Tassadaq Hussain ; Yu Tsao ; Hsin-Min Wang ; Jia-Ching Wang ; Sabato Marco Siniscalchi ; Wen-Hung Liao</i>	
<b>SPEECH ENHANCEMENT BASED ON DEEP MIXTURE OF DISTINGUISHING EXPERTS</b> .....	684
<i>Xupeng Jia ; Dongmei Li</i>	
<b>SEMI-SUPERVISED MULTIMODAL EMOTION RECOGNITION WITH IMPROVED WASSERSTEIN GANS</b> .....	695
<i>Jingjun Liang ; Shizhe Chen ; Qin Jin</i>	
<b>ROBUST ATTACK ON DEEP LEARNING BASED RADAR HRRP TARGET RECOGNITION</b> .....	704
<i>Yijun Yuan ; Jinwei Wan ; Bo Chen</i>	
<b>DEVELOPMENT OF A CHINESE DEPRESSED SPEECH CORPUS BASED ON THE DISTURBED EFFECT OF SELF-PROCESSING</b> .....	718
<i>Xiaoyong Lu ; Yanqin Li ; Haizhen An ; Tao Pan ; Renjun Li ; Yanbin Hu ; Aibao Zhou ; Hongwu Yang</i>	
<b>STATISTICAL ANALYSIS ON CHARACTERISTIC WHISKER MOVEMENTS OBSERVED IN REWARD PROCESSING</b> .....	723
<i>Junichiro Yoshimoto ; Jumpei Ozaki ; Kohta Mizutani ; Takashi Nakano ; Kazushi Ikeda ; Takayuki Yamashita</i>	
<b>INTERACTION ANALYSIS IN HUNTING BEHAVIOR OF FINLESS PORPOISES</b> .....	727
<i>Mikiko Konda ; Takatomi Kubo ; Naruki Morimura ; Kazushi Ikeda</i>	
<b>EXTRACTION OF BIOMOLECULAR SIGNALS CONTROLLING COMPLEX BEHAVIOR OF BIOLOGICAL CELLS</b> .....	731
<i>Yuichi Sakumura ; Katsuyuki Kunida</i>	
<b>PHYSIOLOGICAL SIGNALS RESPONSES TO NORMAL AND ABNORMAL BRAKE EVENTS IN SIMULATED AUTONOMOUS CAR</b> .....	736
<i>Yaming Hu ; Shun Nakamura ; Tsuyoshi Yamanaka ; Toshihisa Tanaka</i>	
<b>A ONE-DIMENSIONAL CONVOLUTIONAL NEURAL NETWORK MODEL FOR AUTOMATED LOCALIZATION OF EPILEPTIC FOCI</b> .....	741
<i>Boning Li ; Xuyang Zhao ; Qibin Zhao ; Toshihisa Tanaka ; Jianting Cao</i>	
<b>COHEN'S CLASS TIME-FREQUENCY REPRESENTATION IN LINEAR CANONICAL DOMAINS: DEFINITION AND PROPERTIES</b> .....	745
<i>Zhichao Zhang ; Maokang Luo ; Ke Deng ; Tao Yu</i>	
<b>LFM SIGNAL DETECTION AND ESTIMATION BASED ON DEEP CONVOLUTIONAL NEURAL NETWORK</b> .....	753
<i>Xiaolong Chen ; Qiaowen Jiang ; Ningyuan Su ; Baoxin Chen ; Jian Guan</i>	
<b>NONUNIFORM FAST LINEAR CANONICAL TRANSFORM</b> .....	759
<i>Yannan Sun ; Bingzhao Li</i>	
<b>DIGITAL IMPLEMENTATION OF HILBERT TRANSFORM IN THE LCT DOMAIN ASSOCIATED WITH FIR FILTER</b> .....	770
<i>Bing Deng ; Qingshun Huang ; Lin Zhang</i>	
<b>ADAPTIVE MATCHING PURSUIT METHOD BASED ON AUXILIARY RESIDUAL FOR SPARSE SIGNAL RECOVERY</b> .....	774
<i>Juan Zhao ; Xia Bai</i>	
<b>DECOMPOSITION OF COVARIANCE MATRIX USING CASCADE OF TREES</b> .....	779
<i>Navid Tafaghodi Khajavi ; Anthony Kuh</i>	
<b>HANDWRITTEN TEXT SEGMENTATION IN SCRIBBLED DOCUMENT VIA UNSUPERVISED DOMAIN ADAPTATION</b> .....	784
<i>Junho Jo ; Jae Woong Soh ; Nam Ik Cho</i>	
<b>RESEARCH ON CLOUD RECOGNITION TECHNOLOGY BASED ON TRANSFER LEARNING</b> .....	791
<i>Chunyao Fang ; Kebin Jia ; Pengyu Liu ; Liang Zhang</i>	
<b>SALIENCY DETECTION VIA ROBUST SEED SELECTION OF FOREGROUND AND BACKGROUND PRIORS</b> .....	797
<i>Muwei Jian ; Ruihong Wang ; Hui Yu ; Junyu Dong ; Yujuan Wang ; Yilong Yin ; Kin-Man Lam</i>	
<b>A HUE CORRECTION SCHEME BASED ON CONSTANT-HUE PLANE FOR COLOR IMAGE ENHANCEMENT</b> .....	802
<i>Yuma Kinoshita ; Kouki Seo ; Hitoshi Kiya</i>	



<b>A SPATIAL DOMAIN SECRET IMAGE EMBEDDING TECHNIQUE WITH IMAGE AUTHENTICATION FEATURE .....</b>	<b>807</b>
<i>S. K. Felix Yu ; Zi-Xin Xu ; Yuk-Hee Chan ; Pak-Kong Lun</i>	
<b>RECONSTRUCTION OF MULTITONE BTC IMAGES USING CONDITIONAL GENERATIVE ADVERSARIAL NETS.....</b>	<b>814</b>
<i>Jing Ming Guo ; S Sankarasrinivasan</i>	
<b>DATA AUGMENTATION AND POST SELECTION FOR IMPROVED REPLAY ATTACK DETECTION .....</b>	<b>818</b>
<i>Yuanjun Zhao ; Roberto Togneri ; Victor Sreeram</i>	
<b>DEEP SEGMENT ATTENTIVE EMBEDDING FOR DURATION ROBUST SPEAKER VERIFICATION .....</b>	<b>822</b>
<i>Bin Liu ; Shuai Nie ; Wenju Liu ; Hui Zhang ; Xiangang Li ; Changliang Li</i>	
<b>SEQUENTIAL SPEAKER EMBEDDING AND TRANSFER LEARNING FOR TEXT-INDEPENDENT SPEAKER IDENTIFICATION .....</b>	<b>827</b>
<i>Qian-Bei Hong ; Chung-Hsien Wu ; Ming-Hsiang Su ; Hsin-Min Wang</i>	
<b>IMPROVING REPLAY ATTACK DETECTION BY COMBINATION OF SPATIAL AND SPECTRAL FEATURES .....</b>	<b>833</b>
<i>Yaguchi Ryoya ; Sayaka Shiota ; Nobutaka Ono ; Hitoshi Kiya</i>	
<b>MULTI-BAND SPECTRAL ENTROPY INFORMATION FOR DETECTION OF REPLAY ATTACKS.....</b>	<b>838</b>
<i>Yitong Liu ; Rohan Kumar Das ; Haizhou Li</i>	
<b>KNOWLEDGE DISTILLATION FROM MULTILINGUAL AND MONOLINGUAL TEACHERS FOR END-TO-END MULTILINGUAL SPEECH RECOGNITION .....</b>	<b>844</b>
<i>Jingyi Xu ; Junfeng Hou ; Yan Song ; Wu Guo ; Lirong Dai</i>	
<b>LEARNING ADAPTIVE DOWNSAMPLING ENCODING FOR ONLINE END-TO-END SPEECH RECOGNITION.....</b>	<b>850</b>
<i>Rui Na ; Junfeng Hou ; Wu Guo ; Yan Song ; Lirong Dai</i>	
<b>MULTI-TASK LEARNING FOR ACOUSTIC MODELING USING ARTICULATORY ATTRIBUTES.....</b>	<b>855</b>
<i>Yueh-Ting Lee ; Xuan-Bo Chen ; Hung-Shin Lee ; Jyh-Shing Roger Jang ; Hsin-Min Wang</i>	
<b>HYPOTHESIS CORRECTION BASED ON SEMI-CHARACTER RECURRENT NEURAL NETWORK FOR END-TO-END SPEECH RECOGNITION.....</b>	<b>862</b>
<i>Yuuki Tachioka</i>	
<b>HYPERSPHERE EMBEDDING AND ADDITIVE MARGIN FOR QUERY-BY-EXAMPLE KEYWORD SPOTTING .....</b>	<b>868</b>
<i>Haoxin Ma ; Ye Bai ; Jiangyan Yi ; Jianhua Tao</i>	
<b>A SPEECH ENHANCEMENT NEURAL NETWORK ARCHITECTURE WITH SNR-PROGRESSIVE MULTI-TARGET LEARNING FOR ROBUST SPEECH RECOGNITION.....</b>	<b>873</b>
<i>Nan Zhou ; Jun Du ; Yan-Hui Tu ; Tian Gao ; Chin-Hui Lee</i>	
<b>CYCLEGAN-BASED SPEECH ENHANCEMENT FOR THE UNPAIRED TRAINING DATA.....</b>	<b>878</b>
<i>Jing Yuan ; Changchun Bao</i>	
<b>PHASE UNWRAPPING BASED SPEECH ENHANCEMENT.....</b>	<b>884</b>
<i>Rui Cheng ; Changchun Bao</i>	
<b>END-TO-END SPEECH ENHANCEMENT USING FULLY CONVOLUTIONAL NETWORKS WITH SKIP CONNECTIONS .....</b>	<b>890</b>
<i>Dujuan Wang ; Changchun Bao</i>	
<b>SINGLE CHANNEL SPEECH ENHANCEMENT USING TEMPORAL CONVOLUTIONAL RECURRENT NEURAL NETWORKS .....</b>	<b>896</b>
<i>Jingdong Li ; Hui Zhang ; Xueliang Zhang ; Changliang Li</i>	
<b>GSC BASED SPEECH ENHANCEMENT WITH GENERATIVE ADVERSARIAL NETWORK.....</b>	<b>901</b>
<i>Yao Zhou ; Changchun Bao ; Rui Cheng</i>	
<b>REAL-TIME AND INTERACTIVE TOOLS FOR VOCAL TRAINING BASED ON AN ANALYTIC SIGNAL WITH A COSINE SERIES ENVELOPE .....</b>	<b>907</b>
<i>Hideki Kawahara ; Ken-Ichi Sakakibara ; Eri Haneishi ; Kaori Hagiwara</i>	
<b>LIKABILITY ESTIMATION OF CALL-CENTER AGENTS BY SUPPRESSING ANNOTATOR VARIABILITY .....</b>	<b>911</b>
<i>Hosana Kamiyama ; Atsushi Ando ; Ryo Masumura ; Satoshi Kobashikawa ; Yushi Aono</i>	
<b>URGENT VOICEMAIL DETECTION FOCUSED ON LONG-TERM TEMPORAL VARIATION .....</b>	<b>917</b>
<i>Hosana Kamiyama ; Atsushi Ando ; Ryo Masumura ; Satoshi Kobashikawa ; Yushi Aono</i>	
<b>LEARNING CONTEXTUAL REPRESENTATION WITH CONVOLUTION BANK AND MULTI-HEAD SELF-ATTENTION FOR SPEECH EMPHASIS DETECTION .....</b>	<b>922</b>
<i>Liangqi Liu ; Zhiyong Wu ; Runnan Li ; Jia Jia ; Helen Meng</i>	

<b>EFFECT OF RELATIVE FREQUENCY OF LEXICAL MEANINGS ON ACCESSING LEXICAL AMBIGUITIES: EVIDENCE FROM THE COORDINATOR ‘AND’</b> .....	927
<i>Xiaoqun Dong ; Xueqin Zhao</i>	
<b>TRAINING DATA EXPANSION FOR CLASSIFICATION BETWEEN NORMAL AND ABNORMAL LUNG SOUNDS</b> .....	935
<i>Naoki Umeno ; Masaru Yamashita ; Hiroyuki Takada ; Shoichi Matsunaga</i>	
<b>HYBRID CONVOLUTIONAL RECURRENT NEURAL NETWORKS OUTPERFORM CNN AND RNN IN TASK-STATE EEG DETECTION FOR PARKINSON'S DISEASE</b> .....	939
<i>Xinjie Shi ; Tianqi Wang ; Lan Wang ; Hanjun Liu ; Nan Yan</i>	
<b>INVESTIGATION OF SPEECH-PLANNING MECHANISM BASED ON EYE MOVEMENT AND EEG</b> .....	945
<i>Jinfeng Huang ; Bin Zhao ; Jianwu Dang ; Minbo Chen</i>	
<b>TOWARDS GENERATION OF VISUAL ATTENTION MAP FOR SOURCE CODE</b> .....	951
<i>Takeshi D. Itoh ; Takatomi Kubo ; Kiyoka Ikeda ; Yuki Maruno ; Yoshiharu Ikutani ; Hideaki Hata ; Kenichi Matsumoto ; Kazushi Ikeda</i>	
<b>VOICE CONVERSION BY DUAL-DOMAIN BIDIRECTIONAL LONG SHORT-TERM MEMORY NETWORKS WITH TEMPORAL ATTENTION</b> .....	955
<i>Xiaokong Miao ; Meng Sun ; Xiongwei Zhang</i>	
<b>TAXI DRIVERS' SMOKING BEHAVIOR DETECTION IN TRAFFIC MONITORING VIDEO</b> .....	968
<i>Siwei Chen ; Kebin Jia ; Pengyu Liu ; Xunping Huang</i>	
<b>INTEGRATING ACTION-AWARE FEATURES FOR SALIENCY PREDICTION VIA WEAKLY SUPERVISED LEARNING</b> .....	974
<i>Jiaqi Feng ; Shuai Li ; Yunfeng Sui ; Lingtong Meng ; Ce Zhu</i>	
<b>EFFICIENT AND ROBUST PSEUDO-LABELING FOR UNSUPERVISED DOMAIN ADAPTATION</b> .....	980
<i>Hochang Rhee ; Nam Ik Cho</i>	
<b>A MULTI-OBJECTIVE OPTIMIZATION PERSPECTIVE FOR JOINT CONSIDERATION OF VIDEO CODING QUALITY</b> .....	986
<i>Wei Gao</i>	
<b>SPHERICAL POSITION DEPENDENT RATE-DISTORTION OPTIMIZATION FOR 360-DEGREE VIDEO CODING</b> .....	992
<i>Yuyang Liu ; Hongwei Guo ; Ce Zhu ; Yipeng Liu</i>	
<b>IS AVERAGE RMSE APPROPRIATE FOR EVALUATING ACOUSTIC-TO-ARTICULATORY INVERSION?</b> .....	997
<i>Qiang Fang</i>	
<b>NORMALIZATION OF GOP FOR CHINESE MISPRONUNCIATION DETECTION</b> .....	1004
<i>Wenwei Dong ; Yanlu Xie</i>	
<b>DISFLUENCY DETECTION BASED ON SPEECH-AWARE TOKEN-BY-TOKEN SEQUENCE LABELING WITH BLSTM-CRFS AND ATTENTION MECHANISMS</b> .....	1009
<i>Tomohiro Tanaka ; Ryo Masumura ; Takafumi Moriya ; Takanobu Oba ; Yushi Aono</i>	
<b>LINGUISTIC STEGANOGRAPHY BY SAMPLING-BASED LANGUAGE GENERATION</b> .....	1014
<i>Rui Yang ; Zhen-Hua Ling</i>	
<b>UNSUPERVISED PRONUNCIATION FLUENCY SCORING BY INFOGAN</b> .....	1020
<i>Wenwei Dong ; Yanlu Xie ; Binghuai Lin</i>	
<b>STUDY ON THE TONES BIASES OF MANDARIN SPEAKER IN AMDO TIBETAN AREAS BASED ON STATISTICS</b> .....	1024
<i>Gan Zhenye ; Jiao Yi ; Yang Hongwu ; Zhao Gaungying ; Song Zhimeng</i>	
<b>AUTOMATICALLY ANNOTATE TV SERIES SUBTITLES FOR DIALOGUE CORPUS CONSTRUCTION</b> .....	1029
<i>Leilan Zhang ; Qiang Zhou</i>	
<b>TOPIC SEGMENTATION FOR DIALOGUE STREAM</b> .....	1036
<i>Leilan Zhang ; Qiang Zhou</i>	
<b>JOINT LEARNING OF CONVERSATIONAL TEMPORAL DYNAMICS AND ACOUSTIC FEATURES FOR SPEECH DECEPTION DETECTION IN DIALOG GAMES</b> .....	1044
<i>Huang-Cheng Chou ; Yi-Wen Liu ; Chi-Chun Lee</i>	
<b>TYPE OF RESPONSE SELECTION UTILIZING USER UTTERANCE WORD SEQUENCE, LSTM AND MULTI-TASK LEARNING FOR CHAT-LIKE SPOKEN DIALOG SYSTEMS</b> .....	1051
<i>Kengo Ohta ; Ryota Nishimura ; Norihide Kitaoka</i>	
<b>PROSODIC CUES IN THE INTERPRETATION OF ECHO QUESTIONS IN CHINESE SPOKEN DIALOGUES</b> .....	1056
<i>Aijun Li ; Gan Huang ; Zhiqiang Li</i>	

<b>A DOA ESTIMATION METHOD OF COHERENT AND UNCORRELATED SOURCES BASED ON NESTED ARRAYS.....</b>	1062
<i>Julan Xie ; Fanghao Cheng ; Zishu He ; Huiyong Li</i>	
<b>A DOA ESTIMATION METHOD IN THE PRESENCE OF UNKNOWN MUTUAL COUPLING BASED ON NESTED ARRAYS.....</b>	1066
<i>Julan Xie ; Fanghao Cheng ; Zishu He ; Huiyong Li</i>	
<b>AN ALTERNATIVE SOLUTION TO THE DYNAMICALLY REGULARIZED RLS ALGORITHM.....</b>	1072
<i>Feiran Yang ; Jun Yang ; Felix Albu</i>	
<b>A NORM CONSTRAINT LORENTZIAN ALGORITHM UNDER ALPHA-STABLE MEASUREMENT NOISE.....</b>	1076
<i>Xinqi Huang ; Yingsong Li ; Felix Albu</i>	
<b>RANDOM SIGNAL ESTIMATION BY ERGODICITY ASSOCIATED WITH LINEAR CANONICAL TRANSFORM.....</b>	1080
<i>Liyun Xu</i>	
<b>STUDY ON PRE-WARNING MODEL OF RAILWAY SIGNAL SYSTEM WITH FUZZY ANALYTIC HIERARCHY PROCESS.....</b>	1084
<i>Shanpeng Zhao ; Shaoxiang Zhao ; Youpeng Zhang ; Zhengjie Xu</i>	
<b>CALIBRATION OF POSITION AND ORIENTATION BETWEEN CAMERAS WITHOUT COMMON FIELD OF VIEW USING COOPERATIVE TARGET.....</b>	1100
<i>Yongzhi Min ; Jie Hu</i>	
<b>FREQUENCY DECOMPOSITION MODEL OF POPULARITY EVOLUTION IN ONLINE SOCIAL MEDIA.....</b>	1105
<i>Shufeng Duan ; Ligu Zhu ; Yujing Shi ; Lei Zhang ; Bo Hui</i>	
<b>ACOUSTIC-DOMAIN SELF-INTERFERENCE CANCELLATION FOR FULL-DUPLEX UNDERWATER ACOUSTIC COMMUNICATION SYSTEMS.....</b>	1112
<i>Yanyan Wang ; Yingsong Li ; Lu Shen ; Yuriy Zakharov</i>	
<b>BACKGROUND MODELING ALGORITHM FOR MULTI-FEATURE FUSION.....</b>	1117
<i>Zhicheng Guo ; Jianwu Dang ; Yangping Wang ; Jing Jin</i>	
<b>IMAGE HAZE REMOVAL BY ADAPTIVE CYCLEGAN.....</b>	1122
<i>Yi-Fan Chen ; Amey Kiran Patel ; Chia-Ping Chen</i>	
<b>REMOTE SENSING IMAGE SCENE CLASSIFICATION BASED ON SURF FEATURE AND DEEP LEARNING.....</b>	1128
<i>Jinxiang Liang ; Jianwu Dang ; Yangping Wang ; Jingyu Yang ; Zhenhai Zhang</i>	
<b>AN IMPROVED RETINEX LOW-ILLUMINATION IMAGE ENHANCEMENT ALGORITHM.....</b>	1134
<i>Shaoquan Wang ; Deyong Gao ; Yangping Wang ; Song Wang</i>	
<b>ENCRYPTED JPEG IMAGE RETRIEVAL USING HISTOGRAMS OF TRANSFORMED COEFFICIENTS.....</b>	1140
<i>Peiya Li ; Zhenhui Situ</i>	
<b>CNN-BASED BIT-DEPTH ENHANCEMENT BY THE SUPPRESSION OF FALSE CONTOUR AND COLOR DISTORTION.....</b>	1145
<i>Changmeng Peng ; Luting Cai ; Zhizhong Fu ; Xiaofeng Li</i>	
<b>EFFECTIVE TRAINING END-TO-END ASR SYSTEMS FOR LOW-RESOURCE LHASA DIALECT OF TIBETAN LANGUAGE.....</b>	1152
<i>Lixin Pan ; Sheng Li ; Longbiao Wang ; Jianwu Dang</i>	
<b>JOINT TRAINING RESCNN-BASED VOICE ACTIVITY DETECTION WITH SPEECH ENHANCEMENT.....</b>	1157
<i>Tianjiao Xu ; Hui Zhang ; Xueliang Zhang</i>	
<b>A RESCORING METHOD USING WEB SEARCH AND WORD VECTORS FOR SPOKEN TERM DETECTION.....</b>	1163
<i>Haruka Tanji ; Kazunori Kojima ; Hiroaki Nanjo ; Shi-Wook Lee ; Yoshiaki Itoh</i>	
<b>DERIVATIVE OF INSTANTANEOUS FREQUENCY FOR VOICE ACTIVITY DETECTION USING PHASE-BASED APPROACH.....</b>	1168
<i>Binh Thien Nguyen ; Yukoh Wakabayashi ; Takahiro Fukumori ; Takanobu Nishiura</i>	
<b>VOICE ACTIVITY DETECTION BASED ON TIME-DELAY NEURAL NETWORKS.....</b>	1173
<i>Ye Bai ; Jiangyan Yi ; Jianhua Tao ; Zhengqi Wen ; Bin Liu</i>	
<b>INVESTIGATION OF NEURAL NETWORK APPROACHES FOR UNIFIED SPECTRAL AND PROSODIC FEATURE ENHANCEMENT.....</b>	1179
<i>Wei-Cheng Lin ; Yu Tsao ; Fei Chen ; Hsin-Min Wang</i>	
<b>IMPROVE DATA UTILIZATION WITH TWO-STAGE LEARNING IN CNN-LSTM-BASED VOICE ACTIVITY DETECTION.....</b>	1185
<i>Tianjiao Xu ; Hao Li ; Hui Zhang ; Xueliang Zhang</i>	

<b>ALLPASS MODELING OF PHASE SPECTRUM OF SPEECH SIGNALS FOR FORMANT TRACKING</b> .....	1190
<i>Karthika Vijayan ; K. Sri Rama Murty ; Haizhou Li</i>	
<b>A STUDY ON MISPRONUNCIATION DETECTION BASED ON FINE-GRAINED SPEECH ATTRIBUTE</b> .....	1197
<i>Minghao Guo ; Cai Rui ; Wei Wang ; Binghui Lin ; Jinsong Zhang ; Yanlu Xie</i>	
<b>ROBUST CAMERA MODEL IDENTIFICATION BASED ON RICHER CONVOLUTIONAL FEATURE NETWORK</b> .....	1202
<i>Ze-Yu Zou ; Yun-Xia Liu ; Wen-Na Zhang ; Yue-Hui Chen ; Yun-Li Zang ; Yang Yang ; Bonnie Ngai-Fong Law</i>	
<b>A ROBUST METHOD FOR BLINDLY ESTIMATING SPEECH TRANSMISSION INDEX USING CONVOLUTIONAL NEURAL NETWORK WITH TEMPORAL AMPLITUDE ENVELOPE</b> .....	1208
<i>Suradej Duangpummet ; Jessada Karnjana ; Waree Kongprawechnon ; Masashi Unoki</i>	
<b>COMPRESSING SPEECH RECOGNITION NETWORKS WITH MLP VIA TENSOR-TRAIN DECOMPOSITION</b> .....	1215
<i>Dan He ; Yubin Zhong</i>	
<b>GENERALIZED COMBINED NONLINEAR ADAPTIVE FILTERS FOR NONLINEAR ACOUSTIC ECHO CANCELLATION</b> .....	1220
<i>Wenxia Lu ; Lijun Zhang ; Jie Chen ; Jingdong Chen</i>	
<b>AUTOMATIC PROSODIC STRUCTURE LABELING USING DNN-BGRU-CRF HYBRID NEURAL NETWORK</b> .....	1234
<i>Yao Du ; Zhiyong Wu ; Shiyin Kang ; Dan Su ; Dong Yu ; Helen Meng</i>	
<b>MONAURAL SINGING VOICE SEPARATION USING FUSION-NET WITH TIME-FREQUENCY MASKING</b> .....	1239
<i>Feng Li ; Kaizhi Qian ; Mark Hasegawa-Johnson ; Masato Akagi</i>	
<b>IDENTIFICATION OF ALZHEIMER'S DISEASE PATIENTS BASED ON ORAL SPEECH FEATURES</b> .....	1244
<i>Qing Zhou ; Yong Ma ; Benyan Luo ; Mingliang Gu ; Zude Zhu</i>	
<b>MIXTURE OF CNN EXPERTS FROM MULTIPLE ACOUSTIC FEATURE DOMAIN FOR MUSIC GENRE CLASSIFICATION</b> .....	1250
<i>Yang Yi ; Kuan-Yu Chen ; Hung-Yan Gu</i>	
<b>UTTERANCE-LEVEL PERMUTATION INVARIANT TRAINING WITH LATENCY-CONTROLLED BLSTM FOR SINGLE-CHANNEL MULTI-TALKER SPEECH SEPARATION</b> .....	1256
<i>Lu Huang ; Gaofeng Cheng ; Pengyuan Zhang ; Yi Yang ; Shumin Xu ; Jiasong Sun</i>	
<b>BIDIRECTIONAL TEMPORAL CONVOLUTION WITH SELF-ATTENTION NETWORK FOR CTC-BASED ACOUSTIC MODELING</b> .....	1262
<i>Jian Sun ; Wu Guo ; Bin Gu ; Yao Liu</i>	
<b>QUERY-BY-EXAMPLE SPOKEN TERM DETECTION USING ATTENTIVE POOLING NETWORKS</b> .....	1267
<i>Kun Zhang ; Zhiyong Wu ; Jia Jia ; Helen Meng ; Binheng Song</i>	
<b>NOVEL ADAPTIVE GENERATIVE ADVERSARIAL NETWORK FOR VOICE CONVERSION</b> .....	1273
<i>Maitreya Patel ; Mihir Parmar ; Savan Doshi ; Nirmesh J. Shah ; Hemant A. Patil</i>	
<b>MANY-TO-MANY CROSS-LINGUAL VOICE CONVERSION WITH A JOINTLY TRAINED SPEAKER EMBEDDING NETWORK</b> .....	1282
<i>Yi Zhou ; Xiaohai Tian ; Rohan Kumar Das ; Haizhou Li</i>	
<b>A MULTI-SCALE FULLY CONVOLUTIONAL NETWORK FOR SINGING MELODY EXTRACTION</b> .....	1288
<i>Ping Gao ; Cheng-You You ; Tai-Shih Chi</i>	
<b>END-TO-END TIBETAN SPEECH SYNTHESIS BASED ON PHONES AND SEMI-SYLLABLES</b> .....	1294
<i>Guanyu Li ; Lisai Luo ; Chunwei Gong ; Shiliang Lv</i>	
<b>REVERSIBLE DATA HIDING IN PDF DOCUMENT EXPLOITING PREFIX ZEROS IN GLYPH COORDINATES</b> .....	1298
<i>Neelesh Nursiah ; Koksheik Wong ; Minoru Kuribayashi</i>	
<b>MULTIPLE-OPERATION IMAGE ANTI-FORENSICS WITH WGAN-GP FRAMEWORK</b> .....	1303
<i>Jianyuan Wu ; Zheng Wang ; Hui Zeng ; Xiangui Kang</i>	
<b>IMPROVING CODE-SWITCHING SPEECH RECOGNITION WITH DATA AUGMENTATION AND SYSTEM COMBINATION</b> .....	1308
<i>Duo Ma ; Guanyu Li ; Haihua Xu ; Eng Siong Chng</i>	
<b>A MULTI-FEATURE FUSION BASED METHOD FOR URBAN SOUND TAGGING</b> .....	1313
<i>Jisheng Bai ; Chen Chen ; Jianfeng Chen</i>	
<b>ACTIVATION DRIVEN SYNCHRONIZED JOINT DIAGONALIZATION FOR UNDERDETERMINED SOUND SOURCE SEPARATION</b> .....	1318
<i>Taiki Izumi ; Shingo Uenohara ; Ken'Ichi Furuya ; Yuuki Tachioka</i>	

<b>DEEP NEURAL NETWORKS WITH BATCH SPEAKER NORMALIZATION FOR INTOXICATED SPEECH DETECTION .....</b>	<b>1323</b>
<i>Weiqing Wang ; Haiwei Wu ; Ming Li</i>	
<b>SUBTRACTION-POSITIVE SIMILARITY LEARNING .....</b>	<b>1328</b>
<i>Liang He ; Xianhong Chen ; Can Xu ; Jia Liu</i>	
<b>A NOVEL EFFECTIVE DIMENSIONALITY REDUCTION ALGORITHM FOR WATER CHILLER FAULT DATA .....</b>	<b>1333</b>
<i>Zhuozheng Wang ; Yingjie Dong ; Wei Liu</i>	
<b>SPEECH PROSODY AND EYE MOVEMENTS IN PROCESSING DISCOURSE INFORMATION: A PRELIMINARY STUDY IN MANDARIN CHINESE.....</b>	<b>1342</b>
<i>Ying Chen ; Wentao Xiao ; Jie Cui ; Hanyu Xu</i>	
<b>AN RNN AND CRNN BASED APPROACH TO ROBUST VOICE ACTIVITY DETECTION .....</b>	<b>1347</b>
<i>Guan-Bo Wang ; Wei-Qiang Zhang</i>	
<b>STUDY OF CHINESE TEXT STEGANOGRAPHY USING TYPOS.....</b>	<b>1351</b>
<i>Linna Zhou ; Derui Liao</i>	
<b>A SIMPLE GAUSSIAN KERNEL CLASSIFIER WITH AUTOMATED HYPERPARAMETER TUNING .....</b>	<b>1358</b>
<i>Kosuke Fukumori ; Toshihisa Tanaka</i>	
<b>EXPLORING RNN-TRANSDUCER FOR CHINESE SPEECH RECOGNITION .....</b>	<b>1364</b>
<i>Senmao Wang ; Pan Zhou ; Wei Chen ; Jia Jia ; Lei Xie</i>	
<b>LONG-TERM 3D REGISTRATION METHOD BASED ON LCT TRACKING AND IMPROVED ORB DETECTION.....</b>	<b>1370</b>
<i>Jiu Yong ; Yangping Wang ; Xiaomei Lei ; Fang Yong ; Zhenhai Zhang</i>	
<b>RESTORATION OF MINUTE LIGHT EMISSIONS OBSERVED BY STREAK CAMERA BASED ON N-CUP METHOD.....</b>	<b>1380</b>
<i>Masahiro Tsumori ; Shinichiro Nagai ; Ryosuke Harakawa ; Toru Sasaki ; Masahiro Iwahashi</i>	
<b>A PREFATORY STUDY ON DATA CHANNELLING MECHANISM TOWARDS INDUSTRY 4.0 .....</b>	<b>1385</b>
<i>Kheng Hui Ng ; Yiqi Tew ; Mum Wai Yip</i>	
<b>SUCCESSIVE STRIPE ARTIFACT REMOVAL BASED ON ROBUST PCA FOR MILLIMETER WAVE AUTOMOTIVE RADAR IMAGE.....</b>	<b>1391</b>
<i>Weiwei Shan ; Shogo Muramatsu ; Akira Oshima ; Hiroyoshi Yamada</i>	
<b>ANOMALY EVENT DETECTION USING GENERATIVE ADVERSARIAL NETWORK FOR SURVEILLANCE VIDEOS .....</b>	<b>1395</b>
<i>Thittaporn Ganokratanaa ; Supavadee Aramvith ; Nicu Sebe</i>	
<b>SEMI-SUPERVISED TRAINING OF ACOUSTIC MODELS LEVERAGING KNOWLEDGE TRANSFERRED FROM OUT-OF-DOMAIN DATA.....</b>	<b>1400</b>
<i>Tien-Hong Lo ; Berlin Chen</i>	
<b>TRAINING DATA REDUCTION USING SUPPORT VECTORS FOR NEURAL NETWORKS .....</b>	<b>1405</b>
<i>Toranosuke Tania ; Kouya Takeda ; Jaehoon Yu ; Masanori Hashimoto</i>	
<b>DISTILLING KNOWLEDGE FOR NON-NEURAL NETWORKS .....</b>	<b>1411</b>
<i>Shota Fukui ; Jaehoon Yu ; Masanori Hashimoto</i>	
<b>PROPOSAL OF MINIMIZATION PROBLEM BASED LIGHTNESS MODIFICATION METHOD CONSIDERING VISUAL CHARACTERISTICS OF PROTANOPIA AND DEUTERANOPIA.....</b>	<b>1417</b>
<i>Meng Meng ; Go Tanaka</i>	
<b>AN EVALUATION OF STACK LIGHT INDICATOR COLOR DETECTION SYSTEM USING WEB CAMERAS FOR AUTOMATIC PRODUCTION LINES.....</b>	<b>1423</b>
<i>Hiroshi Tsutsui ; Kentaro Yamada ; Akihiro Sudou ; Yoshikazu Miyanaga</i>	
<b>MULTI-TASK AND MULTI-LEVEL DETECTION NEURAL NETWORK BASED REAL-TIME 3D POSE ESTIMATION .....</b>	<b>1427</b>
<i>Dingli Luo ; Songlin Du ; Takeshi Ikenaga</i>	
<b>A FAST INTER-VIEW MODE SELECTION ALGORITHM BASED ON VIDEO ARRAY PROCESSOR.....</b>	<b>1435</b>
<i>Yu Wang ; Xueting Li ; Yun Zhu ; Feilong He</i>	
<b>NPFONOC: A LOW-LOSS, NON-BLOCKING, SCALABLE PASSIVE OPTICAL INTERCONNECT NETWORK-ON-CHIP ARCHITECTURE .....</b>	<b>1443</b>
<i>Junyong Deng ; Haoyue Wu ; Rui Shan ; Yiwen Fu ; Xinchuang Liu ; Ping Wang</i>	
<b>A RECONFIGURABLE IMPLEMENTATION OF MOTION COMPENSATION IN HEVC .....</b>	<b>1449</b>
<i>Xiaoyan Xie ; Xiang Lei ; Jinna Zhou ; Yun Zhu ; Lin Jiang</i>	
<b>SCRA: A HYBRID DETERMINISTIC ROUTING ALGORITHM FOR AGING-RESILIENT NETWORK-ON-CHIP.....</b>	<b>1455</b>
<i>Bowen Zhang ; Huaxi Gu ; Ruiqi Guo</i>	

<b>ACCESS DECISION BASED ON SECURE CAPACITY FOR PREVENTION TO CSI IMPERSONATION OF UNTRUSTED RELAY .....</b>	<b>1459</b>
<i>Ryota Sugimoto ; Osamu Takyu</i>	
<b>RECOGNITION AND COUNTERMEASURE TO HIDDEN TERMINAL PROBLEM BY PACKET ANALYSIS IN WIRELESS LAN.....</b>	<b>1463</b>
<i>Akinori Kamio ; Fumihito Sasamori ; Handa Shiro ; Osamu Takyu ; Mai Ohta ; Takeo Fujii</i>	
<b>MACHINE LEARNING-AIDED INDOOR POSITIONING BASED ON UNIFIED FINGERPRINTS OF WI-FI AND BLE .....</b>	<b>1468</b>
<i>Shunsuke Tsuchida ; Takumi Takahashi ; Shinsuke Ibi ; Seiichi Sampei</i>	
<b>AN OVERLOADED SC-CP IOT SIGNAL DETECTION METHOD VIA SPARSE COMPLEX DISCRETE-VALUED VECTOR RECONSTRUCTION .....</b>	<b>1473</b>
<i>Kazumori Hayashi ; Ayano Nakai-Kasai ; Ryo Hayakawa</i>	
<b>NOMA BASED UAV RELAY COMMUNICATION PROTOCOL IN CELLULAR NETWORK.....</b>	<b>1479</b>
<i>Jumpei Kawakami ; Hendrik Lumbantoruan ; Koichi Adachi</i>	
<b>IMPROVING THE SPECTRA RECOVERING OF BONE-CONDUCTED SPEECH VIA STRUCTURAL SIMILARITY LOSS FUNCTION .....</b>	<b>1485</b>
<i>Changyan Zheng ; Jibin Yang ; Xiongwei Zhang ; Meng Sun ; Kun Yao</i>	
<b>DILATED-GATED CONVOLUTIONAL NEURAL NETWORK WITH A NEW LOSS FUNCTION ON SOUND EVENT DETECTION .....</b>	<b>1491</b>
<i>Ke-Xin He ; Wei-Qiang Zhang ; Jia Liu ; Yao Liu</i>	
<b>AUGMENTED STRATEGY FOR POLYPHONIC SOUND EVENT DETECTION .....</b>	<b>1496</b>
<i>Bolun Wang ; Zhong-Hua Fu ; Hao Wu</i>	
<b>DOMAIN ADAPTATION NEURAL NETWORK FOR ACOUSTIC SCENE CLASSIFICATION IN MISMATCHED CONDITIONS .....</b>	<b>1501</b>
<i>Rui Wang ; Mou Wang ; Xiao-Lei Zhang ; Susanto Rahardja</i>	
<b>BOOSTING SPATIAL INFORMATION FOR DEEP LEARNING BASED MULTICHANNEL SPEAKER-INDEPENDENT SPEECH SEPARATION IN REVERBERANT ENVIRONMENTS .....</b>	<b>1506</b>
<i>Ziye Yang ; Xiao-Lei Zhang</i>	
<b>HYBRID CONSTANT-Q TRANSFORM BASED CNN ENSEMBLE FOR ACOUSTIC SCENE CLASSIFICATION.....</b>	<b>1511</b>
<i>Mou Wang ; Rui Wang ; Xiao-Lei Zhang ; Susanto Rahardja</i>	
<b>MULTI-TASK LEARNING OF DEEP NEURAL NETWORKS FOR JOINT AUTOMATIC SPEAKER VERIFICATION AND SPOOFING DETECTION.....</b>	<b>1517</b>
<i>Jiakang Li ; Meng Sun ; Xiongwei Zhang</i>	
<b>FREQUENCY DOMAIN VARIANT OF VELVET NOISE AND ITS APPLICATION TO ACOUSTIC MEASUREMENTS .....</b>	<b>1523</b>
<i>Hideki Kawahara ; Ken-Ichi Sakakibara ; Mitsunori Mizumachi ; Hideki Banno ; Masanori Morise ; Toshio Irino</i>	
<b>FAST &amp; EFFICIENT DELAY ESTIMATION USING LOCAL ALL-PASS &amp; KALMAN FILTERS .....</b>	<b>1533</b>
<i>Beth Jelfs ; Christopher Gilliam</i>	
<b>DYNAMIC ADJUSTMENT OF RAILWAY EMERGENCY PLAN BASED ON UTILITY RISK ENTROPY.....</b>	<b>1540</b>
<i>Qian Ren ; Zhenhai Zhang</i>	
<b>SPEECH DEMODULATION-BASED TECHNIQUES FOR REPLAY AND PRESENTATION ATTACK DETECTION .....</b>	<b>1545</b>
<i>Madhu R. Kamble ; Pulikonda Aditya Krishna Sai ; Maddala V. Siva Krishna ; Ankur T. Patil ; Rajul Acharya ; Hemant A. Patil</i>	
<b>SPECTRUM SENSING ALGORITHM BASED ON LSTM AND ITS IMPLEMENTATION OF MULTIPLE USRP.....</b>	<b>1551</b>
<i>Huachao Lu ; Zhijin Zhao</i>	
<b>QUALITY OF EXPERIENCE USING DEEP CONVOLUTIONAL NEURAL NETWORKS AND FUTURE TRENDS.....</b>	<b>1556</b>
<i>Woojae Kim ; Jaekyung Kim ; Sanghoon Lee</i>	
<b>STEREO MATCHING AND IMAGE INPAINTING BASED ON BINOCULAR CAMERA .....</b>	<b>1560</b>
<i>Yibo Du ; Kebin Jia ; Chang Liu</i>	
<b>OPTIMIZATION-BASED FUNDUS IMAGE DECOMPOSITION FOR DIAGNOSIS SUPPORT OF DIABETIC RETINOPATHY .....</b>	<b>1565</b>
<i>Daichi Kitahar ; Swathi Ananda ; Akira Hirabayashi</i>	
<b>AN INTEGRATED CNN-BASED POST PROCESSING FILTER FOR INTRA FRAME IN VERSATILE VIDEO CODING .....</b>	<b>1573</b>
<i>Mingze Wang ; Shuai Wan ; Hao Gong ; Yuanfang Yu ; Yang Liu</i>	
<b>PARAMETER-FREE IMAGE SEGMENTATION BASED ON EXTREME LEARNING MACHINE .....</b>	<b>1578</b>
<i>Hongwei Zhang ; Liuai Wu ; Yanchun Yang</i>	

<b>AUTOMATIC FUNDUS IMAGE SEGMENTATION FOR DIABETIC RETINOPATHY DIAGNOSIS BY MULTIPLE MODIFIED U-NETS AND SEGNETS.....</b>	1582
<i>Swathi Ananda ; Daichi Kitahara ; Akira Hirabayashi ; K. R. Udaya Kumar Reddy</i>	
<b>KERNEL PREDICTION NETWORK FOR DETAIL-PRESERVING HIGH DYNAMIC RANGE IMAGING .....</b>	1589
<i>Haesoo Chung ; Yoonsik Kim ; Junho Jo ; Sang-Hoon Lee ; Nam Ik Cho</i>	
<b>EFFICIENT DECENTRALIZED TRACING PROTOCOL FOR FINGERPRINTING SYSTEM WITH INDEX TABLE.....</b>	1595
<i>Minoru Kuribayashi ; Nobuo Funabiki</i>	
<b>HAND GESTURE RECOGNITION WITH ENSEMBLE TIME-FREQUENCY SIGNATURES USING ENHANCED DEEP CONVOLUTIONAL NEURAL NETWORK.....</b>	1602
<i>Xiang Feng ; Qun Song ; Qingfang Guo ; Duo Liu ; Zhanfeng Zhao ; Yinan Zhao</i>	
<b>BLOCKCHAIN-BASED P2P MULTIMEDIA CONTENT DISTRIBUTION USING COLLUSION- RESISTANT FINGERPRINTING.....</b>	1606
<i>Amna Qureshi ; David Megías</i>	
<b>CONSIDERATION OF A SELECTING FRAME OF FINGER-SPELLED WORDS FROM BACKHAND VIEW .....</b>	1621
<i>Ponlawat Chophuk ; Kanjana Pattanaworapn ; Kosin Chamnongthai</i>	
<b>TRIPLET-CENTER LOSS BASED DEEP EMBEDDING LEARNING METHOD FOR SPEAKER VERIFICATION .....</b>	1625
<i>Yiheng Jiang ; Yan Song ; Jie Yan ; Lirong Dai ; Ian McLoughlin</i>	
<b>SPEAKER CLUSTERING WITH PENALTY DISTANCE FOR SPEAKER VERIFICATION WITH MULTI-SPEAKER SPEECH.....</b>	1630
<i>Rohan Kumar Das ; Jichen Yang ; Haizhou Li</i>	
<b>GEOMETRIC DISCRIMINANT ANALYSIS FOR I-VECTOR BASED SPEAKER VERIFICATION .....</b>	1636
<i>Can Xu ; Xianhong Chen ; Liang He ; Jia Liu</i>	
<b>EXTRACTION OF NOISE-ROBUST SPEAKER EMBEDDING BASED ON GENERATIVE ADVERSARIAL NETWORKS.....</b>	1641
<i>Jianfeng Zhou ; Tao Jiang ; Qingyang Hong ; Lin Li</i>	
<b>DKU-TENCENT SUBMISSION TO ORIENTAL LANGUAGE RECOGNITION AP18-OLR CHALLENGE .....</b>	1646
<i>Haiwei Wu ; Weicheng Cai ; Ming Li ; Ji Gao ; Shanshan Zhang ; Zhiqiang Lyu ; Shen Huang</i>	
<b>MARGIN MATTERS: TOWARDS MORE DISCRIMINATIVE DEEP NEURAL NETWORK EMBEDDINGS FOR SPEAKER RECOGNITION .....</b>	1652
<i>Xu Xiang ; Shuai Wang ; Houjun Huang ; Yanmin Qian ; Kai Yu</i>	
<b>ANY-TO-ONE FACE REENACTMENT BASED ON CONDITIONAL GENERATIVE ADVERSARIAL NETWORK.....</b>	1657
<i>Tianxiang Ma ; Bo Peng ; Wei Wang ; Jing Dong</i>	
<b>DISCRIMINATION BETWEEN HANDWRITTEN AND COMPUTER-GENERATED TEXTS USING A DISTRIBUTION OF PATCH-WISE FONT FEATURES.....</b>	1665
<i>Naoki Hamasaki ; Kazuaki Nakamura ; Naoko Nitta ; Noboru Babaguchi</i>	
<b>GENERATING SPOOFING TWEETS CONSIDERING POINTS OF INTEREST OF TARGET USER .....</b>	1672
<i>Jeongwoo Lim ; Naoko Nitta ; Kazuaki Nakamura ; Noboru Babaguchi</i>	
<b>ANONYMIZATION OF GAIT SILHOUETTE VIDEO BY PERTURBING ITS PHASE AND SHAPE COMPONENTS.....</b>	1679
<i>Yuki Hirose ; Kazuaki Nakamura ; Naoko Nitta ; Noboru Babaguchi</i>	
<b>AN RGB GAIT ANONYMIZATION MODEL FOR LOW-QUALITY SILHOUETTES.....</b>	1686
<i>Ngoc-Dung T. Tieu ; Huy H. Nguyen ; Fuming Fang ; Junichi Yamagishi ; Isao Echizen</i>	
<b>A GENERALIZATION OF LAPLACE NONNEGATIVE MATRIX FACTORIZATION AND ITS MULTICHANNEL EXTENSION.....</b>	1694
<i>Hiroki Tanji ; Takahiro Murakami ; Hiroyuki Kamata</i>	
<b>A LATE REVERBERATION POWER SPECTRAL DENSITY AWARE APPROACH TO SPEECH DEREVERBERATION BASED ON DEEP NEURAL NETWORKS .....</b>	1700
<i>Yuanlei Qi ; Feiran Yang ; Jun Yang</i>	
<b>A COMPARISON STUDY OF GRAPPA AND GENERALIZED SERIES METHODS FOR PARALLEL MRI AT HIGH ACCELERATION FACTOR .....</b>	1704
<i>Khanh T. K. Nguyen ; Hien M. Nguyen</i>	
<b>CONSIDERATION ON APPLICATION OF THE CONCEPT OF SAAK TRANSFORM TO CONVOLUTIONAL NEURAL NETWORKS .....</b>	1710
<i>Tomonori Maeda ; Kiyoshi Nishikawa</i>	

<b>A NORM PENALIZED NOISE-FREE MAXIMUM CORRENTROPY CRITERION ALGORITHM .....</b>	<b>1717</b>
<i>Wanlu Shi ; Yingsong Li ; Felix Albu</i>	
<b>DIFFERENTIABLE PROGRAMMING BASED STEP SIZE OPTIMIZATION FOR LMS AND NLMS ALGORITHMS .....</b>	<b>1721</b>
<i>Kazumori Hayashi ; Kaede Shiohara ; Tetsuya Sasaki</i>	
<b>NON-STRUCTURED PRUNING FOR DEEP-LEARNING BASED STEGANALYTIC FRAMEWORKS .....</b>	<b>1735</b>
<i>Qiushi Li ; Zilong Shao ; Shunquan Tan ; Jishen Zeng ; Bin Li</i>	
<b>EFFECTIVE SOURCE CAMERA IDENTIFICATION BASED ON MSEPLL DENOISING APPLIED TO SMALL IMAGE PATCHES.....</b>	<b>1740</b>
<i>Wen-Na Zhang ; Yun-Xia Liu ; Ze-Yu Zou ; Yun-Li Zang ; Yang Yang ; Bonnie Ngai-Fong Law</i>	
<b>FILTERING ADVERSARIAL NOISE WITH DOUBLE QUANTIZATION .....</b>	<b>1745</b>
<i>Maungmaung Aprilpyone ; Yuma Kinoshita ; Hitoshi Kiya</i>	
<b>IMAGE IDENTIFICATION OF GRAYSCALE-BASED JPEG IMAGES FOR PRIVACY-PRESERVING PHOTO SHARING SERVICES.....</b>	<b>1750</b>
<i>Kenta Iida ; Hitoshi Kiya</i>	
<b>PRIVACY-PRESERVING DEEP NEURAL NETWORKS USING PIXEL-BASED IMAGE ENCRYPTION WITHOUT COMMON SECURITY KEYS .....</b>	<b>1756</b>
<i>Warit Sirichotedumrong ; Yuma Kinoshita ; Hitoshi Kiya</i>	
<b>DELVING INTO THE METHODS OF COVERLESS IMAGE STEGANOGRAPHY .....</b>	<b>1763</b>
<i>Koi Yee Ng ; Simying Ong ; Koksheik Wong</i>	
<b>IMAGE RECONSTRUCTION FROM LOCAL DESCRIPTORS USING CONDITIONAL ADVERSARIAL NETWORKS.....</b>	<b>1773</b>
<i>Haiwei Wu ; Jiantao Zhou ; Yuanman Li</i>	
<b>COMPUTATIONAL PERCEPTION OF INFORMATION FOCI PRODUCED BY CHINESE ENGLISH LEARNERS AND AMERICAN ENGLISH SPEAKERS .....</b>	<b>1780</b>
<i>Juqiang Chen ; Xuliang He</i>	
<b>ACOUSTIC ATTRIBUTES OF CITATION TONES IN STANDARD CHINESE PRODUCED BY PRELINGUALLY DEAF ADULTS .....</b>	<b>1786</b>
<i>Jie Hou ; Yu Chen ; Yutong Xing ; Jianwu Dang</i>	
<b>MULTI-TASK BASED MISPRONUNCIATION DETECTION OF CHILDREN SPEECH USING MULTI-LINGUAL INFORMATION .....</b>	<b>1791</b>
<i>Linxuan Wei ; Wenwei Dong ; Binghuai Lin ; Jinsong Zhang</i>	
<b>SOUNDS OF PERSONALITY: INFERENCE FROM VOICES BY NON-NATIVE SPEAKERS.....</b>	<b>1795</b>
<i>Bin Li ; Yihan Guan ; Si Chen</i>	
<b>ACQUISITION AND INTERPRETATION OF MANDARIN SPEECH PROSODY BY NATIVE SPEAKERS AND CANTONESE LEARNERS.....</b>	<b>1800</b>
<i>Xi Chen ; Si Chen</i>	
<b>ACQUISITION OF L2 MANDARIN RHYTHM BY RUSSIAN AND JAPANESE LEARNERS .....</b>	<b>1810</b>
<i>Yiran Ding ; Yanlu Xie ; Jinsong Zhang</i>	
<b>A MIN-MAX OPTIMIZATION ALGORITHM FOR GLOBAL ACTIVE ACOUSTIC RADIATION CONTROL .....</b>	<b>1815</b>
<i>Rong Han ; Ming Wu ; Kexun Chi ; Lan Yin ; Hongling Sun ; Jun Yang</i>	
<b>AUDIO INTEGRATED ACTIVE NOISE CONTROL SYSTEM WITH AUTO GAIN CONTROLLER.....</b>	<b>1819</b>
<i>Kenta Iwai ; Takano Nishiura</i>	
<b>BEAM STEERING OF PORTABLE PARAMETRIC ARRAY LOUDSPEAKER.....</b>	<b>1824</b>
<i>Kyosuke Nakagawa ; Chuang Shi ; Yoshinobu Kajikawa</i>	
<b>A SIMULATION INVESTIGATION OF MODIFIED FXLMS ALGORITHMS FOR FEEDFORWARD ACTIVE NOISE CONTROL .....</b>	<b>1833</b>
<i>Chuang Shi ; Nan Jiang ; Rong Xie ; Huiyong Li</i>	
<b>MOBILE ROBOT OBJECT RECOGNITION IN THE INTERNET OF THINGS BASED ON FOG COMPUTING .....</b>	<b>1838</b>
<i>Meixia Fu ; Songlin Sun ; Kaili Ni ; Xiaoying Hou</i>	
<b>JOINT SPARSE CHANNEL ESTIMATION IN DOWNLINK NOMA SYSTEM.....</b>	<b>1843</b>
<i>Haohui Jia ; Na Chen ; Takasei Higashino ; Minoru Okada</i>	
<b>TIME-DOMAIN SIGNAL RECOVERY FOR OFDM SYSTEM IN THE INDUSTRIAL ENVIRONMENT.....</b>	<b>1847</b>
<i>Chengbo Liu ; Na Chen ; Yafei Hou ; Minoru Okada</i>	
<b>DEEP REINFORCEMENT LEARNING FOR RESOURCE ALLOCATION IN 5G COMMUNICATIONS .....</b>	<b>1852</b>
<i>Mau-Luen Tham ; Amjad Iqbal ; Yoong Choon Chang</i>	



<b>A SURVEY ON APPLICATIONS OF DEEP REINFORCEMENT LEARNING IN RESOURCE MANAGEMENT FOR 5G HETEROGENEOUS NETWORKS .....</b>	<b>1856</b>
<i>Ying Loong Lee ; Donghong Qin</i>	
<b>GRIFFIN-LIM PHASE RECONSTRUCTION USING SHORT-TIME FOURIER TRANSFORM WITH ZERO-PADDED FRAME ANALYSIS .....</b>	<b>1863</b>
<i>Yukoh Wakabayashi ; Nobutaka Ono</i>	
<b>ROBUST DEMIXING FILTER UPDATE ALGORITHM BASED ON MICROPHONE-WISE COORDINATE DESCENT FOR INDEPENDENT DEEPLY LEARNED MATRIX ANALYSIS .....</b>	<b>1868</b>
<i>Naoki Makishima ; Norihiro Takamune ; Hiroshi Saruwatari ; Daichi Kitamura ; Yu Takahashi ; Kazunobu Kondo</i>	
<b>EVALUATION OF MULTICHANNEL HEARING AID SYSTEM BY RANK-CONSTRAINED SPATIAL COVARIANCE MATRIX ESTIMATION.....</b>	<b>1874</b>
<i>Masakazu Une ; Yuki Kubo ; Norihiro Takamune ; Daichi Kitamura ; Hiroshi Saruwatari ; Shoji Makino</i>	
<b>COMPARATIVE STUDY OF DEEP LEARNING BASED AND TRADITIONAL SINGLE-CHANNEL NOISE-REDUCTION ALGORITHMS.....</b>	<b>1880</b>
<i>Ningning Pan ; Jingdong Chen ; Biing-Hwang Fred Juang</i>	
<b>AN EFFICIENT DILATED CONVOLUTIONAL NEURAL NETWORK FOR UAV NOISE REDUCTION AT LOW INPUT SNR.....</b>	<b>1885</b>
<i>Zhi-Wei Tan ; Anh H. T. Nguyen ; Andy W. H. Khong</i>	
<b>MULTI-LINGUAL TRANSFORMER TRAINING FOR KHMER AUTOMATIC SPEECH RECOGNITION .....</b>	<b>1893</b>
<i>Kak Soky ; Sheng Li ; Tatsuya Kawahara ; Sopheap Seng</i>	
<b>A STUDY ON LOW-RESOURCE LANGUAGE IDENTIFICATION .....</b>	<b>1897</b>
<i>Zhaodi Qi ; Yong Ma ; Mingliang Gu</i>	
<b>A MORPHEME SEQUENCE AND CONVOLUTIONAL NEURAL NETWORK BASED KAZAKH TEXT CLASSIFICATION .....</b>	<b>1903</b>
<i>Sardar Parhat ; Gao Ting ; Mijit Ablimit ; Askar Hamdulla</i>	
<b>ZERO-RESOURCE LANGUAGE RECOGNITION.....</b>	<b>1907</b>
<i>Jiawei Yu ; Jinsong Zhang</i>	
<b>CROSS-LINGUAL AUTOMATIC SPEECH RECOGNITION EXPLOITING ARTICULATORY FEATURES.....</b>	<b>1912</b>
<i>Qingran Zhan ; Petr Motlicek ; Shixuan Du ; Yahui Shan ; Sifan Ma ; Xiang Xie</i>	
<b>API9-OLR CHALLENGE: THREE TASKS AND THEIR BASELINES .....</b>	<b>1917</b>
<i>Zhiyuan Tang ; Dong Wang ; Liming Song</i>	
<b>A REAL-TIME AND ONLINE MULTIPLE-TYPE OBJECT TRACKING METHOD WITH DEEP FEATURES.....</b>	<b>1922</b>
<i>Yi-Hsuan Hsu ; Jiun-In Guo</i>	
<b>CONVOLUTIONAL ATTENTION MODEL FOR RETINAL EDEMA SEGMENTATION.....</b>	<b>1929</b>
<i>Phuong Le Thi ; Tuan Pham ; Jia Ching Wang</i>	
<b>PARALLEL CAPSULE NEURAL NETWORKS FOR SOUND EVENT DETECTION.....</b>	<b>1933</b>
<i>Kai-Wen Liang ; Yu-Hao Tseng ; Pao-Chi Chang</i>	
<b>AGE AND GENDER RECOGNITION USING MULTI-TASK CNN.....</b>	<b>1937</b>
<i>Duc-Quang Vu ; Thi-Thu-Trang Phung ; Chien-Yao Wang ; Jia-Ching Wang</i>	
<b>IOT-BASED PREDICTIVE MAINTENANCE FOR SMART MANUFACTURING SYSTEMS .....</b>	<b>1942</b>
<i>Leong Chee Him ; Yu Yang Poh ; Lee Wah Pheng</i>	
<b>PHYSICAL PARAMETER PREDICTION BY EMBEDDING HUMAN PERCEPTUAL PARAMETER FOR 3D GARMENT MODELING .....</b>	<b>1945</b>
<i>Seongmin Lee ; Woojae Kim ; Sewoong Ahn ; Jaekyung Kim ; Sanghoon Lee</i>	
<b>GENERIC VIDEO-BASED MOTION CAPTURE DATA RETRIEVAL.....</b>	<b>1950</b>
<i>Zifei Jiang ; Zhen Li ; Wei Li ; Xueqing Li ; Jingliang Peng</i>	
<b>A LIGHTWEIGHT AND ROBUST FACE RECOGNITION NETWORK ON NOISY CONDITION .....</b>	<b>1964</b>
<i>Lulu Guo ; Huihui Bai ; Yao Zhao</i>	
<b>DEEP LEARNING APPROACH TO VIDEO FRAME RATE UP-CONVERSION USING BILATERAL MOTION ESTIMATION .....</b>	<b>1970</b>
<i>Junheum Park ; Chul Lee ; Chang-Su Kim</i>	
<b>3D RECONSTRUCTION USING HDR-BASED SLAM .....</b>	<b>1976</b>
<i>Chia-Hung Yeh ; Min-Hui Lin ; Wei-Chieh Lu</i>	
<b>USING MACHINE LEARNING APPLIED TO RADIOMIC IMAGE FEATURES FOR SEGMENTING TUMOUR STRUCTURES .....</b>	<b>1981</b>
<i>Henry Clifton ; Alanna Vial ; Andrew Miller ; Christian Ritz ; Matthew Field ; Lois Holloway ; Montserrat Ros ; Martin Carolan ; David Stirling</i>	

<b>COMPUTATIONAL INTELLIGENCE-BASED REAL-TIME LANE DEPARTURE WARNING SYSTEM USING GABOR FEATURES</b> .....	1989
<i>Ricky Sutopo ; Teo Ting Yau ; Joanne Mun-Yee Lim ; Koksheik Wong</i>	
<b>OPTIMISING SEARCH OPERATIONS WITH SWARM INTELLIGENCE</b> .....	1993
<i>Ng Chung Hou ; Lim Wern Han ; Lim Mei Kuan</i>	
<b>GUN DETECTION IN SURVEILLANCE VIDEOS USING DEEP NEURAL NETWORKS</b> .....	1998
<i>Junyi Lim ; Md Istiaque Al Jobayer ; Vishnu Monn Baskaran ; Joanne Munyee Lim ; Koksheik Wong ; John See</i>	
<b>INTERPRETING ABNORMALITY OF A COMPLEX STATIC SCENE USING GENERATIVE ADVERSARIAL NETWORK</b> .....	2003
<i>Mahamat Moussa ; Chern Hong Lim</i>	
<b>MEDIAN BASED MULTI-LABEL PREDICTION BY INFLATING EMOTIONS WITH DYADS FOR VISUAL SENTIMENT ANALYSIS</b> .....	2008
<i>Tetsuya Asakawa ; Masaki Aono</i>	
<b>ACTION RECOGNITION USING CONVOLUTIONAL NEURAL NETWORKS WITH JOINT SUPERVISION</b> .....	2015
<i>Yupeng Li ; Yuxiao Wang ; Yongfeng Jiang ; Liang Zhang</i>	
<b>A STUDY OF PERCEPTUAL QUALITY ASSESSMENT FOR STEREOSCOPIC IMAGE RETARGETING</b> .....	2021
<i>Zhenqi Fu ; Yan Yang ; Feng Shao ; Xinghao Ding</i>	
<b>INFRARED PEDESTRIAN DETECTION WITH CONVERTED TEMPERATURE MAP</b> .....	2025
<i>Yifan Zhao ; Jingchun Cheng ; Wei Zhou ; Chunxi Zhang ; Xiong Pan</i>	
<b>A FAST AND ACCURATE CLUSTER CENTER INITIALIZATION ALGORITHM FOR POLSAR SUPERPIXEL SEGMENTATION</b> .....	2032
<i>Binbin Han ; Ping Han ; Zheng Cheng</i>	
<b>COMPARING NATIVE CHINESE LISTENERS' SPEECH RECEPTION THRESHOLDS FOR MANDARIN AND ENGLISH CONSONANTS</b> .....	2038
<i>Jian Gong ; Yameng Yu ; William Bellamy ; Feng Wang ; Xiaoli Ji ; Zhenzhen Yang</i>	
<b>PROSODIC REALIZATION OF FOCUS IN ENGLISH BY BIDIALECTAL MANDARIN SPEAKERS</b> .....	2042
<i>Jiajing Zhang ; Ying Chen ; Jie Cui</i>	
<b>WORLD ENGLISHES AND PROSODY: EVIDENCE FROM THE SUCCESSFUL PUBLIC SPEAKERS</b> .....	2048
<i>Yating Cao ; Hua Chen</i>	
<b>AN EXPERIMENTAL STUDY ON ENGLISH MAJORS WEAK FORM PRODUCTIONS OF PREPOSITIONS</b> .....	2054
<i>Jiangbo Zhang ; Aijun Li ; Na Zhi</i>	
<b>ORAL MOTOR EXERCISES FOR CSL LEARNERS TO MASTER PRODUCTIONS OF RETROFLEX AND NON-RETROFLEX CONSONANTS</b> .....	2064
<i>Yixin Zhang ; Jinsong Zhang</i>	
<b>CROSS-DOMAIN SPEAKER RECOGNITION USING CYCLE-CONSISTENT ADVERSARIAL NETWORKS</b> .....	2070
<i>Yi Liu ; Bairong Zhuang ; Zhiyu Li ; Takahiro Shinozaki</i>	
<b>Author Index</b>	