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<i>Hao Sheng, State Key Laboratory of Software Development Environment, School of Computer Science and Engineering, Beihang University / Shenzhen Key Laboratory of Data Vitalization, Research Institute in Shenzhen, Beihang University, China; Shuo Zhang, Xiaoyu Liu, State Key Laboratory of Software Development Environment, School of Computer Science and Engineering, Beihang University, China; Zhang Xiong, State Key Laboratory of Software Development Environment, School of Computer Science and Engineering, Beihang University / Shenzhen Key Laboratory of Data Vitalization, Research Institute in Shenzhen, Beihang University, China</i>	
<b>IVMSP-P7.6: FAST RESPONSE AGGREGATION FOR DEPTH ESTIMATION USING LIGHT FIELD CAMERA</b>	<b>1636</b>
<i>Yang Cao, Kai Kang, Jing Zhang, University of Science and Technology of China, China; Zengfu Wang, Chinese Academy of Sciences, China</i>	
<b>IVMSP-P7.7: DEPTH MAP ESTIMATION USING CENSUS TRANSFORM FOR LIGHT FIELD CAMERAS</b>	<b>1641</b>
<i>Takayuki Tomioka, Kazu Mishiba, Yuji Oyamada, Katsuya Kondo, Tottori University, Japan</i>	
<b>IVMSP-P7.8: A SEMI-GLOBAL MATCHING METHOD FOR LARGE-SCALE LIGHT FIELD IMAGES</b>	<b>1646</b>
<i>Xiangsheng Huang, Ziling Huang, Chinese Academy of Sciences, China; Ming Lu, Tsinghua University, China; Pengcheng Ma, Chinese Academy of Sciences, China; Weili Ding, Yanshan University, China</i>	
<b>IVMSP-P7.9: LEARNING-BASED FULLY 3D FACE RECONSTRUCTION FROM A SINGLE IMAGE</b>	<b>1651</b>
<i>Hu Xiaoping, Wang Ying, Zhu Feiyun, Pan Chunhong, National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, China</i>	

<b>IVMSP-P7.10: A FAST 3D FACE RECONSTRUCTION METHOD FROM A SINGLE IMAGE USING ADJUSTABLE MODEL</b>	<b>1656</b>
<i>Tao Wu, Fei Zhou, Qingmin Liao, Tsinghua University, China</i>	
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<i>Sijie Song, Yanghao Li, Jiaying Liu, Zongming Guo, Peking University, China</i>	
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<i>Rui Gao, Northeastern University, China; Sergiy A. Vorobyov, Aalto University, Finland; Hong Zhao, Northeastern University, China</i>	
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<i>Chang Su, Li Tao, Samsung Research America, United States</i>	
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<i>Shengxin Zha, Thrasyvoulos Pappas, Northwestern University, United States</i>	
<b>IVMSP-P8.6: A FRAME RATE UP-CONVERSION METHOD WITH QUADRUPLE MOTION VECTOR POST-PROCESSING</b>	<b>1686</b>
<i>Aixi Qu, Ju Liu, Wenbo Wan, Yifan Xiao, Shandong University, China</i>	
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<i>Xiaohui Yang, Zhiquan Feng, University of Jinan, China</i>	
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<i>Kuanyu Ju, Yong Li, Hongkai Xiong, Shanghai Jiao Tong University, China</i>	
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<i>Yuanhao Gong, National University of Singapore, Singapore</i>	
<b>IVMSP-P9.2: SALIENCY &amp; STRUCTURE PRESERVING MULTI-OPERATOR IMAGE RETARGETING</b>	<b>1706</b>
<i>Lingling Zhu, Zhibo Chen, Xiaoming Chen, Ning Liao, University of Science and Technology of China, China</i>	
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<i>Shuai Yang, Jiaying Liu, Sijie Song, Mading Li, Zongming Guo, Peking University, China</i>	
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<i>Jianrong Wang, Tianjin University, China; Yalong Yang, Monash University, Australia; Jianguo Wei, Ju Zhang, Tianjin University, China</i>	

<b>IVMSP-P9.5: JOINT-VIEW KALMAN-FILTER RECOVERY OF COMPRESSED-SENSED MULTIVIEW VIDEOS</b>	<b>1721</b>
<i>Jing Liu, Shubham Chamadia, Dimitris Pados, The State University of New York, University at Buffalo, United States</i>	
<b>IVMSP-P9.6: ROTATING CODED APERTURE FOR DEPTH FROM DEFOCUS</b>	<b>1726</b>
<i>Jingyu Yang, Jinlong Ma, Bin Jiang, Tianjin University, China</i>	
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<i>Chongyi Li, Jichang Guo, Yanwei Pang, Tianjin University, China; Shanji Chen, Qinghai Nationalities University, China; Jian Wang, Tianjin University and National Ocean Technology Center, China</i>	
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<i>Zhiyu Chen, Shogo Muramatsu, Niigata University, Japan</i>	
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<i>Tingting Sun, Cheolkon Jung, Xidian University, China</i>	
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<i>Tao Lu, Wuhan Institute of Technology, China; Zixiang Xiong, Texas A&amp;M University, United States; Yongjing Wan, Wei Yang, Wuhan Institute of Technology, China</i>	
<b>IVMSP-P10.2: SUPERVISED-LEARNING BASED FACE HALLUCINATION FOR ENHANCING FACE RECOGNITION</b>	<b>1751</b>
<i>Weng-Tai Su, Chih-Chung Hsu, Chia-Wen Lin, National Tsing-Hua University, Taiwan; Weiyao Lin, Shanghai Jiao Tong University, China</i>	
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<i>Zhengguo Li, Jinghong Zheng, Institute for Infocomm Research, Singapore</i>	
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<i>Qin Zou, Wuhan University, China; Zhongwen Hu, Shenzhen University, China; Long Chen, Sun Yat-Sen University, China; Qian Wang, Wuhan University, China; Qingquan Li, Shenzhen University, China</i>	
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<i>K Ram Prabhakar, R Venkatesh Babu, Indian Institute of Science, India</i>	
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<i>Reza Zolfaghari, Nicolas Epain, Craig T. Jin, Joan Glaunes, Anthony Tew, The University of Sydney, Australia</i>	
<b>IVMSP-P10.7: SHAPE: LINEAR-TIME CAMERA POSE ESTIMATION WITH QUADRATIC ERROR-DECAY</b>	<b>1776</b>
<i>Alireza Ghasemi, Adam Scholefield, Martin Vetterli, École Polytechnique Fédérale de Lausanne, Switzerland</i>	
<b>IVMSP-P10.8: GRADIENT SCHEMES FOR ROBUST FFT-BASED MOTION ESTIMATION</b>	<b>1781</b>
<i>Georgios Tzimiropoulos, University of Nottingham, United Kingdom; Vasileios Argyriou, Kingston University London, United Kingdom</i>	
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<i>Ang Li, Zhenjiang Miao, Yigang Cen, Qinghua Liang, Beijing Jiaotong University, China</i>	

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*Xuepan Zhang, Qian Xuesen Laboratory of Space Technology, China; Xuejing Zhang, University of Electronic Science and Technology of China, China; Bo Liu, Qian Xuesen Laboratory of Space Technology, China*

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*Yongchao Gong, Shiming Xiang, Lingfeng Wang, Chunhong Pan, Institute of Automation, Chinese Academy of Sciences, China*

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*Yongchao Gong, Shiming Xiang, Chunhong Pan, Institute of Automation, Chinese Academy of Sciences, China*

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*Chao Li, Panwen Yang, Hao Sheng, State Key Laboratory of Software Development Environment, School of Computer Science and Engineering, Beihang University, China*

**IVMSP-P11.7: PRECISE PLAYER SEGMENTATION IN TEAM SPORTS VIDEOS USING ..... 1826**  
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*Tsung-Yu Tsai, National Taiwan University, Taiwan; Yen-Yu Lin, Hong-Yuan Mark Liao, Academia Sinica, Taiwan; Shyh-Kang Jeng, National Taiwan University, Taiwan*

**IVMSP-P11.8: SUBSPACE CLUSTERING WITH A LEARNED DIMENSIONALITY ..... 1831**  
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*Lei Zhang, Harbin Engineering University, China; Xiantong Zhen, The University of Western Ontario, Canada; Jiqing Han, Harbin Institute of Technology, China*

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*Saimunur Rahman, John See, Multimedia University, Malaysia*



<b>IVMSP-P12.3: INTRINSIC TWO-DIMENSIONAL LOCAL STRUCTURES FOR MICRO-EXPRESSION RECOGNITION</b>	<b>1851</b>
<i>Yee Hui Oh, Anh Cat Le Ngo, Raphael Chung-Wei Phan, John See, Multimedia University, Malaysia; Huo Chong Ling, Curtin University, Malaysia</i>	
<b>IVMSP-P12.4: MULTIPLE INSTANCE LEARNING FOR MODEL ENSEMBLE AND META-DATA TRANSFER</b>	<b>1856</b>
<i>Yu Chen, Shanghai Jiao Tong University, China; Ling Cai, Xiamen University, China; Yuming Zhao, Fuqiao Hu, Shanghai Jiao Tong University, China</i>	
<b>IVMSP-P12.5: AN IMAGE SMOOTHING OPERATOR FOR FAST AND ACCURATE SCALE SPACE APPROXIMATION</b>	<b>1861</b>
<i>Maxim Karpushin, Giuseppe Valenzise, Frédéric Dufaux, Laboratoire Traitement et Communication de l'Information (CNRS LTCI), Télécom ParisTech, Université Paris Saclay, France</i>	
<b>IVMSP-P12.6: DISCRIMINANT CORRELATION ANALYSIS FOR FEATURE LEVEL FUSION WITH APPLICATION TO MULTIMODAL BIOMETRICS</b>	<b>1866</b>
<i>Mohammad Haghighat, Mohamed Abdel-Mottaleb, University of Miami, United States; Wadee Alhalabi, Effat University, Saudi Arabia</i>	
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<i>Takumi Kobayashi, National Institute of Advanced Industrial Science and Technology, Japan</i>	
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<i>Muhammad Amir Shafiq, Tariq Alshawi, Zhiling Long, Ghassan AlRegib, Georgia Institute of Technology, United States</i>	
<b>IVMSP-P12.9: ACTION RECOGNITION USING INTEREST POINTS CAPTURING DIFFERENTIAL MOTION INFORMATION</b>	<b>1881</b>
<i>Gaurav Yadav, Prakhar Shukla, Amit Sethi, Indian Institute of Technology Guwahati, India</i>	
<b>IVMSP-P12.10: TAKING MEREDITH OUT OF GREY'S ANATOMY: AUTOMATING HOSPITAL ICU EMERGENCY SIGNALING</b>	<b>1886</b>
<i>Tarem Ahmed, Supriyo Ahmed, BRAC University, Bangladesh; Fazle Elahi Chowdhury, National Heart Foundation Hospital and Research Institute, Bangladesh</i>	
 <b>IVMSP-P13: IMAGE ANALYSIS AND APPLICATIONS</b>	
<b>IVMSP-P13.1: DETECTION OF FAINT EXTENDED SOURCES IN HYPERSPECTRAL DATA AND APPLICATION TO HDF-S MUSE OBSERVATIONS</b>	<b>1891</b>
<i>Jean-Baptiste Courbot, Vincent Mazet, ICube, France; Emmanuel Monfrini, SAMOVAR, France; Christophe Collet, ICube, France</i>	
<b>IVMSP-P13.2: SHIP WAKE DETECTION FOR SAR IMAGES WITH COMPLEX BACKGROUNDS BASED ON MORPHOLOGICAL DICTIONARY LEARNING</b>	<b>1896</b>
<i>Yang Guozheng, Tsinghua University, China; Yu Jing, Xiao Chuangbai, Beijing University of Technology, China; Sun Weidong, Tsinghua University, China</i>	
<b>IVMSP-P13.3: A JOINT LEARNING APPROACH FOR CROSS DOMAIN AGE ESTIMATION</b>	<b>1901</b>
<i>Binod Bhattarai, CNRS UMR 6072, University of Caen Basse-Normandie, ENSICAEN, France; Gaurav Sharma, Max-Planck Institut fuer Informatik (MPII), Germany; Alexis Lechervy, Frederic Jurie, CNRS UMR 6072, University of Caen Basse-Normandie, ENSICAEN, France</i>	
<b>IVMSP-P13.4: CHUTE BASED AUTOMATED FISH LENGTH MEASUREMENT AND WATER DROP DETECTION</b>	<b>1906</b>
<i>Tsung-Wei Huang, Jenq-Neng Hwang, University of Washington, United States; Craig S. Rose, National Oceanic and Atmospheric Administration, United States</i>	

<b>IVMSP-P13.5: A NOVEL VIDEO-BASED SMOKE DETECTION METHOD BASED ON COLOR INVARIANTS</b>	<b>1911</b>
<i>Olfa Besbes, Institut Supérieur D'Informatique Et Des Technologies De Communication De Hammam Sousse, Tunisia; Amel Benazza-Benyahia, Ecole Supérieure des Communications de Tunis, Tunisia</i>	
<b>IVMSP-P13.6: A BEHAVIOR-BASED EVALUATION OF PRODUCT QUALITY</b>	<b>1916</b>
<i>Wei Liang, Han Wang, Hamid Krim, North Carolina State University, United States</i>	
<b>IVMSP-P13.7: ROBUST LANE MARKING DETECTION USING BOUNDARY-BASED INVERSE PERSPECTIVE MAPPING</b>	<b>1921</b>
<i>Zhenqiang Ying, Ge Li, Peking University Shenzhen Graduate School, China</i>	
 <b>IVMSP-P14: IMAGE ANALYSIS</b>	
<b>IVMSP-P14.1: LEARNING FULL-RANGE AFFINITY FOR DIFFUSION-BASED SALIENCY DETECTION</b>	<b>1926</b>
<i>Keren Fu, Shanghai Jiao Tong University, China; Irene Yu-Hua Gu, Chalmers University of Technology, Sweden; Jie Yang, Shanghai Jiao Tong University, China</i>	
<b>IVMSP-P14.2: OBJECT SALIENCY USING A BACKGROUND PRIOR</b>	<b>1931</b>
<i>Chintak Sheth, Venkatesh Babu Radhakrishnan, Indian Institute of Science, India</i>	
<b>IVMSP-P14.3: PRINCIPAL COMPONENTS ANALYSIS-BASED VISUAL SALIENCY DETECTION</b>	<b>1936</b>
<i>Bing Yang, Xiaoyun Zhang, Jing Liu, Li Chen, Zhiyong Gao, Shanghai Jiao Tong University, China</i>	
<b>IVMSP-P14.4: SALIENCY PREPROCESSING FOR PERSON RE-IDENTIFICATION IMAGES</b>	<b>1941</b>
<i>Cong Ma, Zhenjiang Miao, Min Li, Beijing Jiaotong University, China</i>	
<b>IVMSP-P14.5: SALIENCY DETECTION BASED ON INTEGRATION OF CENTRAL BIAS, REWEIGHTING AND MULTI-SCALE FOR SUPERPIXELS</b>	<b>1946</b>
<i>Xiaoling Hu, Wenming Yang, Fei Zhou, Qingmin Liao, Tsinghua University, China</i>	
<b>IVMSP-P14.6: A MULTI-SCALE APPROACH TO EXTRACT MEANINGFUL ANNOTATIONS FROM DOCUMENT IMAGES</b>	<b>1951</b>
<i>Yang Lei, Jian Fan, Jerry Liu, Hewlett-Packard Company, United States</i>	
<b>IVMSP-P14.7: AUTOMATIC IMAGE REGION ANNOTATION THROUGH SEGMENTATION BASED VISUAL SEMANTIC ANALYSIS AND DISCRIMINATIVE CLASSIFICATION</b>	<b>1956</b>
<i>Jing Zhang, Yongwei Gao, Shengwei Feng, Yubo Yuan, East China University of Science and Technology, China; Chin-Hui Lee, Georgia Institute of Technology, United States</i>	
<b>IVMSP-P14.8: SCANNED DOCUMENT ENHANCEMENT BASED ON FAST TEXT DETECTION</b>	<b>1961</b>
<i>Yue Wang, Jobin Mathew, Eli Saber, Rochester Institute of Technology, United States; David Larson, Peter Bauer, George Kerby, Jerry Wagner, Hewlett-Packard Company, United States</i>	
<b>IVMSP-P14.9: DTM: DEFORMABLE TEMPLATE MATCHING</b>	<b>1966</b>
<i>Hyungtae Lee, Heesung Kwon, Ryan Robinson, William Nothwang, U.S. Army Research Laboratory, United States</i>	
<b>IVMSP-P14.10: SHADOW DETECTION USING DOUBLE-THRESHOLD PULSE COUPLED NEURAL NETWORKS</b>	<b>1971</b>
<i>Jing Ji, Xudong Jiang, Nanyang Technological University, Singapore; Wei Sun, Hunan University, China</i>	

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### IVMSP-P15.1: FAST ANOMALY DETECTION IN TRAFFIC SURVEILLANCE VIDEO ..... 1976 BASED ON ROBUST SPARSE OPTICAL FLOW

*Hanlin Tan, Yongping Zhai, Yu Liu, Maojun Zhang, National University of Defense Technology, China*

### IVMSP-P15.2: AN EFFICIENT ANOMALY DETECTION APPROACH IN SURVEILLANCE ..... 1981 VIDEO BASED ON ORIENTED GMM

*Feiping Li, Wenming Yang, Qingmin Liao, Graduate School at Shenzhen, Tsinghua University, China, China*

### IVMSP-P15.3: EXPLOITING SPARSITY FOR IMAGE-BASED OBJECT SURFACE ..... 1986 ANOMALY DETECTION

*Woon Huei Chai, Shen-Shyang Ho, Nanyang Technological University, Singapore; Chi-Keong Goh, Rolls-Royce Singapore, Singapore*

### IVMSP-P15.4: INFRARED SMALL TARGET DETECTION WITH COMPRESSIVE ..... 1991 MEASUREMENTS

*Lijuan Xie, Jianjun Huang, Li Kang, Jingxiong Huang, Shenzhen University, China*

### IVMSP-P15.5: IMPROVING RESOLUTION IN SUPERVISED PATCH-BASED TARGET ..... 1994 DETECTION

*Ron Amit, Gal Mishne, Ronen Talmon, Technion - Israel Institute of Technology, Israel*

### IVMSP-P15.6: PUSHING THE LIMIT OF NON-RIGID STRUCTURE-FROM-MOTION ..... 1999 BY SHAPE CLUSTERING

*Huizhong Deng, Yuchao Dai, The Australian National University, Australia*

### IVMSP-P15.7: RELIABLY DETECTING HUMANS WITH RGB-D CAMERA WITH ..... 2004 PHYSICAL BLOB DETECTOR FOLLOWED BY LEARNING-BASED FILTERING

*Guyue Zhang, Fudan University, China; Jun Liu, Nanyang Technological University, Singapore; Luchao Tian, Yan Qiu Chen, Fudan University, China*

### IVMSP-P15.8: DECODING VISEMES: IMPROVING MACHINE LIP-READING ..... 2009

*Helen L Bear, Richard Harvey, University of East Anglia, United Kingdom*

### IVMSP-P15.9: MULTIPLE INSTANCE DISCRIMINATIVE DICTIONARY LEARNING ..... 2014 FOR ACTION RECOGNITION

*Hongyang Li, Jun Chen, Zengmin Xu, Huafeng Chen, Ruimin Hu, Wuhan University, China*

## IFS-L1: INFORMATION FORENSICS AND SECURITY

### IFS-L1.1: AN EFFECTIVE COLOR SPACE FOR FACE RECOGNITION..... 2019

*Ze Lu, Xudong Jiang, Alex Kot, Nanyang Technological University, Singapore*

### IFS-L1.2: IMPROVED FORGERY DETECTION WITH LATERAL CHROMATIC ..... 2024 ABERRATION

*Owen Mayer, Matthew Stamm, Drexel University, United States*

### IFS-L1.3: PHYSICAL OBJECT AUTHENTICATION: DETECTION-THEORETIC ..... 2029 COMPARISON OF NATURAL AND ARTIFICIAL RANDOMNESS

*Slava Voloshynovskiy, Taras Holotyak, University of Geneva, Switzerland; Patrick Bas, CNRS, France*

### IFS-L1.4: COMBINING DIRTY-PAPER CODING AND ARTIFICIAL NOISE FOR ..... 2034 SECURITY

*Bo Wang, Pengcheng Mu, Chao Wang, Weile Zhang, Hui-Ming Wang, Xi'an Jiaotong University, China; Bobin Yao, Chang'an University, China*

<b>IFS-L1.5: BENCHMARKING OF SCORING FUNCTIONS FOR BIAS-BASED FINGERPRINTING CODE</b>	<b>2039</b>
<i>Minoru Kuribayashi, Okayama University, Japan</i>	
<b>IFS-L1.6: ON PRIVACY PREFERENCE IN COLLUSION-DETERRENCE GAMES FOR SECURE MULTI-PARTY COMPUTATION</b>	<b>2044</b>
<i>Zhaohong Wang, Sen-ching S. Cheung, University of Kentucky, United States</i>	
<b>IFS-P1: MULTIMEDIA FORENSICS</b>	
<b>IFS-P1.1: AN INFORMATION THEORETIC FRAMEWORK FOR ORDER OF OPERATIONS FORENSICS</b>	<b>2049</b>
<i>Xiaoyu Chu, University of Maryland, United States; Yan Chen, University of Electronic Science and Technology of China, China; K. J. Ray Liu, University of Maryland, United States</i>	
<b>IFS-P1.2: PHYLOGENETIC ANALYSIS OF NEAR-DUPLICATE IMAGES USING PROCESSING AGE METRICS</b>	<b>2054</b>
<i>Simone Milani, Marco Fontana, University of Padova, Italy; Paolo Bestagini, Stefano Tubaro, Politecnico di Milano, Italy</i>	
<b>IFS-P1.3: IMAGE PHYLOGENY TREE RECONSTRUCTION BASED ON REGION SELECTION</b>	<b>2059</b>
<i>Paolo Bestagini, Marco Tagliasacchi, Stefano Tubaro, Politecnico di Milano, Italy</i>	
<b>IFS-P1.4: DETECTING DOUBLE MPEG COMPRESSION WITH THE SAME QUANTISER SCALE BASED ON MBM FEATURE</b>	<b>2064</b>
<i>Jieyuan Chen, Xinghao Jiang, Tanfeng Sun, Peisong He, Shilin Wang, Shanghai Jiao Tong University, China</i>	
<b>IFS-P1.7: AAC ENCODING DETECTION AND BITRATE ESTIMATION USING A CONVOLUTIONAL NEURAL NETWORK</b>	<b>2069</b>
<i>Daniel Seichter, Ilmenau University of Technology, Germany; Luca Cuccovillo, Patrick Aichroth, Fraunhofer Institute for Digital Media Technology, Germany</i>	
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