

2020 IEEE 32nd International Conference on Tools with Artificial Intelligence (ICTAI 2020)

**Baltimore, Maryland, USA
9 – 11 November 2020**

Pages 1-652



**IEEE Catalog Number: CFP20091-POD
ISBN: 978-1-7281-8536-1**

**Copyright © 2020 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:	CFP20091-POD
ISBN (Print-On-Demand):	978-1-7281-8536-1
ISBN (Online):	978-1-7281-9228-4
ISSN:	1082-3409

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
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2020 IEEE 32nd International Conference on Tools with Artificial Intelligence (ICTAI) **ICTAI 2020**

Table of Contents

Message from the IEEE ICTAI 2020 General Chair .xxviii.....	
Message from the ICTAI 2020 Program Chair .xxix.....	
Message from the ICTAI 2020 Special Track on SAT/CSP Co-Chairs .xxx.....	
ICTAI 2020 Conference Committee .xxxi.....	
ICTAI 2020 Area Chairs .xxxii.....	
ICTAI 2020 Technical Program Committee .xxxiii.....	

Session 1.1: Ontologies and Multiagent Systems

Cooperative Multi-agent Reinforcement Learning with Hierarchical Relation Graph under Partial Observability .1.....	
<i>Yang Li (Shanghai University, China), Xinzhi Wang (Shanghai University, China), Jianshu Wang (Shanghai University, China), Wei Wang (Shanghai University, China), Xiangfeng Luo (Shanghai University, China), and Shaorong Xie (Shanghai University, China)</i>	
Multi-Agent Feature Learning and Integration for Mixed Cooperative and Competitive Environment .9.....	
<i>Yaowen Zhang (National Innovation Institute of Defense Technology, China), Dianxi Shi (National Innovation Institute of Defense Technology, China), Yunlong Wu (National Innovation Institute of Defense Technology, China), Yongjun Zhang (National Innovation Institute of Defense Technology, China), Liuqing Wang (Tianjin Artificial Intelligence Innovation Center, China), and Tianqi Xu (National Innovation Institute of Defense Technology, China)</i>	
Multi-Agent Reinforcement Learning for Cooperative Adaptive Cruise Control .15.....	
<i>Ashley Peake (Wake Forest University), Joe McCalmon (Wake Forest University), Benjamin Raiford (Wake Forest University), Tongtong Liu (Wake Forest University), and Sarra Alqahtani (Wake Forest University)</i>	
On Modelling Multi-agent Path Finding as a Classical Planning Problem .23.....	
<i>Jindřich Vondrážka (Charles University, Czech Republic), Roman Barták (Charles University, Czech Republic), and Jiří Švancara (Charles University, Czech Republic)</i>	
Model-Based Merging of Open-Domain Ontologies .29.....	
<i>Zied Bouraoui (CRIL, Artois University & CNRS, Lens), Sébastien Konieczny (CRIL, Artois University & CNRS, Lens), Truong-Thanh Ma (Artois University & CNRS, Lens), and Ivan Varzinczak (CRIL, Artois University & CNRS, Lens)</i>	

Ontology for OpenAPI REST Services Descriptions .35.....	
	<i>Aikaterini Karavasilieou (Technical University of Crete (TUC)), Nikolaos Mainas (Technical University of Crete (TUC)), and Euripides G.M. Petrakis (Engineering Technical University of Crete (TUC))</i>

Session 1.2: Recommender Systems I

Preference-Aware Heterogeneous Graph Neural Networks for Recommendation .41.....	
	<i>Yao Fu (Hikvision Research Institute, China), Junhong Wan (Hikvision Research Institute, China), Hong Zhao (Hikvision Research Institute, China), Weihao Jiang (Hikvision Research Institute, China), and Shiliang Pu (Hikvision Research Institute, China)</i>
Research Paper Recommendation Based on Content Similarity, Peer Reviews, Authority, and Popularity .47.....	
	<i>Yiu-Kai Ng (Brigham Young University, USA)</i>
Feature-Aware Attentive Variational Auto-Encoder for Top-N Recommendation .53.....	
	<i>Bo Pang (Nanjing University), Han Bao (Nanjing University), and Chongjun Wang (Nanjing University)</i>
PRPOIR: Exploiting the Region-Level Interest for POI Recommendations .59.....	
	<i>Hao Yuan (Hangzhou Dianzi University), Jian Xu (Hangzhou Dianzi University), Ning Zheng (Hangzhou Dianzi University), Ming Xu (Hangzhou Dianzi University), Wei Li (Hangzhou Dianzi University), and Rujia Shen (Hangzhou Dianzi University)</i>
TSCREC: Time-Sync Comment Recommendation in Danmu-Enabled Videos .67.....	
	<i>Jiayi Chen (East China Normal University, China), Wen Wu (East China Normal University, China), Wenxin Hu (East China Normal University, China), and Liang He (East China Normal University, China)</i>
An Adaptive Aggregation Method Based on Movie Genre for Group Recommendation .73.....	
	<i>Wei Li (Hangzhou Dianzi University, China), Jian Xu (Hangzhou Dianzi University, China), Qing Bao (Hangzhou Dianzi University, China), Rujia Shen (Hangzhou Dianzi University, China), Hao Yuan (Hangzhou Dianzi University, China), and Ming Xu (Hangzhou Dianzi University, China)</i>

Session 1.3: AI Planning

Efficient Multivariate Bandit Algorithm with Path Planning .79.....	
	<i>Keyu Nie (eBay Inc.), Zezhong Zhang (eBay Inc.), Ted Tao Yuan (eBay Inc.), Rong Song (eBay Inc.), and Pauline Berry Burke (eBay Inc.)</i>
Exploiting Classical Planning Grounding in Hybrid PDDL+ Planning Engines .85.....	
	<i>Enrico Scala (University of Brescia, Italy) and Mauro Vallati (University of Huddersfield, United Kingdom)</i>
Configurable Heuristic Adaptation for Improving Best First Search in AI Planning .93.....	
	<i>Ioan Serina (University of Brescia, Italy) and Mauro Vallati (University of Huddersfield, United Kingdom)</i>

Path Planning for Terrain of Steep Incline Using Bézier Curves .101.....	
	<i>Georgios Kamaras (National and Kapodistrian University of Athens), Panagiotis Stamatopoulos (National and Kapodistrian University of Athens), and Stasinou Konstantopoulos (NCSR “Demokritos”)</i>
An Enhanced NSGA-II for Multiobjective UAV Path Planning in Urban Environments .106.....	
	<i>Soheila Ghambari (Universite de Haute-Alsace, France), Mahmoud Golabi (Universite de Haute-Alsace, France), Julien Lepagnet (Universite de Haute-Alsace, France), Mathieu Brévilliers (Universite de Haute-Alsace, France), Laetitia Jourdan (Universite de Lille, France), and Lhassane Idoumghar (Universite de Haute-Alsace, France)</i>
GBEx - Towards Graph-Based Explanations .112.....	
	<i>Paweł Mróz (IBM Krakow Software Lab, Cracow, Poland; AGH University of Science and Technology), Alexandre Quemy (IBM Krakow Software Lab, Cracow, Poland; Poznań University of Technology, Poznań, Poland), Mateusz Ślęzyński (AGH University of Science and Technology), Krzysztof Kluza (AGH University of Science and Technology), and Paweł Jemiolo (AGH University of Science and Technology)</i>
A Novel Parsing-Based Approach for Verification of Hierarchical Plans .118.....	
	<i>Roman Barták (Charles University, Czech Republic), Simona Ondrčková (Charles University, Czech Republic), Adrien Maillard (Jet Propulsion Laboratory, USA), Gregor Behnke (University of Freiburg, Germany), and Pascal Bercher (The Australian National University, Australia)</i>

Session 1.4: SAT/CSP Strategies

A Hybrid Dynamic Arity Search Heuristic for Constraint Programming .126.....	
	<i>Wei Xia (N.A) and Roland H. C. Yap (National University of Singapore)</i>
UWrMaxSat: Efficient Solver for MaxSAT and Pseudo-Boolean Problems .132.....	
	<i>Marek Piotrów (Institute of Computer Science, University of Wrocław, Poland)</i>
Towards Bridging the Gap between SAT and Max-SAT Refutations .137.....	
	<i>Mathieu Py (Aix-Marseille Université), Mohamed Sami Cherif (Aix-Marseille Université), and Djamel Habet (Aix-Marseille Université)</i>
Abacus: A New Hybrid Encoding for SAT Problems .145.....	
	<i>Claudia Vasconcellos-Gaete (Université d’Angers, France), Vincent Barichard (Université d’Angers, France), and Frédéric Lardeux (Université d’Angers, France)</i>
The Community Structure of Constraint Satisfaction Problems and Its Correlation with Search Time .153.....	
	<i>Michel Medema (University of Groningen, The Netherlands) and Alexander Lazovik (University of Groningen, The Netherlands)</i>
Multiple Decision Making in Conflict-Driven Clause Learning .161.....	
	<i>Muhammad Osama (Eindhoven University of Technology, The Netherlands) and Anton Wijs (Eindhoven University of Technology, The Netherlands)</i>
At-Most-One Constraints in Efficient Representations of Mutex Networks .170.....	
	<i>Pavel Surynek (Czech Technical University in Prague, Czechia)</i>

Session 1.5: Recommender Systems II

- Exploiting Sequential Mobility for Recommending new Locations on Geo-Tagged Social Media .178
Carmela Comito (CNR-ICAR)
- Heterogeneous Information Diffusion Model for Social Recommendation .184.....
Yuan Li (School of Mathematical Sciences, Peking University, Beijing, China) and Kedian Mu (School of Mathematical Sciences, Peking University, Beijing, China)
- Context-Aware Adaptive Recommendation System for Personal Well-Being Services .192.....
Roghayeh Mojarad (Univ Paris Est Creteil, France), Ferhat Attal (Univ Paris Est Creteil, LISSI, France), Abdelghani Chibani (Univ Paris Est Creteil, LISSI, France), and Yacine Amirat (Univ Paris Est Creteil, LISSI, France)
- FLY: Venue Recommendation Using Limited Context .200.....
Sailaja Rajanala (Indian Institute of Technology Hyderabad) and Manish Singh (Indian Institute of Technology Hyderabad)
- Improving Dynamic Recommendation Using Network Embedding for Context Inference .205.....
Thilina Thanthriwatta (National University of Singapore, Singapore) and David S. Rosenblum (National University of Singapore, Singapore)
- Meta-Path Embedding Based Recommendation over Heterogeneous Information Network .211....
Chenfei Zhao (Peking University) and Kedian Mu (Peking University)

Session 1.6: AI Learning I

- CSASN: Learning Complementary Spatial-Aware Siamese Networks for Visual Object Tracking .216
Ying She (Sun Yat-sen University, China) and Yang Yi (Sun Yat-sen University, China)
- Fair Detection of Poisoning Attacks in Federated Learning .224.....
Ashneet Khandpur Singh (Universitat Rovira i Virgili), Alberto Blanco-Justicia (Universitat Rovira i Virgili), Josep Domingo-Ferrer (Universitat Rovira i Virgili), David Sánchez (Universitat Rovira i Virgili), and David Rebollo-Monedero (Universitat Rovira i Virgili)
- Learning Latent Semantic Attributes for Zero-Shot Object Detection .230.....
Kang Wang (Fudan University, Shanghai, China), Lu Zhang (Fudan University, Shanghai, China), Yifan Tan (Fudan University, Shanghai, China), Jiajia Zhao (Beijing Electro-Mechanical Engineer Institute, China), and Shuigeng Zhou (Fudan University, Shanghai, China)
- Why Layer-Wise Learning is Hard to Scale-up and a Possible Solution via Accelerated Downsampling .238.....
Wenchi Ma (University of Kansas, USA), Miao Yu (University of Kansas, USA), Kaidong Li (University of Kansas, USA), and Guanghui Wang (University of Kansas, USA; Ryerson University, Canada)
- A New Learning Algorithm with General Loss for Neural Networks with Random Weights .244...
Yunfei Yao (Tianjin University, China), Junfan Li (Tianjin University, China), and Shizhong Liao (Tianjin University, China)

An Error-Correcting Output Code Framework for Lifelong Learning without a Teacher .249.....	
	<i>Shen-Shyang Ho (Rowan University), Mathew Marchiano (Rowan University), Scott Zockoll (Rowan University), and Hieu Nguyen (Rowan University)</i>
Lifelong Learning without a Task Oracle .255.....	
	<i>Amanda Rios (University of Southern California) and Laurent Itti (University of Southern California)</i>

Session 1.7: AI Solvers

On the Refinement of Conflict History Search through Multi-armed Bandit .264.....	
	<i>Mohamed Sami Cherif (Aix-Marseille Univ, Université de Toulon, CNRS, LIS), Djamel Habet (Aix-Marseille Univ, Université de Toulon, CNRS, LIS), and Cyril Terrioux (Aix-Marseille Univ, Université de Toulon, CNRS, LIS)</i>
Parallel Planning Using a Lazy Clause Generation Solver .272.....	
	<i>Behrouz Babaki (HEC Montréal, Canada) and Gilles Pesant (Polytechnique Montréal, Canada)</i>
Solving Open Shop Scheduling Problem via Graph Attention Neural Network .277.....	
	<i>Jing Li (Beijing Jiaotong University, China), Xingye Dong (Beijing Jiaotong University, China), Kai Zhang (Systems Engineering Research Institute, China), and Sheng Han (Beijing Jiaotong University, China)</i>
CNF Encodings for the Min-Max Multiple Traveling Salesmen Problem .285.....	
	<i>Aolong Zha (National Institute of Advanced Industrial Science and Technology, Japan), Rongxuan Gao (National Institute of Advanced Industrial Science and Technology, Japan), Qiong Chang (National Institute of Advanced Industrial Science and Technology, Japan), Miyuki Koshimura (Kyushu University, Japan), and Itsuki Noda (National Institute of Advanced Industrial Science and Technology, Japan)</i>
Solving the Steiner Tree Problem with few Terminals .293.....	
	<i>Johannes K. Fichte (TU Dresden), Markus Hecher (TU Wien), and André Schidler (TU Wien)</i>
Combined Model for Sensory-Based and Feedback-Based Task Switching: Solving Hierarchical Reinforcement Learning Problems Statically and Dynamically with Transfer Learning .301.....	
	<i>Nibraas Khan (Middle Tennessee State University, USA) and Joshua Phillips (Middle Tennessee State University, USA)</i>
Efficient CUR Matrix Decomposition via Relative-Error Double-Sided Least Squares Solving .309...	
	<i>Qi Luan (The City University of New York, Graduate Center) and Liang Zhao (The City University of New York, Graduate Center)</i>

Session 1.8: Intelligent Prediction Tools

FlowGAN: A Conditional Generative Adversarial Network for Flow Prediction in Various Conditions .315.....	315
<i>Donglin Chen (College of Computer, National University of Defense Technology, China), Xiang Gao (College of Computer, National University of Defense Technology, China State Key Laboratory of High Performance Computing, National University of Defense Technology, China), Chuanfu Xu (College of Computer, National University of Defense Technology, China State Key Laboratory of High Performance Computing, National University of Defense Technology, China), Shizhao Chen (College of Computer, National University of Defense Technology, China), Jianbin Fang (College of Computer, National University of Defense Technology, China), Zhenghua Wang (College of Computer, National University of Defense Technology, China), and Zheng Wang (University of Leeds, United Kingdom)</i>	
Open-World Relationship Prediction .323.....	323
<i>JingChao Wang (School of Computer Engineering and Science, Shanghai University, China), Xinzhi Wang (School of Computer Engineering and Science, Shanghai University, China), Xiangfeng Luo (School of Computer Engineering and Science, Shanghai University, China), and Wei Qin (School of Computer Engineering and Science, Shanghai University, China)</i>	
Prediction of Crime Location in a Brazilian City Using Regression Techniques .331.....	331
<i>Andrio Rodrigo Corrêa da Silva (Federal University of Ceará, Brazil), Íalis Cavalcante de Paula Júnior (Federal University of Ceará, Brazil), Ticiane Linares Coelho da Silva (Federal University of Ceará, Brazil), José Antônio Fernandes de Macêdo (Federal University of Ceará, Brazil), and Wellington Clay Porcino Silva (National Department of Public Security, Brazil)</i>	
DTIGCCN: Prediction of Drug-Target Interactions Based on GCN and CNN .337.....	337
<i>Kanghao Shao (Xiamen University, China), Zhongnan Zhang (Xiamen University, China), Song He (Beijing Institute of Radiation Medicine, China), and Xiaochen Bo (Beijing Institute of Radiation Medicine, China)</i>	
Multi-document Cohesion Network Analysis: Automated Prediction of Inferencing across Multiple Documents .343.....	343
<i>Bogdan Nicula (University Politehnica of Bucharest, Romania), Cecile A. Perret (Arizona State University, USA), Mihai Dascalu (University Politehnica of Bucharest, Romania), and Danielle S. McNamara (Arizona State University, USA)</i>	
Who Speaks Next? Turn Change and Next Speaker Prediction in Multimodal Multiparty Interaction .349.....	349
<i>Usman Malik (INSA Rouen, Normandie University, France), Julien Saunier (INSA Rouen, Normandie University, France), Kotaro Funakoshi (Tokyo Institute of Technology, Japan), and Alexandre Pauchet (INSA Rouen, Normandie University, France)</i>	
A Two-Stream Graph Convolutional Neural Network for Dynamic Traffic Flow Forecasting .355...	355
<i>Zhaoyang Li (Wuhan University of Technology, China), Lin Li (Wuhan University of Technology, China), Yuquan Peng (School of Computer Science and Technology, Wuhan University of Technology, Wuhan, China), and Xiaohui Tao (University of Southern Queensland, Australia)</i>	

Session 1.9: AI Learning II

- Kimia-5MAG – A Dataset for Learning the Magnification in Histopathology Images .363.....
Manit Zaveri (University of Waterloo, Canada), Hamid Tizhoosh (University of Waterloo, Canada), Sobhan Hemati (University of Waterloo, Canada), Sultaan Shah (Huron Digital Pathology, St. Jacobs, ON, Canada), Savvas Damskinos (Huron Digital Pathology, St. Jacobs, ON, Canada), and H.R. Tizhoosh (Kimia Lab, University of Waterloo, Canada)
- Learning Preferences in Prioritized Qualitative Choice Logic .368.....
Karima Sedki (LIMICS - University Sorbonne Paris Nord), Jean Baptiste Lamy (Université Sorbonne Paris Nord, LIMICS, INSERM, France), and Rosy Tsopra (INSERM, Université de Paris, Centre de Recherche des Cordeliers, France)
- Detecting Anomalies from Streaming Time Series Using Matrix Profile and Shapelets Learning.376
Mohammad Alshaer (CEA, LIST, Data Analysis and Systems Intelligence Laboratory Paris, France), Sandra Garcia-Rodriguez (CEA, LIST, Data Analysis and Systems Intelligence Laboratory Paris, France), and Cedric Gouy-Pailler (CEA, LIST, Data Analysis and Systems Intelligence Laboratory Paris, France)
- Cross-Lingual Transfer Learning for Complex Word Identification .384.....
George-Eduard Zaharia (University Politehnica of Bucharest, Romania), Dumitru-Clementin Cercel (University Politehnica of Bucharest, Romania), and Mihai Dascalu (University Politehnica of Bucharest, Romania)
- WD3: Taming the Estimation Bias in Deep Reinforcement Learning .391.....
Qiang He (Institute of Automation, Chinese Academy of Sciences; School of Artificial Intelligence, University of Chinese Academy of Sciences) and Xinwen Hou (Institute of Automation, Chinese Academy of Sciences)
- Flexible and Adaptive Fairness-Aware Learning in Non-Stationary Data Streams .399.....
Wenbin Zhang (University of Maryland, Baltimore County, USA), Mingli Zhang (McGill University, Canada), Ji Zhang (University of Southern Queensland, Australia), Zhen Liu (Guangdong Pharmaceutical University, China), Zhiyuan Chen (University of Maryland, Baltimore County, USA), Jianwu Wang (University of Maryland, Baltimore County, USA), Edward Raff (Booz Allen Hamilton, USA), and Enza Messina (University of Milano-Bicocca, Italy)

Session 2.1: Document Processing

- Evaluating Methods for the Parsing and Understanding of Mathematical Formulas in Technical Documents .407.....
Elisavet Elli Kostalia (Wright State University, USA), Euripides G.M. Petrakis (Technical University of Crete, Greece), and Nikolaos Bourbakis (Wright State University, USA)

Deep Features Representation of Word Image for Keyword Spotting in Historical Mongolian Document Images .413.....	
	<i>Hongxi Wei (Inner Mongolia University, China), Jing Zhang (Inner Mongolia University, China), and Hui Zhang (Inner Mongolia University, China)</i>
Integrating Text Embedding with Traditional NLP Features for Clinical Relation Extraction .418....	
	<i>Fatema Hasan (University of Maryland, Baltimore County, Baltimore, USA), Arpita Roy (University of Maryland, Baltimore County, Baltimore, USA), and Shimei Pan (University of Maryland, Baltimore County, Baltimore, USA)</i>
Chinese Short Text Entity Linking Based on Semantic Similarity and Entity Correlation .426.....	
	<i>Yan Zhao (Southeast University), Yun Wang (Southeast University), and Na Yang (Southeast University)</i>
Joint Embedding Based Text-to-Image Synthesis .432.....	
	<i>Menglan Wang (Beijing Institute of Technology, China), Yue Yu (Beijing Institute of Technology, China), and Benyuan Li (Beijing Institute of Technology, China)</i>
Text Editing for Augmented Distilled BERT .437.....	
	<i>Shuyong Wei (Heilongjiang University), Defa Yu (Heilongjiang University), and Chengguo Lv (Heilongjiang University)</i>
Automatic Deep Understanding of Tables in Technical Documents .443.....	
	<i>Michail S. Alexiou (Wright State University) and Nikolaos Bourbakis (Wright State University)</i>

Session 2.2: AI in Behavior and Social Analysis

Studying Adversarial Attacks on Behavioral Cloning Dynamics .452.....	
	<i>Garrett Hall (University of Texas at San Antonio), Arun Das (University of Texas at San Antonio), John Quarles (University of Texas at San Antonio), and Paul Rad (University of Texas at San Antonio)</i>
A Context-Aware Hybrid Framework for Human Behavior Analysis .460.....	
	<i>Roghayeh Mojarad (Univ Paris Est Creteil, LISSI, France), Ferhat Attal (Univ Paris Est Creteil, LISSI, France), Abdelghani Chibani (Univ Paris Est Creteil, LISSI, France), and Yacine Amirat (Univ Paris Est Creteil, LISSI, France)</i>
Probabilistic Decision Modeling in Social Networks .466.....	
	<i>Tangqing Li (National University of Singapore, Singapore), Wynne Hsu (National University of Singapore, Singapore), Mong Li Lee (National University of Singapore, Singapore), and Hai Leong Chieu (DSO National Laboratories, Singapore)</i>
Discovering the Lonely among the Students with Weighted Graph Neural Networks .474.....	
	<i>Qing Zhou (Chongqing University, China), Jiang Li (Chongqing University, China), Yinchun Tang (Chongqing University, China), and Huan Wang (Chongqing University, China)</i>

SoMem: A Self-Optimizing Memory Network for Distributed Person Re-Identification .482.....	
	<i>Jianming Lv (School of Computer Science and Engineering South China University of Technology), Chaojie Hu (School of Computer Science and Engineering South China University of Technology), Yipeng Zhou (Macquarie University), and Xiaojun Chen (Institute of Information Engineering)</i>
DuTriNet: Dual-Stream Triplet Siamese Network for Self-Supervised Action Recognition by Modeling Temporal Correlations .488.....	
	<i>Himanshu Buckchash (Indian Institute of Technology Roorkee, India) and Balasubramanian Raman (Indian Institute of Technology Roorkee, India)</i>
EmoEM: Emotional Expression in a Multi-turn Dialogue Model .496.....	
	<i>Ao Zhang (Tianjin University; College of Intelligence and Computing), Shaojuan Wu (Tianjin University; College of Intelligence and Computing), Xiaowang Zhang (Tianjin University; College of Intelligence and Computing), Shizhan Chen (Tianjin University; College of Intelligence and Computing), Yuchun Shu (Tianjin University; College of Intelligence and Computing), and Zhiyong Feng (Tianjin University; College of Intelligence and Computing)</i>

Session 2.3: Deep Learning Tools

Time-Dynamic Estimates of the Reliability of Deep Semantic Segmentation Networks .502.....	
	<i>Kira Maag (University of Wuppertal, Germany), Matthias Rottmann (University of Wuppertal, Germany), and Hanno Gottschalk (University of Wuppertal, Germany)</i>
Sketch2Relief: Generating Bas-Relief from Sketches with Deep Generative Networks .510.....	
	<i>Shizhe Zhou (Hunan University, China) and Zeyu Liu (Hunan University, China)</i>
Preferential Experience Collection with Frequency Based Intrinsic Reward for Deep Reinforcement Learning .518.....	
	<i>Hongyin Zhang (Westlake University, China), Qiangxing Tian (Zhejiang University, Westlake University, China), Donglin Wang (Westlake University, China), and Kaichen Wei (Cornell University, United States)</i>
Deep Learning Ensembles for Hate Speech Detection .526.....	
	<i>Safa Alsafari (University of Regina, Canada), Samira Sadaoui (University of Regina, Canada), and Malek Mouhoub (University of Regina, Canada)</i>
Multi-robot Collision Avoidance with Map-Based Deep Reinforcement Learning .532.....	
	<i>Shunyi Yao (University of Science and Technology of China, China), Guangda Chen (University of Science and Technology of China, China), Lifan Pan (University of Science and Technology of China, China), Jun Ma (University of Science and Technology of China, China), Jianmin Ji (University of Science and Technology of China, China), and Xiaoping Chen (University of Science and Technology of China, China)</i>

- Image Classification Based on Deep Convolutional Network and Gaussian Aggregate Encoding .540
Fengge Wang (Xidian University, China), Xiaolin Tian (Xidian University, China), Yang Zhang (Xidian University, China), Nan Jia (Xidian University, China), and Tiantian Lu (Xidian University, China)
- PHC-GAN: Physical Constraint Generative Adversarial Network for Single Image Dehazing .545..
Gang Long (Xidian University), Wen Lu (Xidian University), Lin Zha (Qingdao Hi-image Technologies Co., Ltd), and Hongyi Zhang (Xidian University)

Session 2.4: Evolutionary Computing

- Decision Support for Combining Security Mechanisms Using Exploratory Evolutionary Testing .550
Jonathan Hudson (University of Calgary, Canada) and Jörg Denzinger (University of Calgary, Canada)
- Evolutionary Neural Network and Visualization for CNN-Based Pulmonary Textures Classification .558.....
Guoliang Gong (Dalian University of Technology, China), Lin Lin (Dalian University of Technology, China), Zhaoyang Wu (Dalian University of Technology, China), Rui Xu (Dalian University of Technology, China), Shoji Kido (Graduate School of Medicine Osaka University, Japan), and Yan Hu (Dalian University of Technology, China)
- Evolution of Deterministic Hill-Climbers .564.....
Vincent Hénaux (LERIA, Université d'Angers), Adrien Goëffon (LERIA, Université d'Angers), and Frédéric Saubion (LERIA, Université d'Angers)
- Bayesian Network Structure Learning Using Case-Injected Genetic Algorithms .572.....
Sonu Jose (University of Nevada, Reno), Sushil J. Louis (University of Nevada, Reno), Sergiu M. Dascalu (University of Nevada, Reno), and Siming Liu (Missouri State University)
- Inferring Temporal Parametric L-Systems Using Cartesian Genetic Programming .580.....
Jason Bernard (McMaster University) and Ian McQuillan (University of Saskatchewan)
- Adjustment of an Epidemiological Cellular Automata-Based Model Using Genetic Algorithm .589..
Larissa M. Fraga (Federal University of Uberlandia, Brazil), Gina M.B. de Oliveira (Federal University of Uberlandia, Brazil), and Luiz G. A. Martins (Federal University of Uberlandia, Brazil)
- Swarm Based Ensembles for Time Series Residual Forecasting .595.....
Rafael Bergamo B. de Holanda (Universidade de Pernambuco) and João Fausto Lorenzato de Oliveira (Universidade de Pernambuco)

Session 2.5: Neural Networks Tools

- LAfuzz: Neural Network for Efficient Fuzzing .603.....
Xiajing Wang (Beijing Institute of Technology, China), Changzhen Hu (Beijing Institute of Technology, China), Rui Ma (Beijing Institute of Technology, China), Binbin Li (Beijing Institute of Technology, China), and Xuefei Wang (Beijing Institute of Technology, China)

Extreme Sparse X-ray Computed Laminography via Convolutional Neural Networks .612	
	<i>Luis Filipe Alves Pereira (Universidade Federal do Agreste de Pernambuco, Brazil), Jan De Beenhouwer (University of Antwerp, Belgium), Johann Kastner (University of Applied Sciences Upper Austria, Austria), and Jan Sijbers (University of Antwerp, Belgium)</i>
Resource Allocation for Infrastructure Resilience Using Artificial Neural Networks .617.....	
	<i>Siavash Alemzadeh (University of Washington), Hesam Talebiyan (Rice University), Shahriar Talebi (University of Washington), Leonardo Dueñas-Osorio (Rice University), and Mehran Mesbahi (University of Washington)</i>
Neural Grammatical Error Correction for Romanian .625.....	
	<i>Teodor-Mihai Cotet (University Politehnica of Bucharest, Romania), Stefan Ruseti (University Politehnica of Bucharest, Romania), and Mihai Dascalu (University Politehnica of Bucharest, Romania)</i>
Data Augmentation for Insider Threat Detection with GAN .632.....	
	<i>Fangfang Yuan (Institute of Information Engineering, Chinese Academy of Sciences, China), Yanmin Shang (Institute of Information Engineering, Chinese Academy of Sciences, China), Yanbing Liu (Institute of Information Engineering, Chinese Academy of Sciences, China), Yanan Cao (Institute of Information Engineering, Chinese Academy of Sciences, China), and Jianlong Tan (Institute of Information Engineering, Chinese Academy of Sciences, China)</i>
Methods for Prediction Optimization of the Constrained State-Preserved Extreme Learning Machine .639.....	
	<i>Garrett Goodman (Wright State University), Quinn Hirt (Wright State University), Cogan Shimizu (Kansas State University), Iosif Papadakis Ktistakis (ASML), Miltiadis Alamaniotis (University of Texas at San Antonio), and Nikolaos Bourbakis (CART Center, Wright State University)</i>
Dialog Driven Face Construction Using GANs .647.....	
	<i>Malaika Vijay (PES University), Meghana Meghana (PES University), Nishant Aklecha (PES University), and Ramamoorthy Srinath (PES University)</i>

Session 2.6: Neural Learning Tools

A Kernel Perspective for the Decision Boundary of Deep Neural Networks .653.....	
	<i>Yifan Zhang (Tianjin University, China) and Shizhong Liao (Tianjin University, China)</i>

OpenVINO Deep Learning Workbench: A Platform for Model Optimization, Analysis and Deployment .661.....	661
<i>Alexander Demidovskij (Intel Corporation, Higher School of Economics, Russia), Artyom Tugaryov (Intel Corporation, Russia), Alexander Suvorov (Lobachevsky State University of Nizhny Novgorod, Russia), Yaroslav Tarkan (Intel Corporation, Russia), Marat Fatekhov (Intel Corporation, Russia), Igor Salnikov (Adyghe State University, Russia), Andrey Kashchikhin (Intel Corporation, Russia), Vladimir Golubenko (Intel Corporation, Russia), Galina Dedyukhina (Nizhny Novgorod State Agricultural Academy, Russia), Alina Alborova (Intel Corporation, Russia), Ryan Palmer (Intel Corporation, United States), Mikhail Fedorov (Intel Corporation, Russia), and Yury Gorbachev (Intel Corporation, Russia)</i>	
A State Representation Dueling Network for Deep Reinforcement Learning .669.....	669
<i>Haomin Qiu (Software Institute, Nanjing University, China) and Feng Liu (Nanjing University, China)</i>	
SDHF: Spotting DeepFakes with Hierarchical Features .675.....	675
<i>Tao Liang (Institute of Information Engineering, Chinese Academy of Sciences; School of Cyber Security, University of Chinese Academy of Sciences), Peng Chen (Institute of Information Engineering, Chinese Academy of Sciences; School of Cyber Security, University of Chinese Academy of Sciences), Guangzhi Zhou (Institute of Information Engineering, Chinese Academy of Sciences; School of Cyber Security, University of Chinese Academy of Sciences), Hongchao Gao (Institute of Information Engineering, Chinese Academy of Sciences), Jin Liu (Institute of Information Engineering, Chinese Academy of Sciences; School of Cyber Security, University of Chinese Academy of Sciences), Zhaoxing Li (Institute of Information Engineering, Chinese Academy of Sciences), and Jiao Dai (Institute of Information Engineering, Chinese Academy of Sciences)</i>	
Deep Denoising Sparse Coding .681.....	681
<i>Yijie Wang (School of Software Engineering, Xi'an Jiaotong University, China) and Bo Yang (School of Computer Science, Xi'an Polytechnic University, China)</i>	
Adversarial Attack against LSTM-Based DDoS Intrusion Detection System .686.....	686
<i>Weiqing Huang (Institute of Information Engineering, Chinese Academy of Sciences), Xiao Peng (Institute of Information Engineering, Chinese Academy of Sciences; School of Cyber Security, University of Chinese Academy of Sciences), Zhixin Shi (Institute of Information Engineering, Chinese Academy of Sciences), and Yuru Ma (Institute of Information Engineering, Chinese Academy of Sciences)</i>	
Realistic Style-Transfer Generative Adversarial Network with a Weight-Sharing Strategy .694.....	694
<i>Shixiong Zhu (Shanghai University, China), Xiangfeng Luo (Shanghai University, China), Liyan Ma (Shanghai University, China), Shaorong Xie (Shanghai University, China), and Han Zhang (Shanghai University, China)</i>	

Session 2.7: Applied AI Tools

- Hierarchical Joint Control for Urban Mixed-Autonomy Traffic Optimization .700.....
*Jia Wu (University of Electronic Science and Technology of China) and
ZiYan Li (University of Electronic Science and Technology of China)*
- Colorectal Polyp Detection in Real-World Scenario: Design and Experiment Study .706.....
*Xinzi Sun (University of Massachusetts Lowell, USA), Dechun Wang
(University of Massachusetts Lowell, USA), Chenxi Zhang (University of
Massachusetts Lowell, USA), Pengfei Zhang (University of Massachusetts
Lowell, USA), Zinan Xiong (University of Massachusetts Lowell, USA),
Yu Cao (University of Massachusetts Lowell, USA), Benyuan Liu
(University of Massachusetts Lowell, USA), Xiaowei Liu (Xiangya
Hospital of Central South University, China), and Shuijiao Chen
(Xiangya Hospital of Central South University, China)*
- ST-MGAT: Spatial-Temporal Multi-head Graph Attention Networks for Traffic Forecasting .714....
*Kelang Tian (University of Science and Technology of China; Shenzhen
Institutes of Advanced Technology, Chinese Academy of Sciences),
Jingjie Guo (Shenzhen Institutes of Advanced Technology, Chinese
Academy of Sciences), Kejiang Ye (Shenzhen Institutes of Advanced
Technology, Chinese Academy of Sciences), and Cheng-Zhong Xu (Shenzhen
Institutes of Advanced Technology, Chinese Academy of Sciences)*
- WiFi-Based Human Activity Recognition Using Raspberry Pi .722.....
*Glenn Forbes (Robert Gordon University), Stewart Massie (Robert Gordon
University), and Susan Craw (Robert Gordon University)*
- Masked Face Recognition with Identification Association .731.....
*Qi Hong (School of Computer Science, Wuhan University, China),
Zhongyuan Wang (School of Computer Science, Wuhan University, China),
Zheng He (School of Computer Science, Wuhan University, China), Nanxi
Wang (School of Computer Science, Wuhan University, China), Xin Tian
(School of Computer Science, Wuhan University, China), and Tao Lu
(School of Computer Science and Engineering, Wuhan Institute of
Technology, China)*
- NotMle: Community Detection in an Inference Way .736.....
*Qiqi Zhao (College of Computer Science and Engineering, Northwest
Normal University, China), Huifang Ma (College of Computer Science and
Engineering, Northwest Normal University, China), Xiaohong Li (College
of Computer Science and Engineering, Northwest Normal University,
China), and Zhixin Li (Guangxi Key Lab of Multi-source Information
Mining and Security Guangxi Normal University, China)*
- A Bayesian Probabilistic Argumentation Framework for Learning from Online Reviews .742.....
*Kawsar Noor (University College London) and Anthony Hunter (University
College London)*

Session 2.8: Image Analysis Tools

- Enhanced Soft Attention Mechanism with an Inception-Like Module for Image Captioning .748....
Zheng Lian (Institute of Software Chinese Academy of Sciences, China), Haichang Li (Institute of Software Chinese Academy of Sciences, China), Rui Wang (Institute of Software Chinese Academy of Sciences, China), and Xiaohui Hu (Institute of Software Chinese Academy of Sciences, China)
- AFT-Net: Active Fusion-Transduction for Multi-stream Medical Image Segmentation .753.....
Yucheng Shu (Chongqing University of Posts and Telecommunications, China), Jing Zhang (Chongqing University of Posts and Telecommunications, China), Bin Xiao (Chongqing University of Posts and Telecommunications, China), Xiao Luan (Chongqing University of Posts and Telecommunications, China), Linghui Liu (Chongqing University of Posts and Telecommunications, China), and Chunlong Hu (Jiangsu University of Science and Technology, China)
- Learning to Conceal: A Method for Preserving Privacy and Avoiding Prejudice in Images .761.....
Avigail Stekel (Ariel University), Moshe Hanukoglu (Ariel University), Aviv Roovshitz (Ariel University), Nissan Goldberg (Ariel University), and Amos Azaria (Ariel University)
- Lightweight Progressive Residual Clique Network for Image Super-Resolution .767.....
Baojin Huang (Wuhan University, China), Zheng He (Wuhan University, China), Zhongyuan Wang (Wuhan University, China), Kui Jiang (Wuhan University, China), and Guangcheng Wang (Wuhan University, China)
- I2S²: Image-to-Scene Sketch Translation Using Conditional Input and Adversarial Networks .773
Daniel McGonigle (University of Southern Mississippi), Tianyang Wang (Austin Peay State University), Juefei Yuan (University of Southern Mississippi), Kai He (University of Southern Mississippi), and Bo Li (University of Southern Mississippi)
- To be an Artist: Automatic Generation on Food Image Aesthetic Captioning .779.....
Xiaohan Zou (Tongji University), Cheng Lin (Tongji University), Yinjia Zhang (Tongji University), and Qinpei Zhao (Tongji University)
- Image Segmentation of Corrosion Damages in Industrial Inspections .787.....
Simen Keiland Fondevik (Norwegian University of Science and Technology, Norway), Annette Stahl (Norwegian University of Science and Technology, Norway), Aksel Andreas Transeth (SINTEF Digital, Norway), and Ole Øystein Knudsen (SINTEF Digital, Norway)

Session 2.9: Unsupervised Learning Tools

- A Generative Time Series Clustering Framework Based on an Ensemble Mixture of HMMs .793.....
Mohamad Kanaan (Sistema-Strategy), Khalid Benabdeslem (Lyon 1 University - LIRIS), and Hamamache Kheddouci (Lyon 1 University - LIRIS)
- WMPEClus: Clustering via Weighted Meta-Path Embedding for Heterogeneous Information Networks .799.....
Yongjun Zhang (Renmin University of China), Xiaoping Yang (Renmin University of China), Liang Wang (Renmin University of China), and Kede Li (Renmin University of China)

An Optimized Graph-Based Clustering for Multi-database Mining .807.....	807
<i>Salim Miloudi (School of Computer Science, Wuhan University), Yulin Wang (School of Computer Science, Wuhan University), and Wenjia Ding (School of Computer Science, Wuhan University)</i>	
Confronting Sparseness and High Dimensionality in Short Text Clustering via Feature Vector Projections .813.....	813
<i>Leonidas Akritidis (International Hellenic University), Miltiadis Alamaniotis (University of Texas at San Antonio), Athanasios Fevgas (University of Thessaly), and Panayiotis Bozanis (International Hellenic University)</i>	
An Unsupervised Approach for Precise Context Identification from Unstructured Text Documents .821.....	821
<i>Maha Mallek (Aix Marseille University - LARIA, ENSI, University of Manouba), Sébastien Fournier (Aix Marseille University), Ramzi Guetari (LIMITIC laboratory, ISI University of Tunis El Manar), Bernard Espinasse (Aix Marseille University), and Wided Lejouad Chaari (LARIA, ENSI University of Manouba)</i>	
An Internal Cluster Validity Index Using a Distance-Based Separability Measure .827.....	827
<i>Shuyue Guan (The George Washington University, USA) and Murray Loew (The George Washington University, USA)</i>	
Fiction Sentence Expansion and Enhancement via Focused Objective and Novelty Curve Sampling .835.....	835
<i>Yuri Safovich (Data Science Center, Ariel University, Israel) and Amos Azaria (Ariel University, Israel)</i>	

Session 3.1: Applications of AI

Similarity Calculation Algorithm for Intelligent Electronic Customer Service Problems .844.....	844
<i>Yunfei Yin (Chongqing University), Chengen Zheng (Chongqing University), and Qiyu Peng (Chongqing University)</i>	
A Multi-camera Tracker for Monitoring Pedestrians in Enclosed Environments .852.....	852
<i>Xusheng Wu (University of Melbourne, Australia), Stephan Winter (University of Melbourne, Australia), and Kouros Khoshelham (University of Melbourne, Australia)</i>	
A Game-Theoretical Approach to Analyze Film Release Time .859.....	859
<i>Hua Liu (Shanghai University of Finance and Economics, China), Mengjing Chen (Tsinghua University, China), Xiaolong Wang (Jiuquan Satellite Launch Center), and Zihe Wang (Shanghai University of Finance and Economics)</i>	
Building Trusted Startup Teams from LinkedIn Attributes: A Higher Order Probabilistic Analysis .867.....	867
<i>Georgios Drakopoulos (Ionian University, Greece), Eleanna Kafeza (Zayed University, UAE), Phivos Mylonas (Ionian University, Greece), and Haseena al Katheeri (Zayed University, UAE)</i>	
FollowAKOInvestor: Using Machine Learning to Hear Voices from All Kinds of Investors .875.....	875
<i>Jun Chang (Shanghai University of Finance and Economics, China), Yujie Ding (Shanghai University of Finance and Economics, China), and Wenting Tu (Shanghai University of Finance and Economics, China)</i>	

Towards Loss Balance and Consistent Model in Self-Supervised Monocular Depth Estimation .883
Chengyuan Li (Peking University Shenzhen Graduate school, China), Lanqing Zhang (Peking University Shenzhen Graduate School, China), Xing Cai (Peking University Shenzhen Graduate School, China), Keyao Li (Peking University Shenzhen Graduate School, China), Ge Li (Peking University Shenzhen Graduate School, China), and Thomas H Li (Advanced Institute of Information Technology, Peking University, China)

Real-Time Polyp Detection for Colonoscopy Video on CPU .890.....
Xuetong Li (Beihang University, China), Rui Liu (Beihang University, China), Mingzhen Li (Beihang University, China), Yi Liu (Beihang University, China), Lianghui Jiang (Qingdao Municipal Hospital(East) Affiliated to Qingdao University, China), and Changhong Zhou (Qingdao Municipal Hospital(East) Affiliated to Qingdao University, China)

Session 3.2: Tools for Smart Cities

An Efficient Detector for the Key Components of the Power Transmission Lines .898.....
Xiangcheng Liu (South China University of Technology), Qingzhou Dong (South China University of Technology), Youjun Xiang (South China University of Technology), and Yuli Fu (South China University of Technology)

A Decentralized Strategy for Cooperative Driving among Autonomous Cars at Lane Closures .905
Hani Mohammed (Indian Institute of Information Technology Sri City, India), Venkat Himavanth Reddy (Indian Institute of Information Technology Sri City, India), and Subu Kandaswamy (Indian Institute of Information Technology Sri City, India)

Monitoring of Discrete Electrical Signals from Welding Processes Using Data Mining and IIoT Approaches .911.....
Selvine Goerge Mathias (Technische Hochschule Ingolstadt, Germany), Sebastian Schmied (Technische Hochschule Ingolstadt, Germany), and Daniel Grossmann (Technische Hochschule Ingolstadt, Germany)

Fuzzy Classifiers for Chemical Compound Recognition from SAW Sensors Signals .917.....
Edwin Friedmann (CEA LIST, France), Jean-Philippe Poli (CEA LIST, France), Olivier Hotel (CEA LIST, France), and Christine Mer-Calfati (CEA LIST, France)

VC-GAN: Classifying Vessel Types by Maritime Trajectories Using Generative Adversarial Networks .923.....
Dan Li (Institute of Data Science, University of Singapore), Hang Liu (Institute of Data Science, National University of Singapore, Singapore), and See-Kiong Ng (School of Computing, Institute of Data Science, National University of Singapore, Singapore)

Data Augmentation for Heart Arrhythmia Classification .929.....
Mercedeh J. Jafarkhanloo Rezaei (Queen Mary University of London, United Kingdom), John R. Woodward (Queen Mary University of London, United Kingdom), Julia Ramirez (Queen Mary University of London, United Kingdom), and Patricia Munroe (Queen Mary University of London, United Kingdom)

Using Commonsense Knowledge and Text Mining for Implicit Requirements Localization .935.....
Emebo Onyeka (Covenant University), Aparna S. Varde (Montclair State University), Vaibhav Anu (Montclair State University), Niket Tandon (Allen Institute for Artificial Intelligence), and Olawande Daramola (Cape Peninsula University of Technology)

Session 3.3: Data Mining Tools

Latent Retrieval for Large-Scale Fact-Checking and Question Answering with NLI Training .941...
Chris Samarinas (National University of Singapore), Wynne Hsu (National University of Singapore), and Mong Li Lee (National University of Singapore)

A Correlation-Based Entity Embedding Approach for Robust Entity Linking .949.....
Cheikh Brahim El Vaigh (INRIA, IRISA), François Torregrossa (Solocal, IRISA), Robin Allesiardo (Solocal), Guillaume Gravier (CNRS, IRISA), and Pascale Sébillot (INSA, IRISA)

Efficient Model-Based Collaborative Filtering with Fast Adaptive PCA .955.....
Xiangyun Ding (Tsinghua University, China), Wenjian Yu (Tsinghua University, China), Yuyang Xie (Tsinghua University, China), and Shenghua Liu (Chinese Academy of Science, China)

Ensemble Based Data Imputation at the Edge .961.....
Panagiotis Fountas (University of Thessaly) and Kostas Kolomvatsos (University of Thessaly)

Tensor Decomposition-Based Temporal Knowledge Graph Embedding .969.....
Lifan Lin (University of Electronic Science and Technology of China, China) and Kun She (University of Electronic Science and Technology of China, China)

Identifying Conditionally Independent Target Subsets for Multi-target Regression .976.....
Orhan Yazar (LIRIS, Université Claude Bernard Lyon 1), Haytham Elghazel (LIRIS, Université Claude Bernard Lyon 1), Mohand-Saïd Hacid (LIRIS, Université Claude Bernard Lyon 1), and Nathalie Castin (Panzani)

Nonparametric Different-Feature Selection Using Wasserstein Distance .982.....
Wenbo Zheng (School of Software Engineering, Xi'an Jiaotong University), Fei-Yue Wang (State Key Laboratory for Management and Control of Complex Systems, Institute of Automation, Chinese Academy of Sciences), and Chao Gou (School of Intelligent Systems Engineering, Sun Yat-sen University)

Session 3.4: Graph based Tools

Graph Attention Auto-Encoders .989.....
Amin Salehi (Arizona State University) and Hasan Davulcu (Arizona State University)

Extracting Keywords on SNS by Successive KeyGraph .997.....
Yuta Nezu (HOSEI University, Japan) and Takao Miura (HOSEI University, Japan)

Computing All Equilibria in Ordinal Graphical Games .1004.....	
	<i>Arij Azzabi (INRAE-MIAT, Université de Toulouse, France / ISG-Tunis, Université de Tunis, Tunisia), Nahla Ben Amor (ISG-Tunis, Université de Tunis, Tunisia), Hélène Fargier (IRIT, Université de Toulouse, France), and Régis Sabbadin (INRAE-MIAT, Université de Toulouse, France)</i>
GAHNE: Graph-Aggregated Heterogeneous Network Embedding .1012.....	
	<i>Xiaohe Li (Tsinghua University), Lijie Wen (Tsinghua University), Chen Qian (Tsinghua University), and Jianmin Wang (School of Software, Tsinghua University, Beijing, China)</i>
CFGAT: A Coarse-to-Fine Graph Attention Network for Semi-Supervised Node Classification .1020	
	<i>Dongmei Cui (Beijing Institute of Technology), Fusheng Jin (Beijing Institute of Technology), Ronghua Li (Beijing Institute of Technology), and Guoren Wang (Beijing Institute of Technology)</i>
DualGCN: Representation Learning for Property Graphs via Dual-Level Convolutional Networks.....	
1028	<i>Yulei Yang (National University of Defense Technology) and Dongsheng Li (National University of Defense Technology)</i>
HGE2MED: Heterogeneous Graph Embedding for Multi-domain Event Detection .1036.....	
	<i>Jianming Lv (South China University of Technology, China), Jintao Liang (South China University of Technology, China), and Zhenguo Yang (Guangdong University of Technology, China)</i>
SGQuant: Squeezing the Last Bit on Graph Neural Networks with Specialized Quantization .1044	
	<i>Boyuan Feng (University of California, Santa Barbara, USA), Yuke Wang (University of California, Santa Barbara, USA), Xu Li (University of California, Santa Barbara, USA), Shu Yang (University of California, Santa Barbara, USA), Xueqiao Peng (University of California, Santa Barbara, USA), and Yufei Ding (University of California, Santa Barbara, USA)</i>

Session 3.5: Data Processing Tools

An Attraction-Based Approach for Instance Selection .1053.....	
	<i>Joel Luis Carbonera (UFRGS) and Mara Abel (UFRGS)</i>
Efficient Skyline Computation over Incomplete and Uncertain Data for Decision Making Systems .1059.....	
	<i>Sayda Elmi (School of Computing, National University of Singapore) and Kian-Lee Tan (School of Computing, National University of Singapore)</i>
Time Series Averaging Using Multi-Tasking Autoencoder .1065.....	
	<i>Tsegamlak Terefe Debella (Université de Haute-Alsace, ENSISA, IRIMAS (Addis Ababa University, Addis Ababa Institute of Technology, SECE)), Maxime Devanne (Université de Haute-Alsace), Jonathan Weber (Université de Haute-Alsace), Dereje Hailemariam (Addis Ababa University, Addis Ababa Institute of Technology, School of Electrical and Computer Engineering), and Germain Forestier (Université de Haute-Alsace)</i>

Partial Bandit and Semi-Bandit: Making the Most out of Scarce Users' Feedback .1073.....	<i>Alexandre Letard (Université d'Angers - LERIA, Kara Technology - Dpt R&D), Tassadit Amghar (Université d'Angers - LERIA), Olivier Camp (Groupe ESEO), and Nicolas Gutowski (Université d'Angers - LERIA, Groupe ESEO)</i>
Adversarial Regularization for Explainable-by-Design Time Series Classification .1079.....	<i>Yichang Wang (Univ Rennes, France), Rémi Emonet (Univ Lyon, Lab Hubert Curien, France), Elisa Fromont (Univ Rennes, IUF, IRISA, France), Simon Malinowski (Univ Rennes, IRISA, France), and Romain Tavenard (Univ Rennes, LETG UMR, France)</i>
SEM: Adaptive Staged Experience Access Mechanism for Reinforcement Learning .1088.....	<i>Jianshu Wang (Shanghai University, China), Xinzhi Wang (Shanghai University, China), Xiangfeng Luo (Shanghai University, China), Zhenyu Zhang (Shanghai University, China), Wei Wang (Shanghai University, China), and Yang Li (Shanghai University, China)</i>
Generative Data Augmentation for Diabetic Retinopathy Classification .1096.....	<i>Gilbert Lim (School of Computing, National University of Singapore; Singapore Eye Research Institute, Singapore National Eye Centre; Ophthalmology and Visual Science Academic Clinical Program, Duke-NUS Medical School), Pranav Thombre (School of Computer Science, Carnegie Mellon University), Mong Li Lee (School of Computing, National University of Singapore), and Wynne Hsu (School of Computing, National University of Singapore)</i>

Session 3.6: Pattern Recognition I

CPSPNet: Crowd Counting via Semantic Segmentation Framework .1104.....	<i>Jie He (East China Normal University, China), Xingjiao Wu (East China Normal University, China), Jing Yang (East China Normal University, China), and Wenxin Hu (East China Normal University, China)</i>
Margin Guidance Network for Arbitrary-Shaped Scene Text Detection .1111.....	<i>Xin Li (East China Normal University, China), Xingjiao Wu (East China Normal University, China), Tianlong Ma (East China Normal University, China), Zhao Zhou (Videt Tech Ltd., China), Luhui Chen (Videt Tech Ltd., China), and Liang He (East China Normal University, China)</i>
Sentence Pair Similarity Modeling Based on Weighted Interaction of Multi-semantic Embedding Matrix .1118.....	<i>Junyu Chen (Chongqing University, China), Xiaohong Zhu (Chongqing University, China), Jun Sang (Chongqing University, China), and Lu Gong (Chongqing University, China)</i>
Target-Based Sentiment Analysis Using a BERT Embedded Model .1124.....	<i>Shashipal Reddy Pingili (Texas A&M University-Corpus Christi) and Longzhuang Li (Texas A&M University-Corpus Christi)</i>

PointFPN: A Frustum-Based Feature Pyramid Network for 3D Object Detection .1129.....	
	<i>Zhaoxin Fan (School of Information, Renmin University of China), Hongyan Liu (School of Economics and Management, Tsinghua University), Jun He (School of Information, Renmin University of China), Siwei Jiang (School of Information, Renmin University of China), and Xiaoyong Du (School of Information, Renmin University of China)</i>
IDNet: A Single-Shot Object Detector Based on Feature Fusion .1137.....	
	<i>Yuning Cui (National University of Defense Technology, China), Dianxi Shi (National Innovation Institute of Defense Technology, China), Yongjun Zhang (National Innovation Institute of Defense Technology, China), and Qianchong Sun (National Innovation Institute of Defense Technology, China)</i>
An IR-Based Artificial Bee Colony Approach for Traceability Link Recovery .1145.....	
	<i>Danissa V. Rodriguez (Louisiana State University) and Doris L. Carver (Louisiana State University)</i>

Session 3.7: Learning Techniques and Applications

Sentiment-Aware Transformer Using Joint Training .1154.....	
	<i>Hui Huang (Shanghai Jiao Tong University), Yueyuan Jin (Shanghai Jiao Tong University), and Ruonan Rao (Shanghai Jiao Tong University)</i>
Bi-Directional Self-Attention with Relative Positional Encoding for Video Summarization .1161....	
	<i>Jingxu Lin (Shenzhen University, China) and Sheng-hua Zhong (Shenzhen University, China)</i>
Collaborative Robotic Manipulation: A Use Case of Articulated Objects in Three-Dimensions with Gravity .1167.....	
	<i>Riccardo Bertolucci (University of Genoa, Italy), Alessio Capitanelli (Teseo srl, Italy), Marco Maratea (University of Genoa, Italy), Fulvio Mastrogiovanni (University of Genoa, Italy), and Mauro Vallati (University of Huddersfield, United Kingdom)</i>
toon2real: Translating Cartoon Images to Realistic Images .1175.....	
	<i>K. M. Arefeen Sultan (Ahsanullah University of Science and Technology, Bangladesh), Mohammad Imrul Jubair (Ahsanullah University of Science and Technology, Bangladesh), MD. Nahidul Islam (Ahsanullah University of Science and Technology, Bangladesh), and Sayed Hossain Khan (Ahsanullah University of Science and Technology, Bangladesh)</i>
Situational Assessment of Wildfires : A Fuzzy Spatial Approach .1180.....	
	<i>Laurence Boudet (CEA List, France), Jean-Philippe Poli (CEA List, France), Louis-Pierre Bergé (CEA Tech en Occitanie, France), and Michel Rodriguez (CGX, France)</i>
Retro-Engineering State Machines into PDDL Domains .1186.....	
	<i>Maxence Grand (Univ. Grenoble Alpes, LIG), Humbert Fiorino (Univ. Grenoble Alpes, LIG), and Damien Pellier (Univ. Grenoble Alpes, LIG)</i>

Dual-Template Siamese Network with Cross-Correlation Fusion for Tracking .1194.....
Ning Wang (National University of Defense Technology), Dianxi Shi (National Innovation Institute of Defense Technology; Tianjin Artificial Intelligence Innovation Center), Ying Kang (National Innovation Institute of Defense Technology; Tianjin Artificial Intelligence Innovation Center; People's Liberation Army of China No.31401), Zunlin Fan (National Innovation Institute of Defense Technology; Tianjin Artificial Intelligence Innovation Center), Songchang Jin (National Innovation Institute of Defense Technology; Tianjin Artificial Intelligence Innovation Center), and Yongjun Zhang (National Innovation Institute of Defense Technology; Tianjin Artificial Intelligence Innovation Center)

Session 3.8: Miscellaneous

A Survey of Dialogue System Evaluation .1202.....
Yifan Fan (Guangxi Normal University) and Xudong Luo (Guangxi Normal University)

Argumentation Frameworks with Higher-Order Attacks: Labellings and Complexity .1210.....
Sylvie Doutre (IRIT, University Toulouse 1, France), Mickaël Lafages (IRIT, University Toulouse 3, France), and Marie-Christine Lagasquie-Schiex (IRIT, University Toulouse 3, France)

Generating the Top K Solutions to Weighted CSPs: A Comparison of Different Approaches .1218.
Ang Li (University of Southern California), Yuling Guan (University of Southern California), Sven Koenig (University of Southern California), Stephan Haas (University of Southern California), and T. K. Satish Kumar (University of Southern California)

How to (Re) Represent it? .1224.....
Daniel Raggi (University of Cambridge, UK), Gem Stapleton (University of Cambridge, UK), Aaron Stockdill (University of Cambridge, UK), Mateja Jamnik (University of Cambridge, UK), Grecia Garcia Garcia (University of Sussex, UK), and Peter C.-H. Cheng (University of Sussex, UK)

Bounded Suboptimal Token Swapping .1233.....
Pavel Surynek (Czech Technical University in Prague, Czechia)

Automatic Configuration of Multi-thread Local Search: Preliminary Results on Bi-Objective TSP .1241.....
Nicolas Szczepanski (Univ. Lille, CNRS, Centrale Lille, France), Mousin Lucien (Lille Catholic University, Faculté de Gestion, Economie et Sciences, Univ. Lille, CNRS, - CRIStAL, France), Nadarajen Veerapen (Univ. Lille, CNRS, Centrale Lille, France), and Laetitia Jourdan (Univ. Lille, CNRS, Centrale Lille, France)

Parallel Based Hiding of Sensitive Knowledge .1249.....
Panteleimon Krasadakis (University of Piraeus, Greece), Vassilios S. Verykios (Hellenic Open University, Greece), and Evangelos Sakkopoulos (University of Piraeus, Greece)

Session 3.9: Pattern Recognition II

- Dataless Text Classification with Pseudo Topic Representation .1255.....
Rong Yan (Inner Mongolia University, Inner Mongolia Key Laboratory of Mongolian Information Processing Technology), Qi Chen (Inner Mongolia University, Inner Mongolia Key Laboratory of Mongolian Information Processing Technology), and Guanglai Gao (Inner Mongolia University, Inner Mongolia Key Laboratory of Mongolian Information Processing Technology)
- An Ensemble Learning Based Hierarchical Multi-Label Classification Approach to Identify Impacts of Engineering Changes .1260.....
Yuwei Pan (Mercedes-Benz AG, Germany) and Rainer Stark (Technical University Berlin, Germany)
- Semi-Supervised Active Learning for COVID-19 Lung Ultrasound Multi-symptom Classification 1268
Lei Liu (Shenzhen Research Institute of Big Data, The Chinese University of Hong Kong, Shenzhen), Wentao Lei (Shenzhen Research Institute of Big Data, The Chinese University of Hong Kong, Shenzhen), Xiang Wan (Shenzhen Research Institute of Big Data, The Chinese University of Hong Kong, Shenzhen), Li Liu (Shenzhen Research Institute of Big Data, The Chinese University of Hong Kong, Shenzhen), Yongfang Luo (Department of Medical Ultrasonics, National Clinical Research Center for Infectious Disease, Shenzhen Third People's Hospital (Second Hospital Affiliated to Southern University of Science and Technology)), and Cheng Feng (Department of Medical Ultrasonics, National Clinical Research Center for Infectious Disease, Shenzhen Third People's Hospital (Second Hospital Affiliated to Southern University of Science and Technology))
- Associative Classifier for Evidential Data .1274.....
Nassim Bahri (LARODEC-ISG Tunis, Tunisia), Mohamed Anis Bach Tobji (LARODEC-ISG, ESEN Manouba, Tunisia), and Boutheina Ben Yaghlane (LARODEC-ISG, IHEC Carthage, Tunisia)
- MathReader: API for Handwritten Mathematical Expressions Recognition .1282.....
Caroline Santos dos Reis (Universidade Luterana do Brasil (ULBRA)) and Fabiana Lorenzi (Universidade Luterana do Brasil (ULBRA) and Rede Brasileira de Aprendizagem Criativa Núcleo POA)
- Position and Channel Attention for Image Inpainting by Semantic Structure .1290.....
Jingjun Qiu (East China Normal University, China) and Yan Gao (East China Normal University, China)
- A New Tool to Initialize Global Localization for a Mobile Robot .1296.....
Olivier Aycard (University of Grenoble (UGA) - Grenoble Informatics Laboratory (LIG), France) and Christophe Brouard (University of Grenoble (UGA) - Grenoble Informatics Laboratory (LIG), France)
- A Feasibility Study for Predicting 3D Radiotherapy Dose Distribution of Lung VMAT Patients.1304
Runxin Liu (Shanghai Jiaotong University, China), Jingfeng Bai (Shanghai Jiaotong University, China), Jingjie Zhou (Shanghai United Imaging Healthcare Co Ltd Shanghai, China), Kang Zhang (Shanghai United Imaging Healthcare Co Ltd, China), and Cheng Ni (Shanghai United Imaging Healthcare Co Ltd, China)

Author Index