2019 Research in Adaptive and Convergent Systems (RACS 2019)

September 24-27, 2019
Chongqing University of Posts and Telecommunications, Chongqing, China

Final Program



Hosted by
Chongqing University of Posts and Telecommunications

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Conference at a Glance

Tuesday (Sep. 24)		
10:00 ~	Registration	
10:00~14:00		
14:00~15:30	RACS Annual Meeting	TBD
16:00~17:30	Organization and Program Committee Business Meeting	TBD
Wednesday (Sep. 25)		
09:00~	Registration	
09:10~10:20	Conference Opening / Keynote Session	Lecture Hall of the 1st Floor
10:20~10:50	Coffee Break	
10:50~12:30	Session 1: System Software I	204
	Session 2: Artificial Intelligence & Algorithms I	205
12:30~14:00	Lunch Time	
14:00~15:40	Session 3: System Software II	204
	Session 4: Artificial Intelligence & Algorithms II	205
15:40~16:10	Coffee Break	
16:10~17:30	Session 5: Image Processing	204
	Session 6: Database & Data Mining	205
18:30~21:00	Welcome Reception	XianLongJing Hot Pot Restaurant
Thursday (Sep. 26)		
09:00~	Registration	
09:20~11:00	Session 7: Network Computing I	204
	Session 8: Software Engineering	205
11:00~11:30	Coffee Break	
11:30~12:30	Poster Session	The lobby of the 2nd Floor
12:30~14:00	Lunch Time	
14:00~14:30	Coffee Break	
14:30~16:10	Session 9: Network Computing II	204
	Session 10: Security	205
18:30~	RACS Banquet	Sheraton Hotel in Downtown
Friday (Sep. 27)		
10:00~12:00	Future RACS Organization Meeting	TBD
12:00~13:00	Session Chairs Business Meeting	TBD
Conference Ends at 13:30		

Preface

With the expansion of both the Internet and the advanced information technology development profession, reliable and convergent computing has attracted increasing interest in both academia and industry. To cope with this important problem, the Research in Adaptive and Convergent Systems (RACS) provides a forum for exchanging highly original ideas about an important class of computing systems. The RACS aims primarily at researchers who have experience in reliable and convergent computing systems and are engaged in the design and implementation of new computing applications. Each year RACS brings together engineers and scientists from diverse communities with interests in practical computing technologies and creates an environment for them to discuss and report experimental results, novel designs, work-in-progress, experiences, case studies, and trend-setting ideas.

This volume contains the papers selected for presentation at RACS 2019, which was held at Chongqing University of Posts and Telecommunications, Chongqing, China, September 24 – 27, 2019. There were 188 submissions from 8 countries. Each paper underwent a blind peer review process by three members of the Technical Program Committee (TPC), and 46 regular full papers (24.5% Acceptance rate) and 10 posters were accepted for publication in the proceedings of the conference. The selected papers cover a wide range of topics, including: Algorithm, Artificial Intelligence, Data Mining, Database, Image Processing, Network Computing, Security, Software Engineering, and System Software.

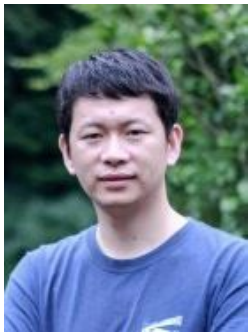
The RACS 2019 Technical Program Committee was led by three Program Chairs: Dr. Christian Esposito, Dr. Jun Huang, and Dr. Juw Won Park. We wish to thank the TPC members for their valuable time and technical input in creating an excellent program. Without their help and contributions, this conference would not have been possible. We would also like to thank the Organizing Committee for their great effort. Our special thanks go to Dr. Qianbin Chen (Honorable General Chair), Dr. Xianzhong Xie and Dr. Qinghua Zhang (Honorable Program Chairs), Dr. Tomas Cerny (Posters Chair), Dr. Shubhamoy Dey, Dr. Lei Li, Dr. Florin Pop, Dr. Chi-Sheng Shih, and Dr. Sangsoo Sung (International Advisory Chairs), Dr. Junyoung Heo, Dr. Shi Jin, Dr. Wei Wang, and Dr. Anis Yazidi, Dr. Su Xin, (Publicity Chairs), Dr. Limei Zeng (Local Arrangement Chair), Dr. John Kim (Publication Chair), Dr. Bongjae Kim and Dr. Chang Choi (Treasurer/Web Master), Dr. Sung Y. Shin, Dr. Yookun Cho, Chih-Cheng Hung, Dr. Tei-Wei Kuo, and Dr. Vahid Tarokh (Steering Committee Chairs) for their leadership and excellent work to organize the conference. We are grateful for the generous support given by Chongqing University of Posts and Telecommunications. Finally, we thank all of the authors who contributed to this volume and all the attendees of RACS 2019.

September 2019

Chih-Cheng Hung, Kennesaw State University, USA
Conference Chair, RACS 2019

Keynote

Session Chair
Sung Y. Shin, South Dakota State University, USA



Title
Emerging Sensing Technologies for Drone Detection

Speaker
Jiming Chen, Zhejiang University, China

Abstract
In recent years, the commercial drone market, especially multi-rotor drones, has been witnessed an explosive growth. Drones nowadays have been broadly used in various industrial, military, and civilian applications. The consequent abuse of drones has posed great threats to personal privacy and public security. There is an urgent need for accurate and effective real-time drone monitoring. Regarding that drones are usually of small size, low flying speeds at low altitude, in this talk we focus on key theories and technologies we have been investigating for detecting, and tracking flying drones using multi-sensing techniques. We will introduce the drone monitoring experimental platform and the multi-source signal database for drones we have built up. In particular, in our research, features of drones from audio, radio and video signals collected by various sensors are extracted and analyzed. Cross-media data fusion are conducted to take full advantage of different sensors' strongpoints.

Speaker's Bio
Jiming Chen (IEEE M'08-SM'11-F'19) received the Ph.D. degree in Control Science and Engineering from Zhejiang University in 2005. He is a Changjiang Scholars Chair Professor with the Department of Control Science and Engineering, the vice Dean of the Faculty of Information Technology, and the deputy director of the State Key Laboratory of Industrial Control Technology, Zhejiang University. He has published more than 300 papers in premier IEEE Transactions/Journals and conferences. His research interests include networked control, mobile communications, and connected vehicles, aligned well with the VTS Society.
He serves on the editorial boards of journals, including four IEEE Transactions, and the General Co-chairs for IEEE RTCSA 19, IEEE Datacom '19, etc. He has been selected in the National Program for Special Support of Top-Notch Young Professionals, and funded the Excellent Youth Foundation of NSF of China. He was a recipient of the 7th IEEE ComSoc Asia/Pacific (AP) Outstanding Paper Award, the JSPS
Visiting Fellowship 2011, and the IEEE ComSoc AP Outstanding Young Researcher Award in 2011. He is an IEEE VTS Distinguished Lecturer and a Fellow of IEEE.

Wednesday (September 25)

(S.1) System Software I Wednesday 10:50~12:30 204

Session Chair : Tei-Wei Kuo, Taiwan National University, Taiwan

1. (p.1) Performance Tuning Case Study on Graphics Processing Unit-Accelerated Monte Carlo Simulations for Proton Therapy, Yi-Shen Chen, Sheng-Wei Cheng, Tei-Wei Kuo

2. (p.7) A Data Sanitization Method for Mobile Devices with NAND Flash Memory, Chin-Hsien Wu, Po-Ling Lin, Yu-Hun Hu, Ming-Yang Du

3. (p.14) Energy-Efficient Scheduling Algorithm for Real-Time Tasks with Multiple Parallel Segments in Multiprocessor Systems, Chin-Fu Kuo, Jian-Xing Lin, Yung-Feng Lu

4. (p.20) Container-based Load Balancing for WebRTC Applications, Yung-Feng Lu, Hung-Ming Chen, Chin-Fu Kuo, Bo-Kai Tseng and Shih-Chun Chou

5. (p.27) MIPS CPU Development With Analogous Teaching Method for Experimental Teaching of Digital Logic and Computer Organization, Xing LIU, Guangming Sheng, Bing Shi, Christophe De Vaulx, Wenbi Rao and Qing Li

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(S.2) Artificial Intelligence & Algorithms I Wednesday 10:50~12:30 205

Session Chair : Chih-Cheng Hung, Kennesaw State University, USA

1. (p.67) Study of Variable Liquid Fertilization Control System based on Fuzzy PID Control, Rui Zhang, Jun Zhou, Lixiao Feng, Wei Ma

2. (p.71) Abnormal object detection and recognition in the complex construction site via cloud computing, Chuang Wang, Jiakun Li, Tian Wang, Peng Shi, Hichem Snoussi, Xin Su

3. (p.76) Classification of Multiclass Datasets Using Genetic Programming, Mahsa Shokri Varniab, Chih-Cheng Hung and Vahid Khalilzad Sharghi

4. (p.83) Modeling and Control Method of Connected and Autonomous Vehicles(CAVs)in Urban Traffic Network Based on PC algorithm, Zheng Ze Zhu, Haiying Zhou, Kun Mean Hou, Kui Zhow, Sinhan Wang, Jianping Lan, Jiayuan Gong, Dong Bi

5. (p.91) Human Evaluation of Virtual and Real-world Distance, Tingting Zhang, Guimiao Liu, Ling Xia and Xiaofeng Liu

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(S.3) System Software II Wednesday 14:00~15:40 204

Session Chair : John Kim, Utica College, USA

1. (p.34) An Indoor Environmental Monitoring System for large Buildings Based on LoRaWAN, Wei Li, Guanxi Shen, Jinbo Zhang

2. (p.39) Energy-aware Offloading for Mobile Computing with Heterogeneous Network, Chia-Hsueh Wu, Cheng-Tui Hong, Ya-Shu Chen

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3. (p.45) Using Real-Time Image Enhancement Technique to Improve Prostate Capsula Detection, Baonan Xiao, Jianfeng Yang, Shixiao Wu, Qing Geng

4. (p.51) Data consistency and temporal validity under the circular buffer communication paradigm, Evariste Ntaryamira, Cristian Maxim, Liliana Cucu-Grosjean

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(S.4) Artificial Intelligence & Algorithm II Wednesday 14:00~15:40 205

Session Chair : Young-Sun(Andy) Yun, Hannam University, South Korea

1. (p.96) Application of Deep Learning for Power Control in the Interference Channel: a RNN-based Approach, Yan Pan, Zhixiang Deng, Qian Sang

2. (p.101) Computation Offloading for Fast CNN Inference in Edge Computing, Qinglin Yang, Xiaofei Luo, Peng Li, Toshiaki Miyazaki, Xiaoyan Wang

3. (p.108) Development of a Semantic Scene Conversion Model for Image-based Localization at Night, Dongyoun Kim, Sangwon Shin, Jin Woo Park, Sung Shin

4. (p.114) Evaluation of Deep Learning Models for Information Extraction from EMF-Related Literature, Youjeong Jang, Hyung-do Choi, Deng Fang, Sung Shin

5. (p.118) Machine Learning Modeling Assistance for Non-expert Developers, Ki Sun Park, Kyoung Soon Hwang, Chan Sik Han, Jin Han and Keon Myung Lee

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(S.5) Image Processing Wednesday 16:10~17:50 204

Session Chair : Choi Chang, Chosun University, South Korea

1. (p.134) Distinction of Vegetable Diseases by Image Processing, Hong Shen, Yuuki Kaiya

2. (p.138) Research of Infrared Image Super-resolution Reconstruction Based on Improved FSRCNN, Kai Che, Yufeng Chen, Zhengtao Xiang, Guosheng Peng, Jian LV, Yun Zhou

3. (p.144) Validity of deriving low order photometry parameters from light solid distribution, Ling Xia, Tingting Zhang, Xiaofeng Liu

4. (p.148) Instance Segmentation in Urban Scenes using Inverse Perspective Mapping of 3D Point Clouds and 2D Images, Chungyup Lee, Soohyeon Choi, Jung Y. Kim, Kwanghee Won

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(S.6) Database & Data Mining Wednesday 16:10~17:50 205

Session Chair : Sang-Wook Kim, Hanyang University, South Korea

1. (p.154) Live Migration in Greenplum Database Based on SDN via Improved Gray Wolf Optimization Algorithm, Chengming Zou, Fanchao Zhao, Yi Xie, Haiying Zhou, Jun Qin

2. (p.162) Outlier Detection using Isolation Forest and Local Outlier Factor, Zhangyu Cheng, Chengming Zou, Jianwei Dong

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3. (p.170) Malware Classification for Identifying Author Groups: A Graph-based Approach, Jiwon Hong, Sung-Jun Park, Taeri Kim, Yung-Kyun Noh, Sang-Wook Kim, Dongphil Kim, Wonho Kim

Thursday (September 26)

(S.7) Network Computing I Thursday 09:20~11:00 204

Session Chair : Jun Huang, Chongqing University of Posts and Telecommunications, China

1. (p.176) Clustered NFV Service Chaining Scheme for Ocean Observations, Yuchen Gan, Xin Su, Chang Choi, Zhou Zhou

2. (p.182) Design and Implementation of Distributed Traceability System for Smart Factories based on Blockchain Technology, Chi-Sheng Daniel Shih, Kai-Wei Yang

3. (p.190) Moving Intelligence of Mobile Edge Computing to Maritime Network, Godwin Gakpo, Xin Su, Chang Choi

4. (p.195) Energy Scheduling Mechanism for Intelligent Terminal with Simultaneous Wireless Information and Power Transfer, Gang Yang, Jun Huang, Longyan Xu, Yahong Zhai

5. (p.201) Energy-Efficient Power Allocation in Analogue Network Coding Based Multi-hop D2D Communication, Pengfei Wu, Jun Huang, Longyan Xu

6. (p.207) Performance Analysis for Multi-priority Data Flow Scheduling in SDN, Yinping Ding, Jun Huang, Peng Zhou

(S.8) Software Engineering Thursday 09:20~11:00 205

Session Chair : Tomas Cerny, Baylor University, USA

1. (p.245) Time-dependent Theme Park Routing Problem, Zhang Yang, Li Jiacheng, Du Jiaoman, Li Lei

2. (p.251) Sliding Mode Control of PMSM Based on Novel Convergence Reaching Law, Xincheng Huang, Wei Jian, Cheng Yang, Yiren Li, Yun Gao and Zhihu Wang

3. (.257) Intelligent Token-Based Code Clone Detection System for Large Scale Source Code, Abdul Rahmabn Abu Elkhail, Jan Svacina,Tomas Cerny

4. (p.262) Case Study on Data Communication in Microservice Architecture, Antonin Smid, Ruolin Wang, Tomas Cerny

(S.9) Network Computing II Thursday 14:30~16:10 204

Session Chair : Junyoung Heo, Hansung University, South Korea

1. (p.213) Adaptive Selection of Configuration Methods in 6LoWPAN based IoUT, Junho Seo, Sungwon Lee, Muhammad Toaha Raza Khan and Dongkyun Kim

2. (p.218) Task Offloading Strategy Based on Workload Balancing in Ultra-Dense Networks, Cissoko Moussa, Haibo Zhang, Hasan Shamim, Kaijian Liu

3. (p.225) Effective Capacity-aware Resource Allocation for 5G Ultra Dense Network with Hybrid Access Mode, Shamim Hasan, Haibo Zhang, Moussa Cissoko, Kaijian Liu

4. (p.231) Preprocessed Symmetric RSA authentication for wireless body area networks in Space, Sangwon Shin, Soohyeon Choi, Kwanghee Won, Sung Shin

5. (p.237) Traffic Big Data Assisted Broadcast in Vehicular Networks, Siri Guleng, Celimuge Wu, Tsutomu Yoshinaga, Yusheng Ji

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(S.10) Security Thursday 14:30~16:10 205

Session Chair : Jun Huang, Chongqing University of Posts and Telecommunications, China

1. (p.269) Vulnerability Analysis and Optimization of Power Communication Network, Geng Zhang, Jian Hou, Yang Wang, Yanan Wang, Jianguo Zhou

2. (p.277) Automatic hybrid Analysis Technique to Improve Botnet Code Coverage using Fake Server, Seongil Bae, Soo Han Kim and Eul Gyu Im

3. (p.284) DGA-based Malware Detection using DNS Traffic Analysis, Jong Youn Lee, Jun Young Chang, Eul Gyu Im

4. (p.291) Blockchain-based RBAC for User Authentication with Anonymity, Yongjoo Lee, Keong Myung Lee

5. (p.297) Iris Biometric Feature Hidden Based on Chaotic Encryption, Wenming Jiao, Heng Zhang, Qiyan Zang, Jian Zhang, Hongran Li

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Posters Session Thursday 11:30~12:30 The lobby of the 2nd Floor

Session Chair : Bongjae Kim, Sun Moon University, South Korea

1. (p.124) Anomaly Detection for Deep-Learning Based License Plate Recognition in Real Time Video, Bada Kim, Taeyeon Won, Sangmin Park and Junyoung Heo

2. (p.57) Design and Implementation of Virtual Machine Control and Streaming Scheme Using Linux Kernel-based Virtual Machine Hypercall for Virtual Mobile Infrastructure, Eunseok Choi, Jiman Hong

3. (p.242) Enhancing the Security of IoT Gateway based on the Classification of User Security-Sensitive Data, Seungyeon Lee, Mhanwoo Heo, Kicheol Park, Bongjae Kim, Jiman Hong

4. (p.126) Performance Analysis of Chinese Cursive Character Recognition Based on Convolutional Neural Network, Boseon Hong, Bongjae Kim, Jeong-Dong Kim, Jeahyoun Koo

5. (p.61) IoT-Based Floodgate Control System, Sangmin Park, Bada Kim, Taeyeon Won, Junyoung Heo

6. (p.63) An IoT based Distortion Invariant Motion Detection using Raspberry pi with Mean Shift Algorithm, Taeyeon Won, Bada Kim, Sangmin Park, Junyoung Heo

7. (p.129) Cluster Management Framework for Autonomic Machine Learning Platform, Heejin Kim Younggwan Kim, Jiman Hong

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8. (p.132) A Study on Supporting Spiking Neural Network Models based on Multiple Neuromorphic Processors, Boseon Hong, Jinsung Cho, Bongjae Kim, Hong Min, Jiman Hong, Keon Myung Lee

9. (p.302) Machine Learning based Android Malware Classification, Yena Lee, Yongmin Kim, Seungyeon Lee, Junyoung Heo, Jiman Hong

10. (p.65) Survey of IoT Platforms Supporting Artificial Intelligence, Seoyeon Kim, Jisu Park, Jaehyeok Jeong, Young-Sun Yun, Seongbae Eun, Jinman Jung

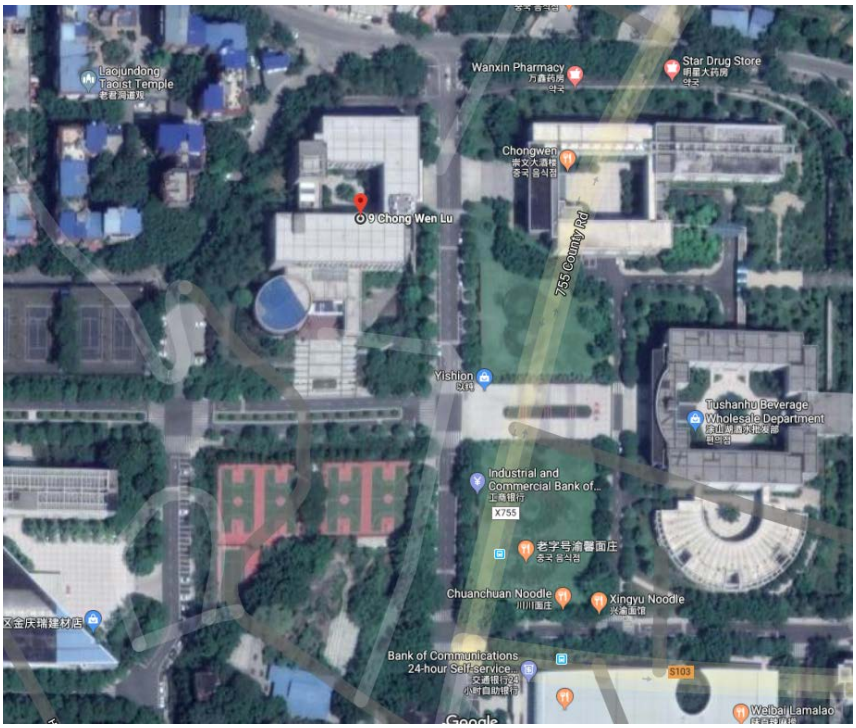
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Venue

- School of Communication and Information Engineering, Chongqing University of Posts and Telecommunications, Chongqing, China

- 9 Chongwen Rd, Huang Jue Ya, Nanan Qu, Chongqing Shi, China 400065





Welcome Reception

- Sep. 25, 2019, Wednesday 6:30 PM ~ 9:00 PM

- XianLongJing Hot Pot Restaurant, FHRR+F6 Nan'an, Chongqing, China

- Tel: +86 23 6248 2449

(Note) A bus to Welcome Place will depart from the Chongyou Hotel (重邮宾馆 - University Hotel) at 6:00 PM.





Banquet

- Sep. 26, 2019, Thursday 6:30 PM ~

- Sheraton Chongqing Hotel, 78 Nanbin Rd, Nan Bin Lu Mei Shi Jie, Nanan Qu, Chongqing Shi, China, 400060

- Tel: + 86 23 6277 7777

(Note) A bus to Banquet Place will depart from the Chongyou Hotel (重邮宾馆 - University Hotel) at 6:00 PM.

