

**Technical Committee on:
"Railroad Systems and Applications"**

<https://ta.itss-ieee.org/railroad-systems-and-applications/>

**TC Report
2018**



Chair Picture

Chair:

Hairong (Heidy) Dong
(hrdong@bjtu.edu.cn)



Co-Chair Picture

Co-Chairs:

Clive Roberts (c.roberts.20@bham.ac.uk)

Organized Events and Activities

1. Conferences

Year	Conference name	Organizers & functions
2018	2018 IEEE International Conference on Intelligent Rail Transportation (ICIRT 2018)	Nanyang Technological University, Singapore; IEEE Singapore section; University of Birmingham; Beijing Jiaotong University; ITSS; & General/Technical Program Co-Chairs
2018	The 5th International Conference on Behavioral, Economic, and Socio-Cultural Computing (BESC 2018)	National University of Kaohsiung; University Technology of Sydney; University of Southern Queensland; & Track Chair
2018	The 22nd Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2018)	Deakin University; & Program Committee
2018	The 19th International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT 2018)	SoonChunHyang University; SeoulTech; Georgia State University; & Program Committee
2018	2018 International Conference on Optimization and Decision Science (ODS2018)	University of Catania & Program Committee

2. Workshops and Tutorials

Year	Workshop/tutorial title	At Conference	Organizers (TC members)	Participants (estimated #)
2018	Smart Rail: Control, Communication and Emerging Technologies	IEEE International Conference on Intelligent Transportation Systems	Beijing Jiaotong University /Hairong Dong	80

3. Organized Sessions

Year	Invited/special technical session title	Conference Host	Organizers/Moderator
2018	RW2018-2: Switches and Crossings Developments	The Fourth International Conference on Railway Technology	Elsevier

4. Special Issues in Journals or Editor of Other Publications

Year	Title	Journal	Editor
2018	Special Issue on Intelligent Rail Transportation	IEEE Transactions on Intelligent Transportation Systems	Feiyue Wang, Hairong Dong, Clive Roberts, Zongli Lin
2018	Special Issue on Intelligent Control of Rail Transportation	IEEE/CAA Journal of Automatica Sinica	Feiyue Wang, Hairong Dong, Clive Roberts, Zongli Lin
2018	Special Issue on Integrated optimization models and algorithms in rail planning and control	Transportation Research Part C: Emerging Technologies	Francesco Corman, Xuesong Zhou, Tao Tang, Lingyun Meng

5. **Book and Book chapters**

Year	Title	Journal/Publisher	Editors or Guest-Editors

6. **Competitions**

Year	Title	Object	Organizer

7. **Other Activities**

- 🌈 Organization of a summer school in July 2018 at Beijing Jiaotong University regarding the topic of Intelligent Railway Operations Optimization Techniques. Professors from Germany, Netherlands, USA, Japan, and so on were invited to give lectures for the Ph.D. and master students, more than 100 students had participated.
- 🌈 Organization of an International Seminar for Railway Education and Training (ISRET 2018) from 16th to 18th April 2018 in the Birmingham Centre for Railway Research and Education, in collaboration with its industry based partners MTR Academy of Hong Kong and SMRT Institute of Singapore.
- 🌈 Reports on the formation and activities of Technical Committee was posted in the IEEE Intelligent Transportation Systems Magazine (Volume: 10 , Issue: 2 , Summer 2018); more professional experts intended to join the committee.

- 🌈 Organization of the 3rd International Seminar on Railway System Simulation.
- 🌈 Participations of the 21st IEEE International Conference on Intelligent Transportation Systems, 37th Chinese Control Conference, 29th Chinese Process Control Conference, 30th Chinese Control and Decision Conference, 2018 IEEE International Conference on Information and Automation (IEEE ICIA 2018), 18th Workshop on Algorithmic Approaches for Transportation Modelling, Optimization, and Systems (ATMOS 2018), 2018 International Conference on Optimization and Decision Science (ODS 2018), Transportation Research Board 97th Annual Meeting Transportation Research Board, and so on with the following presented papers:
 - 1) Qianling Wang, **Hairong Dong**, Bin Ning, Fei Yan, Tao Tang, *Quantized Consensus of Unidirectional Pedestrian Flow based on Two-Time-Scale Hybrid Models*, 21st IEEE International Conference on Intelligent Transportation Systems.
 - 2) Pier Giuseppe Sessa, Valerio De Martinis, **Francesco Corman**, *A hybrid dynamic-kinematic EKF for train trajectory estimation*, 21st IEEE International Conference on Intelligent Transportation Systems.
 - 3) Xingtang Wu, **Dong Hairong**, Shigen Gao, Wei Li, Qi Zhang, *Extracting Metro Passengers' Route Choice via AFC Data Utilizing Gaussian Mixture Clustering*, 21st IEEE International Conference on Intelligent Transportation Systems.
 - 4) Min Zhou, **Hairong Dong**, Yanbo Zhao, Yihang Zhang, Petros A. Ioannou. *Optimal Number and Location Planning of Evacuation Leader in Subway Stations*, 15th IFAC Symposium on Control in Transportation Systems.
 - 5) Min Zhou, **Hairong Dong**, Jiali Liu, Xiuming Yao, **Yidong Li**. *Modeling of Crowd Dynamics With Emergency Signs Via Modified Social Force Model*, 14th IEEE International Conference on Control & Automation.
 - 6) Hainan Zhu, Shigen Gao, **Hairong Dong**, *Improving Train Driving Performance under Disturbances by Intelligent Driver Advisory System*, in 2018 IEEE International Conference on Intelligent Rail Transportation.
 - 7) Yimang Li, Shigen Gao, Hainan Zhu, **Hairong Dong**, *Train Trajectory Optimization with Random Initial States under Multiple Constraints*, IEEE International Conference on Information and Automation.
 - 8) Lingbin Ning, Shigen Gao, Hainan Zhu, **Hairong Dong**, *Energy-efficient Train Operation under Uncertain Remaining Running Time and Demand Moment*, 29th Chinese Process Control Conference.
 - 9) Shigen Gao, **Hairong Dong**, Bin Ning, Hongwei Wang, *A Nonlinear Feedback Adaptive Control Method for Improving the Control Performance of Automatic Train Operation*, CCC Proceedings of the 37th Chinese Control Conference.
 - 10) Giorgio Sartor; **Carlo Mannino**, *The Path & Cycle formulation for the Hotspot Problem in Air Traffic Management*, 18th Workshop on Algorithmic Approaches for Transportation Modelling, Optimization, and Systems (ATMOS 2018).

- 11) **Francesco Corman**, Luan Xiaojie, Valerio De Martinis, *Model-based and data-driven approaches for railway traffic management and energy efficient operations, International Conference on Optimization and Decision Science (ODS 2018)*.
 - 12) Xiaojie Luan, Bart De Schutter, **Francesco Corman**, Gabriel Lodewijks, *Integrating Dynamic Signalling Commands Under Fixed-Block Signalling Systems into Train Dispatching Optimization Models, Transportation Research Board 97th Annual Meeting Transportation Research Board*.
- ✿ Organization of Europe academic communication and project negotiation with ETH Zürich, Technische Universität Carolo-Wilhelmina zu Braunschweig, KTH Royal Institute of Technology, and Linköping University. Several technical seminars, which focused on the topics of Rail transit planning and optimization, advanced control methods for train operation, were organized.

CALL FOR VOLUNTEERS:

Please, make a list of available positions for volunteers for the organization of the technical activities of this TC