2017 International Conference on Unmanned Systems

Beijing, China October 27-29, 2017

PROGRAM

IEEE

The 2017 IEEE International Conference on Unmanned Systems (ICUS 2017)

Oct. 27-29, 2017 Beijing, China

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Welcome to IEEE ICUS 2017

The 2017 IEEE International Conference on Unmanned Systems (IEEE ICUS 2017) is approved by China Association for Science and Technology (CAST) and will be held by Chinese Institute of Command and Control (CICC), Beijing Institute of Technology (BIT) and American Institute of Electrical and Electronics Engineers (IEEE) from October 27th to 29th in Beijing, China.

ICUS provides an international forum for professionals, academics, and researchers over the world to the latest developments of academic and technical issues related to unmanned systems. The theme for the conference in 2017 is "Development and Application of Unmanned Systems in Era of Artificial Intelligence". It particularly welcomes internationally renowned scholars as well as enterprises from home and aboard to give relevant reports and display related products respectively. Forms as group discussion, oral presentation and post presentation, etc. are also included in this conference.

Accepted high-quality papers will be recommended to special issues in International Journal of Robotics and Automation (SCI-indexed), International Journal of Modeling Identification and Control (EI-indexed) and CAAI Transactions on Intelligence Technology (Elsevier).

Congratulations from IEEE China Council

Mr. Chairman, ladies and gentlemen,

It is a great honor for me on behalf of IEEE China Council and IEEE Beijing Section to extend congratulations to the opening of 2017 IEEE International Conference on Unmanned Systems-IEEE ICUS 2017, and warmly welcome the attendees coming from overseas and domestic to the ICUS 2017. I believe that ICUS we have today is the 1st one of its kind in China with IEEE as one of its co-sponsors.

I am aware that the focus of the conference is on the unmanned system which is one of the most popular topics nowadays. Today when talking about the word of unmanned systems and units, the unmanned spy-check machines and bombers will come to people's mind. The reason is that such spy units badly hurt the world, destroyed the human civilization and shocked people's mind. I do believe that the aim we develop such a technology is not to hurt the others, but for the peaceful development of the mankind and to make the earth a better place to live. I believe the wonderful work the honored scientists do will build a modern society with modern technologies in our hands.

Mr. Chairman, I have looked through the accepted papers in the technical programs, and found that the papers accepted by ICUS 2017 cover many topics within this scope. This is a very special conference offering opportunities for professional people to exchange thinking and interests with each other. And I hope you will continue to making this conference better in the future.

Finally, I wish you enjoy this conference and have a nice stay in Beijing and China.

Mengqi Zhou
IEEE China Council, Executive Vice Chairman

Welcome Message from General Chairs

On behalf of the committee of 2017 IEEE International Conference on Unmanned Systems (ICUS 2017) and the local organizing committee, it is our greatest pleasure to welcome you to the conference and the Chinese beautiful capital of Beijing.

As one of the flagship annual meetings, ICUS 2017 is the premier conference in the increasingly well researched areas of unmanned systems and autonomous control.

It is our honor to have the distinguished plenary speakers: Professor Antonios Tsourdos from Cranfield University (UK); Professor Yantao Shen from Beijing Institute of Technology (China); Professor Aiguo Song from Southeast University (China); Professor David Hernandez from Locomotec GmbH in Sankt Augustin (Germany); Professor Didier Theilliol from University of Lorraine (France); Professor Yang Shi from University of Victoria (Canada); Professor Zhengjie Wang from Beijing Institute of Technology (China); Professor Simon X. Yang from University of Guelph (Canada); Professor Wei Ren from University of California, Riverside (USA), and me (Professor Deyi Li) from the Academician of Chinese Academy of Engineering. They will share their new theoretical results and techniques in the field of control, intelligent systems and unmanned technologies.

ICUS provides an international forum for professionals, academics, and researchers over the world to present latest developments of academic and technical issues related to unmanned systems. The theme for the conference in 2017 is “Development and Application of Unmanned Systems in Era of Artificial Intelligence”. Forms as group discussion, oral presentation and post presentation, etc. are also included in this conference.

Overall, we strongly believe that ICUS 2017 would deliver an inspiring, informative and educative program. All of these would not have been possible without the earnest efforts and dedication of the organizing committee behind the scenes for organizing the conference. Firstly, we would like to thank the Program Chair, Dongguang Li and his team of Program Committee members who have done an excellent job in executing all the details of the preparation activities. Then we would like to express our appreciation for the support of conference co-organizers: Chinese Unmanned Systems Academician Workstation; Beihang UAS Technology Co. Ltd; Key Laboratory of Information Fusion Technology of the Ministry of Education, Northwestern Polytechnical University; Laboratory of Unmanned System, School of Mechatronics and Automation, National University of Defense Technology; Editorial Department of Unmanned System Technology and Beijing Finding Education Co., Ltd. At last, we would like to thank all of participants.

We hope that you can gain not only insights and productive interactions during the conference but also an unforgettable memory during your stay in the wonderful capital in Beijing in China.

Thank you!

Deyi Li, Jie Chen
General Chairs of ICUS 2017

Welcome Message from Program Chairs

It is with great pleasure that we welcome you to the IEEE International Conference on Unmanned Systems organized in Beijing for the first time. This is an international forum for professionals, academics, and researchers over the world to present latest developments of academic and technical issues related to unmanned systems.

The ICUS 2017 is organized by the Chinese Institute of Command and Control (CICC), Beijing Institute of Technology (BIT) and American Institute of Electrical and Electronics Engineers (IEEE).

This is the first time the conference has been held. The theme for the conference in 2017 is “Development and Application of Unmanned Systems in Era of Artificial Intelligence”. As it is known to all, the artificial intelligence is a subversive and important field. The artificial intelligence weapon equipment will not only bring about the change of the future war form, but also lead to military command and decision-making changes. Obviously, the artificial intelligence is the most important military and civilian technology in the next few decades.

ICUS 2017 offers a unique and interesting platform for scientists, engineers and practitioners throughout the world to present and share their most recent research and innovative ideas in the areas of unmanned systems, robotics, automation, and intelligent systems. It includes a high-quality technical program consisting of plenary and special session talks, research papers, and industrial exhibition sessions.

We received more than 160 submissions from all over the world in response to the call for papers. Each paper was thoroughly reviewed by expert panel in the relevant field. After detailed discussions with the session chairs and in consultation with the program chairs, 125 papers were finally accepted, with an acceptance ratio of 78%. In collaboration with our publishers, accepted high-quality papers will be recommended to special issues in International Journal of Robotics and Automation (SCI-indexed), International Journal of Modeling Identification and Control (EI-indexed) and CAAI Transactions on Intelligence Technology (Elsevier).

All of these would be impossible without the contribution from all the participants, expert reviewers and all the members of organizing committee. Since it is the first time we organize this conference as a sponsor, faults are unavoidable during the program. We are very sorry for any possible inconvenience during this conference, and wish you all a very productive meeting and a pleasant experience in Beijing.

Thank you!

Dongguang Li
Program Chair of ICUS 2017

About the Conference

Co-Sponsors

1. **IEEE Beijing Section, China**
2. **Beijing Institute of Technology (BIT), China**
3. **Chinese Institute of Command and Control (CICC), China**

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5. **Association for Unmanned Vehicle Systems, China**
6. **International Society of Bionic Engineering, China**

Topics of Interests

1. **Unmanned Aerial Vehicles**
2. **Unmanned Ground Vehicles**
3. **Unmanned Underwater Vehicles**
4. **Unmanned System Command and Control**
5. **Sensing, Navigation and Control**
6. **Cooperative Control of Unmanned Systems**
7. **Unmanned System Dynamics**
8. **Unmanned System Modeling and Simulation**
9. **Artificial Intelligence and Intelligent Systems**
10. **Robotic Systems**
11. **Bionic Technology**
12. **New Concept Unmanned Systems**
13. **Other Related Technologies for Unmanned Systems**

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Schedule

Oct. 27th

Date	Time	Content	Place
Oct. 27th	09：00 - 21：00	Registration	Central Building
	14：00 - 15：40	Workshop 1: “Deep Reinforcement Learning for Unmanned Systems”, by Prof. Xin Xu	Room 101 of Postgraduate Building
	15：40 - 15：50	Tea Break	
	15：50 - 17：30	Workshop 2: “Aeroelasticity and Composite Structures in Micro, Small and Large Aircraft Design”, by Prof. Shijun Guo	

Oct. 28th

Date	Time	Content	Compere	Place
Oct. 28th	08：30 - 09：00	Opening Ceremony	Dongguang Li	Lecture Hall of Central Building
	09：00 - 12：00	“Challenges & Mass Production of L3 Vehicles”, by Prof. Deyi Li.	Xin Xu	
		Tea Break & Group Photo		
		“Vision-Based Road Boundary Tracking System for Unstructured Roads”, by Prof. David Hernandez.		
		“Force Feedback Teleoperation Robot and Its Application”, by Prof. Aiguo Song.		
	12：00 - 14：00	Lunch Break		YanYuan Restaurant
	14：00 - 18：00	Technical Sessions		Postgraduate Building

Oct. 29th

Date	Time	Content	Compere	Place
Oct. 29th	08：30 - 12：00	“Multiple UAS in Surveillance Operations”, by Prof. Antonios Tsourdos.	Yantao Shen	Lecture Hall of Central Building
		“A Model Predictive Control (MPC) Framework for Networked and Distributed Autonomous Systems”, by Prof. Yang Shi.		
		Tea Break		
		“Bio-inspired Intelligent Approaches to Various Autonomous Unmanned Robotic Systems”, by Prof. Simon X. YANG.		
		“Bio-inspired Agile Aerodynamic Flight and Robust Guidance in Small Aerial Vehicle”, by Prof. Zhengjie Wang.		
	12：00 - 14：00	Lunch Break		YanYuan Restaurant
	14：00 - 17：00	“Biomimetic Deformable Crawling Robots: New Class of Mechanisms, Designs, Modeling and Locomotion Performance Validation”, by Prof. Yantao Shen.	Zhengjie Wang	Lecture Hall of Central Building
		“Design of Fault-tolerant Control Methods Based on Reliability: Applications to a fleet of UAVs Testbeds”, by Prof. Didier Theilliol.		
		Tea Break		
		“Distributed Control, Estimation and Optimization in Multi-agent Systems: Algorithms and Applications”, by Prof. Wei Ren.		
	17：00 - 18：00	Award Ceremony	Dongguang Li	
	18：00 - 20：00	Banquet		YanYuan Restaurant

Attention:

1. A big photo for all participants will be taken after the opening ceremony on Oct. 28th, and then you can get the photo via the online registration system.
2. Lunches on Oct. 28th and Oct. 29th as well as dinner on Oct. 29th will be offered by the conference.

Technical Sessions

Session Chair: Christoph Göttlicher Meeting Room: Room 304		Co-Chair: Haibo Lv Regular Session: Unmanned Aerial Vehicles	
Session	**Time**	**Paper ID**	**Title and Author**
A	14:00-14:15	44	Establishing and Diagnosing Models in Medium-altitude UAV Haze Removal System
			Chunlei Liu, Wenrui Ding, Hongguang Li, Jiankun Li
	14:15-14:30	45	Semantic Segmentation for High-resolution Aerial Imagery Using Multi-Skip Network and Markov Random Fields
			Jiankun Li, Wenrui Ding, Hongguang Li, Chunlei Liu
	14:30-14:45	46	Low Drag Design of Radome for Unmanned Aerial Vehicle
			Wenbiao Gan, Jinwu Xiang, Tielin Ma, Qinling Zhang, Dawei Bie
	14:45-15:00	48	Experimental and Numerical Study of Flapping Wing Rotary MAV
			Wei Xu, Daochun Li, Jiaqi Jiang, Puxue Tan, Jinwu Xiang
	15:00-15:15	49	Design and Experimental Study of a New Flapping Wing Rotor Micro Aerial Vehicle
			Yi Sun, Daochun Li, Jiaqi Jiang, Jinwu Xiang, Wei Xu
	15:15-15:30	55	Multitask Assignment of Swarming UAVs Based on Improved PSO
			Guoqi Zeng, Yu Bai, Chunlei Liu, Kai Cui and Xin Zhang
	15:30-15:45	57	Applications of Active Flow Control Technologies in Low Aspect Ratio Flying Wing UAV Aerodynamic Design
			Zihan Xue, Tielin Ma, Wenbiao Gan, Chuanguang Yang, Gen Li
	15:45-16:00	**Rest**	
	16:00-16:15	58	Multiscale Compressed Sensing Method for ROI Coding
			Haibo Lv, Derong Chen, Jiulu Gong, Xiangxiao Gao, Zepeng Wang
	16:15-16:30	61	Source Seeking of UAV Via Adaptive Extremum Seeking Without Steady-State Oscillation
			Shuo Zhuo, Chaoyong Li, Donglian Qi
	16:30-16:45	67	Modeling Analysis and Controller Design of an Innovative Ducted Fan Aerial Vehicle
			Yibo Zhang, Changle Xiang, Bin Xu, Lei Liu
	16:45-17:00	68	A UAV Positioning Strategy Based on Optical Flow Sensor and Inertial Navigation
			Juntong Qi, Naixin Yu, Xiang Lu
	17:00-17:15	71	Research on Application Mode of Large Fixed-wing UAV System on Overhead Transmission Line
			Yi Wu, Liming Chen, Lingyu Kong, Jie Zhang, Miao Wang
	17:15-17:30	75	Research on Terminal Guidance of SUAV Based on Strapdown Image Module
			Yachao Yang, Chang Liu, Hong Ji, Jie Li
	17:30-17:45	324	Research on Fire Rescue System Architecture Based on LapRLS Prediction
			Haozhe Lou, Xin Jin

Session Chair: Hua Wang Meeting Room: Room 308			Co-Chair: Hongbin Deng Regular Session: Unmanned Aerial Vehicles
Session	**Time**	**Paper ID**	**Title and Author**
B	14:00-14:15	77	Online Path Planning Algorithms for Unmanned Air Vehicle Mengying Zhang, Hua Wang, Feng Cheng
	14:15-14:30	78	Assessment and Prediction of Complex Electromagnetic Environment Based on Bayesian Network Yuan Hu, Wenrui Ding, Chunlei Liu
	14:30-14:45	79	Design and Research of UAV Autonomous Grasping System Juntong Qi, Jinan Kang, Xiang Lu
	14:45-15:00	94	Optimization of Range and Endurance of a Propeller UAV Based on SQP Algorithm Yi Li, Jinwu Xiang
	15:00-15:15	98	Numerical Simulation of Mechanical Performances and Outflow Field for a Quad-rotor UAV Kewei Li, Bianhong Li, Dongfang Li, Chao Wang, Hongbin Deng
	15:15-15:30	104	Inflatable Airfoil Structure Optimization on Flying Wing Buoyancy-lifting Unmanned Aerial Vehicles Qingli Shi and Hua Wang
	15:30-15:45	110	Effectiveness Evaluation Model of Fixed Wing UAV Based on the Improved ADC Model Guifeng Zhang, Xiaoming Qiao, Min Luo, Wei Zhang, Xinqiao Wu, Hemeng Yang, Yanfang, Chen
	15:45-16:00		**Rest**
	16:00-16:15	111	Analysis of Technical Characteristics of Fixed-Wing VTOL UAV Tielin Ma, Chuanguang Yang, Wenbiao Gan, Zihan Xue, Qinling Zhang, Xiaoou Zhang
	16:15-16:30	119	Estimation on Location of Subsonic Aerodynamic Center for Tandem Airfoil Configuration or Multiple-Lifting-Surface System Hao Cheng, Hua Wang and Feng Cheng
	16:30-16:45	122	Orthogonal Design and Optimization of Flight Stability Test for the Quadrotor Unmanned Aerial Vehicle Xiaodong Hu, Xuexiang Huang
	16:45-17:00	124	A Fully Autonomous Multi-UAV Forest Search System Wei Meng, Yuchao Hu, Mingjie Lao, Kemao Peng, Fang Liao, Yazhe Tang, Feng Lin, Rodney Teo
	17:00-17:15	136	Study on Disaster Monitoring Technology of Mountain Fire Based on UAV Transmission Line Inspection Wei Zhang, Hong Yu, Zhengliang Yan, Jie Xu
	17:15-17:30	137	Development of the AMT in Yawing Control of Flying Wing UAVs Dawei Bie, Wenbiao Gan, Tielin Ma, Qinling Zhang, Xiaoou Zhang
	17:30-17:45	323	Modeling of Robotic Manta Ray Propelled by Servo Actuated Pectoral Fins Sandeep Reddy Chitti, Zheng Chen

Session Chair: Jiadong Shi			Co-Chair: Yue Ma
Meeting Room: Room 403			Regular Session: Unmanned Ground Vehicles
Session	**Time**	**Paper ID**	**Title and Author**
C	14:00-14:15	51	DFA Based Autonomous Decision-making for UGV in Unstructured Terrain
			Ning Li, Xijun Zhao, Jianfeng Gao, Xing Cui
	14:15-14:30	73	"RUNNING" – The Bionic Quadruped Robot
			Lei Jiang, Wei Xu, Peng Xu, Zuming Kang
	14:30-14:45	80	Design of Leader's Path Following System for Multi-vehicle Autonomous Convoy
			Xijun Zhao, Wen Yao, Ning Li and Yang Wang
	14:45-15:00	81	Adaptive Path Tracking for Unmanned Ground Vehicle
			Mengwei Zhang, Fengjie Tian, Yuqing He, Decai Li
	15:00-15:15	88	Human Tracking Based on Vision and Laser Sensor
			Guodong Yan, Jiadong Shi, Zhiyuan Yu, Jianzhong Wang
	15:15-15:30	89	Approach to Autonomous Stair Climbing for Tracked Robot
			Jianpo Guo, Jiadong Shi, Weiguang Zhu, Jianzhong Wang
	15:30-15:45	91	A Target Recognition Algorithm Applied to the Unmanned Ground Combat Platform in Curve Driving
			Jiarui Li, Lei Han, Zhipeng Dong, Yan Li, Ping Lang, Tao Shang
	15:45-16:00		**Rest**
	16:00-16:15	107	Design of Sliding Mode Controller on Steering Control of Skid Steering 6×6 Unmanned Vehicle
			Yue Ma, Yi Li, Hongjie Liang
	16:15-16:30	123	A Planning System for Robot Sampling Task-based on ROS Framework
			Weidong Wang, Wenwu Cao, Wenrui Gao, Zhijiang Du
	16:30-16:45	127	Outer Rotor Motor Thermal Analysis for Unmanned Ground Vehicle
			Weiguang Zhu, Zhiyuan Yu, Yongjian Ni, Jiadong Shi, Guang Li
	16:45-17:00	152	Design of Distributed DC Power Supply System for Unmanned Ground Vehicle Computer System
			Fu Liu, Peizhi Liu, Weiyan Chai
	17:00-17:15	164	An Improved Localization Method Based on the Fusion of Kinect and Odometry
			Caixia Lu, Zhongli Wang, Baigen Cai
	17:15-17:30	302	Design of High Voltage Surge Suppression Circuit for Unmanned Ground Vehicle Computer System
			Fu Liu, Peizhi Liu, Weiyan Chai
	17:30-17:45	308	Design of Permanent Magnet Synchronous Motor Based on Genetic Algorithm in Unmanned Ground Vehicles
			Weiguang Zhu, Zhiyuan Yu, Weifeng Zhou, Jiadong Shi, Yecheng Yin

Session Chair: Jinwen Hu Meeting Room: Room 404			Co-Chair: Qiannan Cui Regular Session: Unmanned Underwater Vehicles and Others
Session	**Time**	**Paper ID**	**Title and Author**
D	14:00-14:15	54	The Research of the AUV Navigation Control System Based on the LS-SVM
			Xiaoru Song, Kai Cao, Song Gao, Chaobo Chen, Jiaoru Huang
	14:15-14:30	305	Study on Data Transferring in Fluid Structure Interaction
			Lei Liang, Zhenhai Wanyan, Liang Yang, Jia Xu, Rongmei Nie, Xiaoxue Du
	14:30-14:45	312	Lyapunov-Based Model Predictive Control for Dynamic Positioning of Autonomous Underwater Vehicles
			Chao Shen, Yang Shi, Brad Buckham
	14:45-15:00	106	The Defect Detection of Personalized Print Based on Template Matching
			Binwu Ma, Wei Zhu, Yanghong Wang, Huan Wu, Yanzhu Yang, Hui Fan, Hongwei Xu
	15:00-15:15	129	Application of Uniform Design in Jet Projectile Charges Detonation Insensitive Explosives
			Hengxian Wang, Hua Wang, Zhigang Chen, Xiaozhong Zhang
	15:15-15:30	203	Data-Driven Fault Detection of Electrical Machine
			Zhao Xu, Jinwen Hu
	15:30-15:45	139	Active Disturbance Rejection Backstepping Control for Trajectory Tracking of the Unmanned Airship
			Jie Wang, Xiuyun Meng
	15:45-16:00		**Rest**
	16:00-16:15	151	Brief Analysis of Drone Swarms Communication
			Qiannan Cui, Peizhi Liu, Jinhua Wang, Jing Yu
	16:15-16:30	153	Adaptive Attitude Controller Design for Unmanned Helicopter
			Xingwen Zhang, Xianxiang Chen, Peizhi Liu, Jinhua Wang
	16:30-16:45	204	Finite-Time Consensus for Multi UAV System with Collision Avoidance
			Jinwen Hu, Sijia Li, Chunhui Zhao, Quan Pan, Bin Fan, Zhiyuan Zhang, Hua Li
	16:45-17:00	206	A Brief Review on the Positioning Technologies for Unmanned Aerial Vehicles
			Jinwen Hu, Zhiyuan Zhang, Chunhui Zhao, Dong Wang, Bin Fan, Sijia Li, Quan Pan
	17:00-17:15	303	Survey of Swarm Intelligence Optimization Algorithms
			Feng Yang, Pengxiang Wang, Yizhai Zhang, Litao Zheng, Jianchun Lu
	17:15-17:30	313	Gain Scheduling PID Control of the Quad-rotor Helicopter
			Jing Qiao, Zhixiang Liu, Youmin Zhang
	17:30-17:45	306	The Research on Launch Vehicle Collaborative Design Mode Based on Unified Data Source
			Shusen Sun, Xiaoxue Du, Jin Xiao, Suhong Ma, JunJie Tang

Session Chair: Bo Su Meeting Room: Room 408			Co-Chair: Qiuzhi Song Regular Session: Robotic Systems
Session	**Time**	**Paper ID**	**Title and Author**
E	14:00-14:15	43	An Efficient Autonomous Traction Control Method for Quadruped Robot
			Peng Xu, Bo Su, Lei Jiang, Qichang Yao, Ruina Dang, Wei Xu, Yunfeng Jiang
	14:15-14:30	65	Enhancement of Payload Capacity in a 3DOF Robotic Manipulator by Changing Motor Geometric Configurations
			Muhammad Ahsan Sami, Muhammad Umar Masood, Haris Sohail, Muhammad Mujtaba, Usman Ali Khan, Muhammad Shiraz, Nasir Rashid, Mohsin I. Tiwana, Javaid Iqbal
	14:30-14:45	76.1	A Kinematics Modeling Method of Linkage Robot Based on Euler Spinning Method
			Shitong Zhou, Qiuzhi Song, Xin Wang
	14:45-15:00	76.2	Design and Simulation of Load Dynamic Compensation Controller Based on Dynamic Model for Upper Limb Exoskeleton Robot
			Shitong Zhou, Qiuzhi Song, Xin Wang
	15:00-15:15	92	Multimode Obstacle-crossing Analysis of a Wheel/Track Mobile Robot
			Dengqi Cui, Xueshan Gao, Wenzeng Guo, Jian Li
	15:15-15:30	103	Bionic Control Method for Stable Tracking of Semi-strap-down Seeker
			Shushu Xia, Xiuling Ji, Zhengjie Wang
	15:30-15:45	116	The Control System Design and Simulation Analysis of Pneumatic Manipulator Based on AMESim
			Jian Li, Haidi Su, Peng Liang, Xueshan Gao
	15:45-16:00		**Rest**
	16:00-16:15	126	2D Obstacle Avoidance Method for Snake Robot Based on Modified Artificial Potential Field
			Dongfang Li, Zhihao Zhou, Hongbin Deng, Chao Wang, Kewei Li, Chaozheng Wang
	16:15-16:30	202	Coupled Convolution Method for Image Processing
			Wen Fan, Junli Liang, Pengliang Li
	16:30-16:45	304	Launch Vehicles' Virtual Test Bed Technology on Separation Applications
			Liang Yang, Zhenhai Wanyan, Jia Xu, Lei Liang, Jin Xiao
	16:45-17:00	320	Motion Control Technology Study on Tracked Robot with Swing Arms
			Qiang Xie, Bo Su, Jianghua Guo, Honglei Zhao, Wei Lan
	17:00-17:15	321	Design and Control of Stiffness Coordination between Knee and Ankle Joints for a Hopping Legged Robot
			Qiuguo Zhu, Weinan Wu, Yidong Zhao, Jun Wu, Rong Xiong
	17:15-17:30	311	Estimation of Vehicle Mass and Road Slope Based on Steady-state Kalman Filter
			Shengqiang Hao, Peipei Luo, Junqiang Xi
	17:30-17:45	318	Active Screw-Driven In-pipe Robot for Inspection
			Peng Li, Wei Yang, Xin Jiang and Congyi Lyu

Session Chair: Tiaoping Fu Meeting Room: Room 414			Co-Chair: Peizhi Liu Regular Session: Artificial Intelligence and Intelligent Systems
Session	**Time**	**Paper ID**	**Title and Author**
F	14:00-14:15	108	Surface Defect Detection of Plaster Coating Based on Machine Vision Huan Wu, Huifu Luo, Wei Zhu, Yanghong Wang, Qiang Zhang, Binwu Ma, Yanzhu Yang, Hui Fan, Hongwei Xu
	14:15-14:30	109	A Convolutional Neural Network Architecture for Vehicle Logo Recognition Changxin Huang, Binbin Liang, Wei Li, Songchen Han
	14:30-14:45	112	Research on Mangrove Recognition Based on Hyperspectral Unmixing Houjun Wang, Juan Zhang, Jin Wu, Zhiyang Yan
	14:45-15:00	133	A Fast Vehicle Detection Method by UAV Using Region Feature Gradient Lei Yan, Jiulu Gong, Derong Chen, Suoqi Zhang
	15:00-15:15	134	Sparsity-motivated Multi-Scale Histograms of Oriented Gradients Feature for SRC Suoqi Zhang, Jiulu Gong, Derong Chen, Linfeng Xu, Lei Yan
	15:15-15:30	142	Marine Unit Offensive Operation Simulation Based on Multi-Agent Tiaoping Fu, Jing Qu, Jianhui Zhong
	15:30-15:45	150	Visual Search in Split Screen Jiayi Cheng, Peizhi Liu, Jinhua Wang, Lili Hao
	15:45-16:00		**Rest**
	16:00-16:15	201	A Review of the Applications and Hotspots of Reinforcement Learning Jun Hou, Hua Li, Jinwen Hu, Chunhui Zhao, Yaning Guo, Sijia Li, Quan Pan
	16:15-16:30	148	Research on Cooperative Design Method of Aircraft Based on Master Model Xiaoxue Du, Wanqing Xin, Jin Xiao, Zongang Liu, Congying Li
	16:30-16:45	149	The High Dynamic Reconstruction of High-resolution Image Based on MapReduce Houyong Feng, Peizhi Liu, Nan Mu, Jinhua Wang
	16:45-17:00	163	IMU-assisted Data Association and Improvement in 2D Laser-based SLAM for Low Texture Environment K. Yang, Z. L.Wang, B.G. Cai
	17:00-17:15	207	Pose Estimation for Multi-Camera Systems Chunhui Zhao, Bin Fan, Jinwen Hu, Limin Tian, Zhiyuan Zhang, Sijia Li, Quan Pan
	17:15-17:30	307	Small Object Detection with Random Decision Forests Juanjuan Ma, Quan Pan, Jinwen Hu, Chunhui Zhao, Yaning Guo, Dong Wang
	17:30-17:45	319	A LiDAR Based End to End Controller for Robot Navigation Using Deep Neural Network J.K. Wang, X.Q. Ding, H. Xia, Y. Wang, L. Tang, R. Xiong

Session Chair: David Hernandez		Co-Chair: Baihai Zhang	
Meeting Room: Room 415		Regular Session: Sensing, Navigation and Control	
Session	**Time**	**Paper ID**	**Title and Author**
G	14:00-14:15	62	Vision-Based Road Boundary Tracking System for Unstructured Roads
			Erwin Prassler, David E. Hernandez
	14:15-14:30	66	Optimization Analysis of WSN Location Process Based on Hybrid PSO Algorithm
			Silin Liu
	14:30-14:45	84	Research on Integrated Attitude Determination Methods Based on MEMS Device for Quadrotor UAVs
			Keke Lu, Yong Chen, Songlin Li
	14:45-15:00	85	X-ray Pulsar Based Autonomous Navigation for Lunar Rovers
			Jingjing Li, Yutu Zhang, Sipei Shao, Huijun Hu, Zhengtao Ding
	15:00-15:15	90	Analysis and Simulation of Thrust Management System for Large Plane
			Yong Chen, Jing Yan Leng, Keke Lu
	15:15-15:30	95	Roll Estimation for Smart Munitions Using a 3D Magnetometer Only
			Qixian Wang, Dongguang Li, Rupeng Li, Jieru Fan, Tianyuan Yang
	15:30-15:45	101	A Modified Attitude Algorithm for the Adaptive Kalman Filter in High Dynamic Environment
			Menglong Wang, Hua Wang
	15:45-16:00		**Rest**
	16:00-16:15	114	A Study on the Robustness and Fragility of Tree-Based Wireless Sensor Networks with Community Characteristics
			Feifan Wang, Baihai Zhang, Qiao Li, Senchun Chai, Linguo Cui, Shi Zhang, Zixiao Guan
	16:15-16:30	132	Improved Smartphone-based Indoor Localization via Drift Estimation for Accelerometer
			Shenglun Yi, Tingli Su, Xuebo Jin
	16:30-16:45	135	Micro-motion Parameters Optical Measurement Method for Conical Target
			Zepeng Wang, Derong Chen, Shengzhe Chen, Haibo Lv, Jiulu Gong
	16:45-17:00	140	Spare A Search Approach for UAV Route Planning
			Chengjun Zhang, Xiuyun Meng
	17:00-17:15	143	Nonuniformity Correction Method with Dual Gradient Scenes for Unmanned Aerial Vehicles
			Dabiao Zhou, Lichun Yang
	17:15-17:30	146	The Comparison of PHD Algorithms with Adaptive Target Birth
			Feng Yang, Cangan Sun, Yumei Hu. Litao Zheng, Jianchun Lu
	17:30-17:45	315	Online Calibration for Monocular Vision and Odometry Fusion
			Xuefeng Wang, Haoyao Chen, Yanjie Li

Session Chair: Pengfei Li		Co-Chair: Jieru Fan	
Meeting Room: Room 504		Regular Session: Unmanned System Modeling and Simulation	
Session	**Time**	**Paper ID**	**Title and Author**
H	14:00-14:15	64	Simulation for Two-dimensional Trajectory Correction Projectile with Fixed-canard Based on Modified Proportional Navigation
			Jisi Cheng, Qiang Shen, Pian Zhou
	14:15-14:30	86	Design of an UAV Simulation Training and Assessment System Based on Unity3D
			Yongkang Jiao, Yong Chen, Daquan Tang
	14:30-14:45	93	Analysis for Cooperative Combat System of Manned-unmanned Aerial Vehicles and Combat Simulation
			Jieru Fan, Dongguang Li, Rupeng Li, Tianyuan Yang, Qixian Wang
	14:45-15:00	100	Reinforcement-Learning-based Miniature UAV Identification
			Xiaoyu She, Zhenyu Guan, Ruizhi Mao, Jie Li, Chengwei Yang
	15:00-15:15	105	Design and Modeling of Belt Grinding Tool for Industrial Robot Application
			Mingyang Li, Yongzhuo Gao, Wei Dong, Zhijiang Du
	15:15-15:30	113	A Personalized Curve Driving Model for Intelligent Vehicle
			Jianming Xie, Jianwei Gong, Shaobin Wu, Guangming Xiong, Chao Lu
	15:30-15:45	115	Research on New Military Plotting System Architecture Based on AutoCAD Secondary Development
			X. Jin, J. Zhou, H. L. Dong, W. Z. Lou, J. K. Wang, F. F. Wang
	15:45-16:00		**Rest**
	16:00-16:15	117	Design and Analysis of a Novel Multifunctional Screw-propelled Vehicle
			He Ding, Long Li
	16:15-16:30	147	Research on UAV Communication Network Topology Based on Small World Network Model
			Jingnan Li, Pengfei Li, Kai Liu
	16:30-16:45	310	Intelligent Control Method of Distributed Generation for Power Sharing in Virtual Power Plant
			Waseem Yousaf,Ehtisham Asghar,Hongmin Meng,Songyuan Yu,Fang Fang
	16:45-17:00	125	Design of Multi-Mode UAV Human-Computer Interaction System
			Jie Liang, Jian Cao, Lei Wang
	17:00-17:15	97	A Fast Method for Generating Aerodynamic Data for Missile Trajectory Simulation
			Han Chen,Shikun Wang,Hongbin Deng,Kewei Li,Dongfang Li,Chao Wang
	17:15-17:30	144	The Research and Independent on Autonomous Safe Landing for Unmanned Helicopter
			Guifeng Zhang, Daliang Bian, Wei Zhang, Xinqiao Wu, Zhijun Zhang, Hong Yu
	17:30-17:45	322	Modeling and Control of Longitudinal Motion for Unmanned Ground Vehicle in Complex Environment
			Chengxiang Li, Yong Liu, Jin Yan

Session Chair: Hongbin Ma	Co-Chair: Jinyong Yu		
Meeting Room: Room 506	Regular Session: Unmanned System Command and Control		
Session	**Time**	**Paper ID**	**Title and Author**
I	14:00-14:15	60	UCAVs Cooperative Task Allocation Method Based on Immune Evolutionary Computation
			Zhiqiang Nie, Ronggang Zhu, Peng He
	14:15-14:30	83	A Shared Control Architecture Based on Electrooculogram Signal and Global Vision for Smart Assistive Robots
			Lei Sun, Hua Chen, Ting Fu, Yangquan Chen
	14:30-14:45	87	Task Assignment and Route Planning Method of Cooperative Attack for Manned/Unmanned Aerial Vehicles
			Kunhu Kou, Jinyong Yu, Gang Wang, Fengxia Zhang
	14:45-15:00	99	Cooperative Search of UAV Swarm Based on Improved Ant Colony Algorithm in Uncertain Environment
			Fan Yang, Bing Li, Chengwei Yang, Jie Li, Xiuling Ji
	15:00-15:15	145	Infrastructure-free Cooperative Relative Localization for Unmanned Aerial Vehicles in GPS-denied Environments
			Kexin Guo, Lihua Xie
	15:15-15:30	162	Auxiliary Unmanned Driving Route Planning Algorithm Based on Mining Road
			Shuai Wang, Jianhua Wang, Zhujin Jiang
	15:30-15:45	205	Multi-target Threat Assessment in Air Combat Based on AHP and FVIKOR
			Kun Zhang, Peipei Liu, Ke Li, Weiren Kong, Jiandong Zhang
	15:45-16:00		**Rest**
	16:00-16:15	96	Ship-Aircraft Joint Situation Assessment by Using Fuzzy Dynamic Bayesian Network
			Jinyong Yu, Keke Lu, Wenjing Wang
	16:15-16:30	120	Research on Low-cost Technology of Hand Capture Applicable to GCS Human Factors Engineering Assessment
			Jian Cao, Jie Liang, Peipei Liu
	16:30-16:45	128	Research on Unmanned Electro-Acoustic Composite Dust Concentration Monitoring Network System Based on C-MBUS
			Y. Zhang, W. Z. Lou, M. H. Liao
	16:45-17:00	141	Fuzzy Sliding Mode Control Based on Disturbance Observer for Electromechanical Actuator on Guided Projectile
			Yiran Wei, Kewei Li, Xu Wang, Dongfang Li, Zhenhua Pan, Chao Wang, Hongbin Deng
	17:00-17:15	156	An Adaptive Control Method of Flexible Hypersonic Vehicle
			Xiaoxue Du, Wanqing Xin, Jin Xiao, Congying Li
	17:15-17:30	157	A Vision and Neural Network Based Air-Ground Coordinated Control System
			Muyun Jiang, Jiahui Shi, Hongbin Ma, You Li
	17:30-17:45	155	Application of Sliding Mode Controller with Proportional Integral Switching Gain in Robot
			Xiaofei Zhang, Hongbin Ma, Nannan Li, Xinghong Zhang

Workshop

Seminar 1:

Deep Reinforcement Learning for Unmanned Systems

Invited Speaker:

Prof. Xin Xu

National University of Defense Technology, China

Web: www.jilsa.net/xinxu.html

Email: xinxu@nudt.edu.cn

Brief Biography of the Invited Speaker:

Prof. Xin Xu received the B.S. degree in electrical engineering from the Department of Automatic Control, National University of Defense Technology (NUDT), Changsha, P. R. China, in 1996 and the Ph.D. degree in control science and engineering from the College of Mechatronics and Automation (CMA), NUDT. He has been a visiting scientist for cooperation research in the Hong Kong Polytechnic University, University of Alberta, University of Guelph, Russian Academy of Sciences and the University of Strathclyde, respectively. Currently, he is a full Professor with the College of Mechatronics and Automation, NUDT.

His main research areas include: reinforcement learning and approximate dynamic programming, learning control, robotics and intelligent vehicles, machine learning and data mining. He has coauthored four books and published more than 150 papers in international journals and conferences. He is the founding co-Editor-in-Chief of Journal of Intelligent Learning Systems and Applications (with Prof. Haibo He) and the founding associate Editor-in-Chief of CAAI Transactions on Intelligence Technology. He has served as an Associate Editor or Guest Editor of Information Sciences, IEEE Transactions on Systems, Man and Cybernetics: Systems, International Journal of Adaptive Control and Signal Processing, International Journal

of Social Robotics, Intelligent Automation and Soft Computing, Acta Automatica Sinica.

Prof. Xu is one of the scientists who received the 2nd class National Natural Science Award of China in 2012, the 1st class Natural Science Award from Hunan Province, P. R. China, in 2009 and the Fork Ying Tong Youth Teacher Fund of China in 2008. He is a Senior Member of IEEE, a Committee Member of the IEEE Technical Committee on Approximate Dynamic Programming and Reinforcement Learning (ADPRL) and the IEEE Technical Committee on Robot Learning.

Seminar 2:

Aeroelasticity and Composite Structures in Micro, Small and Large Aircraft Design

Invited Speaker:

Prof. Shijun Guo,

Cranfield University, UK

Email: s.guo@cranfield.ac.uk

Brief Biography of the Invited Speaker:

Prof. Guo (MSc, PhD) is a CEng, FRAeS, FHEA and SMAIAA who is specialized in Aeroelasticity and Structural Dynamics especially Composite Structures. He joined Cranfield University in UK since 2003. He has supervised 2 Post-Doc Research Assistants, 13 PhD and 17 academic visitors and visiting PhD students. He has published over 120 journal and conference papers, and has number of patents in novel FWR MAV and Tilt-Wing-Rotor UAV design. Prior to the current position, he worked in number of other UK universities including University of Hertfordshire, University of Lincolnshire, Oxford University and City University of London.

Prior to academic career, he worked in the aerospace industry for over 10 years as a research engineer in an Aircraft Structure Research Institute, AVIC, Xi'an, China and then at the formal British Aerospace (Civil Aircraft Division, Hatfield).

Prof. Guo has successfully carried out many research projects funded by UK, EU and international funding bodies and sponsors including EPSRC, BAE Systems, MBDA, Airbus, Innovative-UK and Rolls-Royce, EC (FP7), EOARD/USAFRL, Embraer, Chinese NSFC and AVIC. He keeps a wide range of research interests and activities such as bio-inspired flapping wing MAV, morphing wing technology,

aeroelastic tailoring of composite wings, smart composite structures, passive and active gust alleviation and flutter suppression for small and large aircraft.

He keeps active research cooperation with Chinese academic and industrial partners, and acts as visiting professor in BIT, Beihang University, Shandong University and Dalian University of Technology in China; an expert in aircraft design under the Chinese 111-Programme based at Beihang University; a senior technical advisor in COMAC/BASTRI.

Keynote

Topic One

Challenges & Mass Production of L3 Vehicles

Deyi Li

Chinese Academy of Engineering
International Academy of Sciences for Europe and Asia
President of Chinese Association for Artificial Intelligence
Director of China Cloud Computing Expert Committee

Professor Deyi Li received his Doctoral Degree from Heriot-Watt University in Edinburgh, UK, in 1983. Currently, he is an academician at both the Chinese Academy of Engineering and International Academy of Sciences for Europe and Asia, Dean of College of Robotics of Beijing Union University, President of Chinese Association for Artificial Intelligence, and Director of China Cloud Computing Expert Committee as well as being adjunct professor and doctoral supervisor at Tsinghua University and the National Defense University. As one of the first scholars studying in the UK after the reform and opening-up, he was honored as a returning overseas scholar and young/middle-aged expert making outstanding contributions. Supported by special government allowance, he also obtained the Ho Leung Ho Lee Foundation and Significant Contribution Award for Military Professional Technology. He has published three English-version monographs, two Chinese-version monographs, and seven books of a technology series as an editor-in-chief. He also obtained over ten national patents for inventions. He has presented over one hundred academic papers, with two paper cited over a thousand times among and accumulative ten thousand citations in total. Meanwhile, he has cultivated a hundred or more students with doctoral and master's degrees.

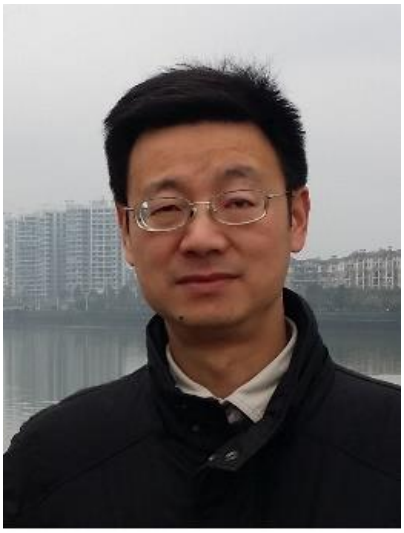
Topic Two

Vision-Based Road Boundary Tracking System for Unstructured Roads

David Hernandez

Member of the first flexible OLED screen developed team
Software development engineer of Locomotec GmbH in Sankt Augustin

Professor David Hernandez received a bachelor's Degree in Electronic Engineering from the Javeriana University Bogotá in 2012. In the same year, he joined the Nanophotonics research group of the mentioned university, where he was part of the development team of the first flexible OLED screen developed in Colombia. From 2012 to 2015, Hernandez joined the University of Applied Sciences Bonn-Rhein-Sieg as a research student, where in 2015, he received a master's degree in Computer Science. Since 2016, Hernandez joined Locomotec GmbH in Sankt Augustin as software development engineer.



Topic Three

Force Feedback Teleoperation Robot and Its Application

Aiguo Song

IEEE senior member
Chair or Co-Chair of 30+ International Conferences
Director of the Robot Sensor and Control Lab, Southeast University

Professor Aiguo Song received the B.S. degree in Automatic Control in 1990, the M.S. degree in Measurement and Control in 1993 from Nanjing Aeronautics and Astronautics University, Nanjing, China, and the Ph.D. degree in Measurement and Control from Southeast University, Nanjing, China in 1996.

From 1996 to 1998, he was an Associate Researcher with the Intelligent Information Processing Laboratory, Southeast University, China. From 1998 to 2000, He was an associate Professor with the School of Instrument Science and Engineering, Southeast University, China. From 2000 to 2003, he was the Director of the Robot Sensor and Control Lab, Southeast University, China. From April, 2003 to April, 2004, he was a visiting scientist with the Lab for Intelligent Mechanical Systems (LIMS), Northwestern University, Evanston, USA. He is currently the Dean and Professor of the School of Instrument Science and Engineering, Southeast University, China, and also the Director of Robot Sensor and Control Laboratory. His current interests concentrate on teleoperation robot, haptic display, space robot, and rehabilitation robot. He has published more than 260 peer reviewed journal papers, of which 130+ papers have been indexed by SCIE, and SCI cited time is 1300+. He received the best paper award 7 times.

Prof. Song is a member of Chinese Instrument and Control Association, a member of Chinese Robot Association, IEEE senior member. He serves as Associate Editor for Chinese Journal of Robot, Chinese Journal of Measurement, Journal of Sensors, Journal of Advanced Robotics Systems, Advances in Robotics Research, etc. He has served as Chair or Co-Chair of 30+ International Conference/Symposium.

Topic Four

Multiple UAS in Surveillance Operations

Antonios Tsourdos

Director of Research for the School of Aerospace, Transport & Manufacturing, Cranfield University

Head of the Centre for Autonomous and Cyber-Physical Systems within the School of Engineering, Cranfield University

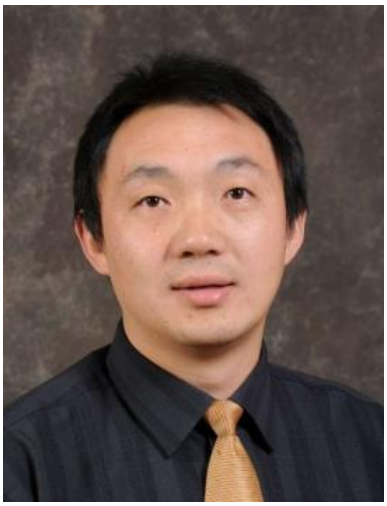
Board member of the International Journal of Systems Science, IEEE Transactions of Aerospace and Electronic Systems and the Aerospace Science & Technology

Chair of the IFAC Technical Committee on Aerospace Control

UK MoD Autonomy Grand Challenge (2008)

IET Innovation Award (Category Team, 2009)

Professor Antonios Tsourdos is the Director of Research for the School of Aerospace, Transport & Manufacturing and the Head of the Centre for Autonomous and Cyber-Physical Systems within the School of Engineering, Cranfield University. Professor Tsourdos was a member of the Team Stellar, the winning team for the UK MoD Autonomy Grand Challenge (2008) and the IET Innovation Award (Category Team, 2009). Professor Tsourdos is an editorial board member of the International Journal of Systems Science, IEEE Transactions of Aerospace and Electronic Systems and the Aerospace Science & Technology. Professor Tsourdos is the Chair of the IFAC Technical Committee on Aerospace Control. Professor Tsourdos is also a member of the IET Robotics & Mechatronics Executive Team and the UK National Committee on Autonomous Systems. He has a diverse expertise in both unmanned and autonomous vehicles as well as complex systems. He conducts basic and applied research in the fields of guidance, control and navigation for single and multiple unmanned autonomous vehicles as well as research on cyber-physical systems.



Topic Five

A Model Predictive Control (MPC) Framework for Networked and Distributed Autonomous Systems

Yang Shi

Fellow of IEEE, ASME and CSME

Associate Editor for many IEEE Trans.

Founding Vice Chair of IEEE IES Technical Committee on Industrial Cyber-Physical Systems

2015 Craigdarroch Silver Medal for Excellence in Research

Professor Yang Shi received the Ph.D. degree in electrical and computer engineering from the University of Alberta, Edmonton, AB, Canada, in 2005. From 2005 to 2009, he was an Assistant Professor and Associate Professor in the Department of Mechanical Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada. In 2009, he joined the University of Victoria, and now he is a Professor in the Department of Mechanical Engineering, University of Victoria, Victoria, British Columbia, Canada. His current research interests include networked and distributed systems, model predictive control (MPC), cyber-physical systems (CPS), robotics and mechatronics, navigation and control of autonomous systems (AUV and UAV), and energy system applications.

Dr. Shi received the University of Saskatchewan Student Union Teaching Excellence Award in 2007. At the University of Victoria, he received the Faculty of Engineering Teaching Excellence in 2012, and the Craigdarroch Silver Medal for Excellence in Research in 2015. He received the JSPS Invitation Fellowship (short-term), and was a Visiting Professor at the University of Tokyo during Nov-Dec 2013. His co-authored paper was awarded the 2017 IEEE Transactions on Fuzzy Systems Outstanding Paper Award. He is the founding Vice Chair of IEEE IES Technical Committee on Industrial Cyber-Physical Systems. He serves as Associate Editor for Automatica, IEEE Trans. Control Systems Technology, IEEE/ASME Trans. Mechatrnonics, IEEE Trans. Industrial Electronics, IEEE Trans. Cybernetics, IET Control Theory and Applications, ASME Journal of Dynamic Systems, Measurement, and Control. He is a Fellow of IEEE, ASME and CSME, and a registered Professional Engineer in British Columbia, Canada.

Topic Six

Bio-inspired Intelligent Approaches to Various Autonomous Unmanned Robotic Systems

Simon X. YANG

Professor and the Head of the Advanced Robotics and Intelligent Systems (ARIS) Laboratory at the University of Guelph

Editor-in-Chief of International Journal of Robotics & Automation, and Journal of Robotics & Artificial Intelligence

Associate Editor of IEEE Transactions on Cybernetics, Sensors journal

General Chair of the 2011 IEEE International Conference on Logistics and Automation

Distinguished Professor Award at the University of Guelph

Professor Simon X. Yang received the B.Sc. degree in engineering physics from Beijing University, China, in 1987, the first of his two M.Sc. degrees in biophysics from Chinese Academy of Sciences, Beijing, China, in 1990, the second M.Sc. degree in electrical engineering from the University of Houston, USA, in 1996, and the Ph.D. degree in electrical and computer engineering from the University of Alberta, Edmonton, Canada, in 1999. He joined the University of Guelph in Canada in August 1999. Currently he is a Professor and the Head of the Advanced Robotics and Intelligent Systems (ARIS) Laboratory at the University of Guelph. Prof. Yang's research interests include robotics, intelligent systems, sensors and signal processing, multi-sensor fusion, wireless sensor networks, intelligent control, and computational neuroscience.

Prof. Yang serves as the Editor-in-Chief of International Journal of Robotics & Automation, and Journal of Robotics & Artificial Intelligence; and serves as an Associate Editor of IEEE Transactions on Cybernetics, Sensors journal, and several other journals. Currently he is a panel member of the NSERC Discovery Grants Selection Committee on Electrical and Computer Engineering, and a panel member of the NSERC-CIHR (Canadian Institutes of Health Research) Collaborative Health Research Projects (CHRP) Selection Committee. He was General Chair of the 2011 IEEE International Conference on Logistics and Automation. Among many of his awards, he was a recipient of the Distinguished Professor Award at the University of Guelph.

Topic Seven

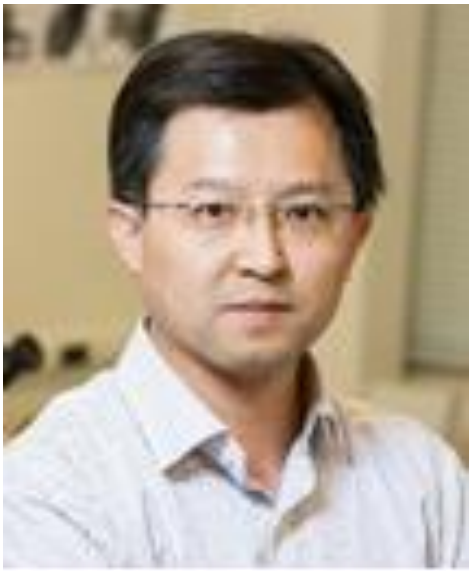
Bio-inspired Agile Aerodynamic Flight and Robust Guidance in Small Aerial Vehicle

Zhengjie Wang

Professor of Beijing Institute of Technology

Professor Zhengjie Wang is specialized in micro aircraft vehicle design especially aircraft guidance and control system design. She has been working in Beijing Institute of Technology from 2001. She has supervised 3 Ph.D. students. Currently 4 Ph.D. students are under her supervision. She has published over 40 journal and conference papers, one textbook on control theory and one professional book about microminiature unmanned system.

Prof. Wang has successfully carried out many research projects such as Seamless Continuous Control Surfaces of the Flexible Wing Aircraft Dynamics Modeling and Control (NSFC, 2012-2014; 2017-2020), Bio-inspired Guidance and Control Technology (National Advanced Research Project, 2016-2020), Flexible Wing Bionic Aircraft Technology (National Advanced Research Project, 2011-2015). She keeps active research cooperation with the academics of UK and Germany.



Topic Eight

Biomimetic Deformable Crawling Robots: New Class of Mechanisms, Designs, Modeling and Locomotion Performance Validation

Yantao Shen

UNR IEEE Outstanding Electrical Engineering Professor
NSF CAREER Award
Best Conference Paper Award in the 2007 IEEE RO-MAN
T. J. Tarn Best Robotics Paper Award in the 2009 IEEE ROBIO

Professor Yantao Shen received his BS and MS degrees from Beijing Institute of Technology, and the Ph. D. degree from the Chinese University of Hong Kong. He is currently an Associate Professor in the Department of Electrical and Biomedical Engineering at University of Nevada, Reno (UNR). Dr. Shen's current research interests include Bio-robotics/-mechatronics, Bioinstrumentation and Automation, Sensors and Actuators, Visual Servoing, and Tactile & Haptic Interfaces. He has authored-coauthored one book chapter and over 100 peer-reviewed journal and conference papers, and co-holds four US patents. His research papers have been nominated/selected as a finalist for Best Vision Paper Award in the 2001 IEEE ICRA, a finalist for Best Conference Paper Award in the 2007 IEEE RO-MAN, a winner of the T. J. Tarn Best Robotics Paper Award in the 2009 IEEE ROBIO, a finalist for Best Conference Paper Award in the 2014 IEEE ROBIO, a finalist for Best Paper Award in Biomimetics in the 2015 IEEE ROBIO, and a candidate for the award in the 2017 IEEE/RSJ IROS by the committee.

Dr. Shen's research is currently supported by NSF and National Robotics Initiative (through NIH R01), as well as NASA and local agencies. He was a recipient of NSF CAREER Award, the 2015 Excellence Award from UNR College of Engineering and the UNR IEEE Outstanding Electrical Engineering Professor in both 2010 and 2011.

Topic Nine

Design of Fault-tolerant Control Methods Based on Reliability: Applications to a fleet of UAVs Testbeds

Didier Theilliol

Full Professor in Research Centre for Automatic Control of Nancy (CRAN) at University of Lorraine

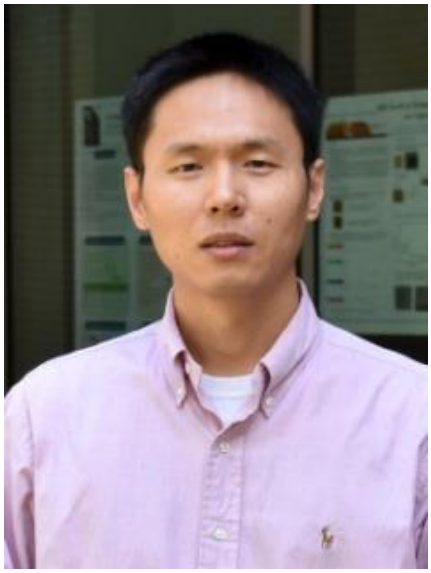
Scientific leader of Co-design of Fault Tolerant Control Architectures and Methodologies for Dynamic Systems (CSDF) research group at CRAN

Associate Editor of ISA Transactions Journal etc

Professor Didier Theilliol received the Ph.D. degree in Control Engineering from University of Lorraine (France) in 1993. Since September 2004, he is a full Professor in Research Centre for Automatic Control of Nancy (CRAN) at University of Lorraine where he co-ordinates and leads National, European and International R&D projects in steel industries, wastewater treatment plant and aerospace domains. Didier Theilliol is currently a scientific leader of Co-design of Fault Tolerant Control Architectures and Methodologies for Dynamic Systems (CSDF) research group at CRAN. His current research interests include model-based fault diagnosis (FDI) method synthesis and active fault-tolerant control (FTC) system design and also reliability analysis. He has published over 200 journal/conference papers. He is currently an Associate Editor of various journals such as ISA Transactions Journal. Didier Theilliol was Associate Editor of IEEE Transactions on Reliability (2013-2016).

2012-2013 and 2013-2014: Visiting Professorship for Senior International Scientists for Chinese Academy of Sciences (Shenyang Institute of Automation, Shenyang, China)-Project on Fault Tolerant Control on Fleet of Unmanned Helicopters under reliability constraints.

2012-2011: Visiting Professor in Departement of Mechanical and Industrial Engineering with Dr Youmin Zhang (Faculty of Engineering and Computer Science, Concordia University, Canada) - Project on Fault Tolerant Control Design on UAV systems.



Topic Ten

Distributed Control, Estimation and Optimization in Multi-agent Systems: Algorithms and Applications

Wei Ren

IEEE Fellow

Professor of the Department of Electrical and Computer Engineering, University of California, Riverside

Associate Editor for Automatical, Systems and Control Letters, and IEEE Transactions on Control of Network Systems

Professor Wei Ren is currently a Professor of the Department of Electrical and Computer Engineering, University of California, Riverside. He received the Ph.D. degree in Electrical Engineering from Brigham Young University, Provo, UT, in 2004. From 2004 to 2005, he was a Postdoctoral Research Associate of the Department of Aerospace Engineering, University of Maryland, College Park. He was an Assistant Professor (2005-2010) and an Associate Professor (2010-2011) of the Department of Electrical and Computer Engineering, Utah State University. His research focuses on distributed control of multi-agent systems, networked cyber-physical systems, and autonomous systems. Dr. Ren is an author of two books Distributed Coordination of Multi-agent Networks (Springer-Verlag, 2011) and Distributed Consensus in Multi-vehicle Cooperative Control (Springer-Verlag, 2008). He was a recipient of the National Science Foundation CAREER Award in 2008. He is currently an Associate Editor for Automatical, Systems and Control Letters, and IEEE Transactions on Control of Network Systems. He is an IEEE Fellow.

Venue

ICUS 2017 venue locations are shown below:

Tip:
If you have any problems in finding the locations, please contact the conference group, Jieru Fan (+86-13910756691).

A. Registration & Keynote（大会注册地点）

Central Building, Beijing Institute of Technology (北京理工大学中心教学楼)

B. Accommodation（住宿地点）

YanYuan Hostel, Beijing Institute of Technology (北京理工大学延园招待所)
Tel.: +86 10-68911191

C. Technical Sessions & Workshop（小组讨论地点）

Postgraduate Building, Beijing Institute of Technology (北京理工大学研究生院)

D. Dinning（用餐地点）

YanYuan Restaurant (延园餐厅)

E. North Gate of Beijing Institute of Technology (北京理工大学北门)

F. East Gate of Beijing Institute of Technology (北京理工大学东门)

G. South Gate of Beijing Institute of Technology（北京理工大学南门）

H. West Gate of Beijing Institute of Technology（北京理工大学西门）

Tourism

Tian'anmen Square

Tian'anmen Square is one of the largest city squares in the world. It is situated in the heart of Beijing. Tian'anmen was built in 1417 and was the entrance gate to the Forbidden City. Now the square stretches 880 meters from north to south and 500 meters from east to west. The total area is 440,000 square meters. That's about the size of 60 soccer fields, spacious enough to accommodate half a million people.

The Great Wall

The Great Wall of China is a series of stone and earthen fortifications in northern China, built originally to protect the northern borders of the Chinese Empire against

intrusions by various nomadic groups. Several walls have been built since the 5th century BC that are referred to collectively as the Great Wall, which has been rebuilt and maintained from the 5th century BC through the 16th century. One of the most famous is the wall built between 220–206 BC by the first Emperor of China, Qin Shi Huang. Little of that wall remains; the majority of the existing wall was built during the Ming Dynasty.

The Ming Tombs

The Ming Tombs are located in the northwestern suburbs of Beijing, about fifty kilometers from the city. They are the tombs of thirteen emperors of the Ming Dynasty (1368-1644 A.D).

Dingling is the tomb of the tenth emperor of the Ming Dynasty and his two empresses. Its underground palace was the first of the underground structures excavated between 1956 and 1957.

Dingling consists of five chambers, all built of stone. Its total area is 1,195 square meters. The Ante-chamber and the Central Chamber are 7.2 meters high each. Two Side Chambers are 7.1 meters high each. In the Central Chamber there are three thrones. The Back Chamber, 9.5 meters high, is the place where the coffins are kept.

The grave goods of Dingling number over 3,000 pieces in all, including gold, silver, pearls, jewels, jadeware, chinaware, lacquerware, silk goods.

Fragrant Hills

Another name for Fragrance Hill is Garden of Tranquility and Pleasure. It is located in the west suburbs of Haidian District with a total area of 160 ha. and the peak of 557m high, 25km far from the central city. As a very famous garden in Beijing, it can be traced back to Jin Dynasty when the emperor built the Big Yong'an Temple, also known as Sweet Dew Temple. The emperor built his temporary dwelling palace next to this temple from one generation to another and the name Garden of Tranquility and Pleasure was given in the 10th year of Emperor Qianlong (1745).

Beihai Park

It is the earliest royal palace garden park. It is located in Xicheng District Wenjin Street No. 1 (North of the Imperial Palace). It is around the Imperial Palace, Jingshan Hill and Zhongnanhai Park and so on.

The Summer Palace

The Summer Palace is a palace in Beijing, China. The Summer Palace is mainly dominated by Longevity Hill and the Kunming Lake. It covers an expanse of 2.9 square kilometers, three quarters of which is water.

Longevity Hill is about 60 meters (200 feet) high and houses many buildings positioned in sequence. The front hill is rich in the splendid halls and pavilions, while the back hill, in sharp contrast, is quiet with natural beauty.

The central Kunming Lake covering 2.2 square kilometers was entirely man made and the excavated soil was used to build Longevity Hill. In the Summer Palace, one finds a variety of palaces, gardens, and other classical-style architectural structures.

In December 1998, UNESCO included the Summer Palace on its World Heritage List. It declared the Summer Palace "a masterpiece of Chinese landscape garden design. The natural landscape of hills and open water is combined with artificial features such as pavilions, halls, palaces, temples and bridges to form a harmonious ensemble of outstanding aesthetic value." It is a popular tourist destination but also serves as a recreational park.

2017 International Conference on Unmanned Systems

Beijing, China October 27-29, 2017