

2019 IEEE 1st International Conference on Civil Aviation Safety and Information Technology (ICCASIT 2019)

**Kunming, China
17-19 October 2019**



**IEEE Catalog Number: CFP19WTF-POD
ISBN: 978-1-7281-2599-2**

**Copyright © 2019 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:	CFP19WTF-POD
ISBN (Print-On-Demand):	978-1-7281-2599-2
ISBN (Online):	978-1-7281-2598-5

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

Table of Contents

AS005	Image Processing of Different Fuels with Burning Flame	1
	<i>Lin Hu, Li Deng, Quanyi Liu</i>	
AS008	A method for the outlier flights detection of the final approach based on FOQA data	7
	<i>Yunpeng Jiang, Rui Liu, Ningning Le, Yinger Zheng</i>	
AS010	Speech Separation for Aerodrome Traffic Control Recordings by Auxiliary function based Independent Vector Analysis	12
	<i>Pengyu Wang</i>	
AS011	Design and Test of High Availability Airborne Communication Network Based on TAN Principle	17
	<i>Zhikun Liu, Yijun Tong, Yifang Wang, Zhiya Zhao, Xuetao Dai</i>	
AS013	Electronic aircraft maintenance record signature technology based on SM2 cryptographic algorithm	23
	<i>Rui Liu, Yingzhi Zou, Xinfeng Chen, Haitao Yang</i>	
AS016	Promoting the High-quality Development of Industrial APP in Jiangsu Province Under New Development Concept	28
	<i>Dianwei Wang</i>	
AS019	Civil aircraft surface defects detection based on histogram of oriented gradient	34
	<i>Guo Jiachen, Xu Juan, Zuo Hongfu, Fei Hang, Zhong Zhirong, Xu Xiangqian</i>	
AS020	A Prepar3d Based Signal Simulation System for ARINC429 Bus	39
	<i>Jiansheng Wang, Xiaoguang Lu, Zhe Zhang, Ping Han</i>	
AS024	Aircraft Wing Deformation Measurement Method Based on Three-dimensional Speckle Image	44
	<i>Lei Yang, Weiwei Zhang, Hang Yu</i>	
AS025	AeroMACS Field Trial at Guilin Airport of China	49
	<i>Ao Liu, Yi Zhang, Long He</i>	
AS027	Air Safety Early Warning System Based on Time Series	54
	<i>Weiwei Zhang, Qing Li, Hang Yu</i>	
AS031	A Framework of Reliability Improvement Based on Field Data: A Case of the Vehicle's Front Hub Bearing Assembly	58
	<i>Yuqing Yao, Zhaomin Zhang, Shuguang He, Lisha Song</i>	
AS034	Airport Fire Emergency Rescue Virtual Drill Platform Based on Virtual Reality Technique	63
	<i>Haiyao Xu, Xinpeng Zhu, Jian Wan</i>	

AS036	Research on detection technology of civil aviation information network based on SDN <i>Jiaxing Lei, Yang Hu</i>	67
AS037	Airport Delay Prediction Method based on Improved Weather Impacted Traffic Index <i>Kai Wang, Jie Li, Yong Tian</i>	73
AS042	Grey Correlation Analysis of Hard Landing Based on QAR Data <i>Xin Lu, Dawei Chen, Fengtian Zhang</i>	79
AS044	Research on Coding Of Conventional Procedures Based Upon ARINC Specification 424 <i>Rui Xue, Jia Ren, Gongbo Chai, Linling Huo</i>	84
AS049	Research on Traceability Model of Aircraft Equipment Based on Blockchain Technology <i>Cheng Wang, Bingxue Li</i>	88
AS050	A Method of Flight Off-Block Time Prediction Based on LSI-CNN Model <i>Mao Jian, Dang Zhengyang, Liu Yang, Li Dingliang, Deng Dingyu, Zhang Yang</i>	95
AS051	Research on navigation data coding method <i>Gongbo Chai, Jia Ren, Rui Xue</i>	100
AS053	Application Research of Deep Learning in the Field of Aircraft Fault Diagnosis <i>Yuelei Liu</i>	104
AS055	Dynamic Prediction about Turnaround Time of Flight based on Support Vector Machine Regression <i>Cong Wan, Chen Zhaoxin, Du Yuxian, Liu Yang, Pan Ye, He Tao</i>	109
AS058	Correlation Analysis of Semantic Network Nodes in Flight Fatigue Events <i>Junjie Liu, Yinlan Du, Ruirui Zhang</i>	114
AS060	Time Prediction of Off-Block Model Based on Serial Process Neural Network <i>Chen Zhe, Liu Yang, Li Yifan, Xu Gaoyang, Zhang Yi</i>	120
AS061	Improving Aircraft Maintenance Operations Through Model Based Definition Maintenance Support System <i>Hongjun Qiu, Ju Tian, Jianjun Yu</i>	125
AS064	Research of Distributed Deceptive Defense System of Civil Aviation Information Network on SDN <i>Su Lin</i>	131
AS066	Big Data Platform of Air Traffic Management <i>Yukun Chen, Luhua Zhou, Junyi Yang, Yuedan Yan</i>	137
AS069	The Application of Linear Optimization in Establishing Safety Triggers in Safety Performance Management <i>Rong Zhao, Mei Rong, Yanqiu Chen</i>	142

AS073	Research On Aircraft Virtual Assembly Technology Based On Gesture Recognition <i>Xintong Shao, Xiaofei Wei, Shengxian Liu</i>	147
AS074	An aircraft fire emergency rescue system based on visual simulation <i>Zhang Yongli, Jin Qinfang, Yu Wenfei</i>	151
AS078	Analysis of PTN Mobile Return Network Architecture and Network Protection Mode <i>Haitao Chen, Youcheng Liang</i>	156
AS079	Analysis of packet switching technology in civil aviation data transmission network <i>Youcheng Liang, Haitao Chen</i>	160
AS080	Analysis of pilots' cognitive bias based on information processing model <i>Yanqing Wang, Rui Li</i>	163
AS082	Research on Information Quantity Measurement of Aviation Safety Report <i>Zhenxin Cui, Chunhao Liu</i>	167
AS083	Improved Fingerprint Localization Algorithm based on Channel State Information <i>Lu Yin, Tianrun Jiang, Zhongliang Deng, Ziyang Wang</i>	171
AS085	Detection Algorithm Design for PUCCH in NOMA System <i>Dan Deng, Hong Zhu</i>	176
AS086	An Algorithm for Unmanned Aerial Vehicle Landing Scene Recognition based on Deep Learning and Computational Verbs <i>Chao Tian, Chaobing Huang</i>	180
AS087	A Scene Classification Method based on Neural Network and Computational Verb <i>Qi Huang, Chaobing Huang</i>	185
AS089	State Machine Based Malicious Packet Attack Detection and Security Situation Assessment <i>Ying Liu, Dongqin Feng</i>	189
AS091	Design of a General Purpose Wireless Compact Stimulator for Freely-moving Animal Subject In-vivo Neuroscientific Research <i>Zhangyi Yuan, Milin Zhang, Xuecheng Wang, Zhihua Wang, Jiaxin Lei</i>	195
AS097	A Novel Routing Protocol based on E-GyTAR for VANETs in City Environment <i>Kexiu Ding, Dengyin Zhang, Fei Ding, Min Zhang</i>	200
AS098	Applying Apriori Algorithm and Decision Tree to Promote Data Traffic of Mobile Customers <i>Linlin Luan, Huaying Shu</i>	204
AS099	Scene Matching Method of Video Satellite Remote Sensing Image based on Deep Convolutional Neural Network <i>Xueyang Zhang, Longlong Xiao, Min Hu, Junqi Liu</i>	211

AS100	A Weight-based Multi-innovation Intelligent Tracking Algorithm with Maneuver Detection	216
	<i>Youli Wu, Yang Xu, Tongxin Liu, Xinyu Dong, Chuanzhuan Peng</i>	
AS103	Quantum-behaved Pigeon-inspired Optimization Algorithm based on Particle-best Mutation	221
	<i>Bingsong Xiao, Rui Wang, Yang Xu, Jundi Wang, Yongjian Yang, Youwei Deng</i>	
AS109	Fault Diagnosis Algorithms Based on GEP	226
	<i>Xuejun Zhao, Yuhao Dong, Xiujia Yuan, Yiwei Zhao, Zhuangzhuang Bao, Jialin Li</i>	
AS114	Training Ternary Neural Networks By Rectified L2 Regularization	231
	<i>Qiankun Han, Yuanning Fan, Jiexian Ge, Xiaoxin Cui, Dunshan Yu</i>	
AS117	Credit card fraud identification based on unbalanced data set based on fusion model	235
	<i>Donglin Li</i>	
AS118	Privacy Protection and Authorization Control System based on Android	240
	<i>Yue Wu, Zhengfei Xiang, Peisen Xu</i>	
AS119	An Offspring Generation Strategy for MOEA/D	244
	<i>Xiaoji Chen, Bin Wu, Pengcheng Sheng</i>	
AS122	Solving the Prize-collecting Location Routing Problem in Chinese Rural Logistics Network by a Bi-level Genetic Algorithm	249
	<i>Jiang Wu, Yuanhua Jia</i>	
AS123	Application of QFD-AHP in Decision-making of Aircraft Trajectory Calculation Programme	254
	<i>Xiaowei Dai, Dong Li</i>	
AS124	A Redistribution Method of CT Image HU Value	258
	<i>Jie Chang, Minquan Ye, Naijie Gu, Xiaoci Zhang, Tianhan Hu</i>	
AS125	Identification of Node Influence Based on Improved K-shell Algorithm	262
	<i>Li Kai, An Shi</i>	
AS127	Employment Recommendation Algorithm Based on Ensemble Learning	267
	<i>Yubei Lin, Yinhua Huang, Pingping Chen</i>	
AS130	Improvement of Word Bag Model based on Image Classification	272
	<i>Zeng Hao, Lin Kaidong, Qin Feng</i>	
AS131	TrackDQN: Visual Tracking via Deep Reinforcement Learning	277
	<i>Pei Yang, Jiyue Huang</i>	
AS134	A Genetic Algorithm for the Two-Echelon Vehicle Routing Problem with Simultaneous Pickup and Delivery	283
	<i>Tai Jia, Zhu Jing, Ma Hong</i>	

AS136	Tolerance Fault WNN Diagnosis Based on UKF with Variance Inflation Factor for Analog Circuit	288
	<i>Xusheng Gan, Jingjuan Sun, Shuangfeng Li</i>	
AS139	Combined-LSTM based User Electricity Consumption Prediction in a Smart Grid System	292
	<i>Yun Su, Naiwang Guo, Hanghai Yang</i>	
AS141	Evaluation Method of Operation State in Overweight Rejection based on Unary Linear Regression Model	298
	<i>Haofeng Yan, Yu Wang, Tingdong Fang, Xiaofei Chen</i>	
AS143	Data Multiple Interpolation Technique Based on Convolutional Neural Networks	302
	<i>Deliang Ji, Jia Shi, Zhongfeng Wang, Linchao Xie, Gangyi Fang</i>	
AS145	An Algorithm Based on Hitting Set for SAT Problem	306
	<i>Youjun Xu, Yingrui Ma, Zi Li</i>	
AS149	Research on Optimization Problem of Routing about Parking Guidance Based on Improved Ant Colony Algorithm	311
	<i>Juan Li, Zi Li, Tao Sun, Meijuan Jia, Haitao Yu</i>	
AS150	Research on Optimization of Visual Navigation Algorithm for Real-time Obstacle Avoidance of UAV Moving Target Tracking	315
	<i>Siyu Chen, Lei Wang, and Wei Chen</i>	
AS151	Optimal Design and Research of Cluster Wave Generator	321
	<i>Xunkuai Zhou, Dagui Huang</i>	
AS154	Design of an Universal Installation Method for Spacecraft Heavy-weight Instruments Based on Adjustable Robot End-effector	326
	<i>Bin Zhang, Chengli Zhang, Fugui Xie, Xiaoqiang Tang, and Wangmin Yi</i>	
AS158	Transfer Alignment Method and Realization of SINS on Moving Base Based on Kalman Filter	329
	<i>Mingyu Cong, Huan Lu, Xianghong Cheng, Hao Liang</i>	
AS161	Structural design and simulation of inflatable rotor blades for a rotary-wing flying mount	334
	<i>Wang Ying, Liu Li, Wu Da</i>	
AS163	Multi-controller Placement Scheme Based on Network Overhead Optimization in Software Defined Network	339
	<i>Shanshan Wang, Zhengwu Yuan, Peng Zhou, Xiaojian Zhang</i>	
AS164	Research on Supplier Selection Method Based on BP Neural Network	344
	<i>Zhang Yangyang, Cheng Zhonghua, Ma Quanyue, Wang Qian</i>	

AS166	Research on Image Detection and Application of Security Dangerous Goods Based on SSD	348
	<i>Xinyang Xu, Qiang Gao, Ye Tian, Weijie Shen, Ruifeng Hong, Jun Pan</i>	
AS167	Study of Modified Chaotic Artificial Bee Colony Algorithm Based on Process Solutions	351
	<i>Xueli Jiang, Fenmei Wang, Jingang Jiang</i>	
AS169	Learning LASSO Regularized and Time-Aware Continuous Convolution Operator Correlation Filter for Visual Tracking	355
	<i>Heng Zhang, Li Cao</i>	
AS172	Intelligent Battlefield Situation Comprehension Method Based on Deep Learning in Wargame	363
	<i>Junfeng Zhang, Qing Xue, Qihua Chen, Yang Zhang, Ping Ding, Qing Deng</i>	
AS175	An Improved Pose Matching Method Based on Deep Learning	369
	<i>Junyi Li, Jun Li</i>	
AS177	An improved Image Description Method Using Recurrent Neural Network with Gated Recurrent Unit	372
	<i>Haiyong Wang, Kezheng Li</i>	
AS183	Real-time Smoothing Algorithm for High-frequency Measurement and Control Target Attitude Based on Least Square Fitting of Orthogonal Set	377
	<i>Liu Hongjian, Sun Baohui, Gao Ya, Wang Yan, Wang Jiawei</i>	
AS187	Fusion of Three-frame Difference Method and Background Difference Method to Achieve Infrared Human Target Detection	381
	<i>Mengying Lei, Jianping Geng</i>	
AS188	Design of password encryption model based on AES algorithm	385
	<i>Ying Liu, Wei Zhang, Xinxia Peng, Yan Liu, Sida Zheng, Tongjia Wei, Liang Wang</i>	
AS190	Cooperative Mobile Edge Computing Architecture in IoV and Its Workload Balance Policy	390
	<i>Xiaohui Gu, Guoan Zhang, Nan Zhao</i>	
AS191	Logic carrying network building method based on link load balancing	397
	<i>Hongqiao Zhao, Minsheng Tan, Chuangwei Tang, Shiyong Xia, Zheng Peng</i>	
AS194	The Realization of Moving Target Tracking in Monitoring Video based on Deep Learning	403
	<i>Qiong Ren, Juming Chang, Hai Han</i>	
AS198	Research and Implementation of XDMA High Speed Data Transmission IP Core Based on PCI Express and FPGA	408
	<i>Liu Boyang</i>	

AS199	Research and Design of Trusted Enhancement Model for Wireless Sensor Computing Environment	412
	<i>Dang Xinlai, Qiang Jie, Li Dong</i>	
AS203	Analyzing the Causes of Tail Strike Event during Takeoff with Stepwise Regression	418
	<i>Yanda Chen, Zheng Han, Jian Gu</i>	
AS208	Design of Lean Maintenance Process for Ball Screw Actuator	425
	<i>Chen Zhang, Chun Wang, Qi Chen</i>	
AS212	Technologies Raise the Effectiveness of Airport Security Control	431
	<i>Zhou Zhang</i>	
AS216	The Establishment of Convective Weather Forecasting System Applied to Air Traffic Management in North China	435
	<i>Yi Huang, Wei Zhang, Chenlu Xu, Han Shen, Miao Chen, Fei Wang</i>	
AS223	Design on Intelligent Medical Platform for Nursing and Communication	440
	<i>Xiaochen Xu, Lei Zhu, Shuyi Zhao, Lanhua Zhang</i>	
AS226	Design of a Turbulence Prevention System Based on ATG	445
	<i>Qi Chen, Zhanhai Wang, Jian Wan, Tianmei Feng, Pu Chen, Chun Wang, Chen Zhang</i>	
AS228	Research and Application of Configuring Monitoring User Group of FREQUENTIS in Beijing Area Control Center	450
	<i>Liu Chenkai</i>	
AS233	Perceived Fatigue of Air Traffic Controllers in China:A survey of 927 air traffic controllers	454
	<i>Tong Li, Fuli Bai, Qian Wu</i>	
AS236	Application of Schedule Data Acquisition System for Construction Management in Yangda Railway	458
	<i>Xinwen Ning</i>	
AS240	Parametric Modeling Method for Generating Access Road Models in a 3D Scene	462
	<i>Heng Zhang</i>	
AS241	Design and Verification of an Aircraft Landing Gear Taxiing Test System	467
	<i>Zhanhai Wang, Qi Chen</i>	
AS244	Fatigue Detection of Air Traffic Controllers Using Metabolomic Methods	471
	<i>Zhenling Chen, Jianping Zhang, Pengxin Ding</i>	
AS251	A Redundant Fault-tolerant Aviation Control System Based on Deep Neural Network	475
	<i>Ying Zhang, Leiyan Tao, Shihui Wang, Jian Cao, Siwen Xu, Xing Zhang</i>	
AS255	An Air Conflict Prediction Method Applied to General Aviation	481
	<i>Heng Li, Honggang Wu, Donglin He, Xingbo Li</i>	

AS259	Aircraft Pollutant Emission Estimation and Time and Space Distribution Based on Flight Data	488
	<i>Lingyun Miao, Chen Zhang, Jiahe Miao</i>	
AS260	A coordinate transformation algorithm for FOD detection system of airport runway	492
	<i>Haitao Qin, Yi Cao, Feng Zhou, Shumin Wang</i>	
AS263	Design and implementation of a centralized monitoring system for a remote control tower system	498
	<i>Zhu Kaidi</i>	
AS268	Abnormal Detection Strategy in Flight Inspection of Instrument Landing System Using Fuzzy Set Decisions	504
	<i>Rui Yang, Renli Lv, Zhaoyong Meng</i>	
AS271	The Asia/Pacific Region System-Wide Information Management Implementation Policies	509
	<i>Han Hong, Huang Tengfei</i>	
AS274	Research on flight parameters based on statistical theory	515
	<i>Xinbin Zhao, Xiuting Zhou, Xiaoyue Zhang</i>	
AS275	Real-time downloading and analysis of QAR data using Air-to-Ground wireless communication	519
	<i>Haitao Qin, Xiangjun Kong, Ping Shu</i>	
AS278	Analysis and Evaluation of BDS Performance Based on Real Measured Data	525
	<i>Jing Guo, Ershen Wang, He He</i>	
AS280	Runway Safety Information Analysis and Management Recommendations	530
	<i>Zhihui Xie</i>	
AS281	Airport network developments with the impact of Beijing-shanghai and Beijing-guangzhou highspeed railways in China	534
	<i>Zheng Peng</i>	
AS285	Research on Optimization Model of Site Selection for Civil Airport Fire Station	540
	<i>Xiang Li, Yuanhua He, Xin Yang</i>	
AS289	Design of Fine Management System for Civil Aviation Airspace Resources Based on Spatiotemporal Grid Model	547
	<i>Yinger Zheng, Juqing Liu, Jun Li, Yubin Xu, Qian Huang, Yan Zhu and Yanqiu Pei</i>	
AS293	Method of abnormal flight data correction without trend items monitoring sequence and its application	552
	<i>Nongtian Chen, Xianjun Yi</i>	
AS294	Research on construction method of knowledge graph in the civil aviation security field	556
	<i>Yinqian Cheng, Yang Jiao, Wei Wei, Zhiyuan Wu</i>	

AS295	Spatio-temporal analysis of unstable approach incidents with QAR Big Data <i>Jiayi Xie, Huabo Sun, Chun Wang, Binbin Lu</i>	560
AS297	Analysis and Research about Landing bounce influence factors based on QAR Data <i>Pengchao Dong, Huabo Sun, Feng Xu</i>	564
AS299	Exploring Spatial Patterns of Flight Turbulence Incidents in China with QAR data <i>Binbin Lu, Huabo Sun, Xiaoyue Zhang, Yang Jiao, Chen Wu</i>	570
AS300	Applications of Remote Sensing Technology in Aerodrome Full Life Cycle Management <i>Yubin Xu, Rongshun Huang, Xuhui Wang, Shasha Liu</i>	574
AS301	A Method of Calculating the Accelerate-Stop Distance for Large Civil Aircraft on Contaminated Runways <i>Junli Yang, Xuhui Cao, Ke Wang</i>	579
AS304	Safety Risk Assessment Algorithm of TCAS Advisories Based on Fuzzy Clustering <i>Rui Yang, Renli Lv, Wei Li</i>	584
AS305	Research on Adaptive Acquisition Method of Coherent and Incoherent Integration for BDS/GPS Satellite Signals <i>Yan Ma, Li Ma, Jian Zhang</i>	588
AS310	Prospect of 5G Application in Civil Airport <i>Ningning Le, Yinger Zheng, Qian Huang, Yanqiu Pei</i>	591
AS312	Effect of Downstream Potential Flow with Different Strength on Turbine Boundary Layer Flow <i>Feng Zhou, Haitao Qin, Chao Jia, Xiangyu Hou</i>	596
AS316	Association Rules Mining with QAR Data: an Analysis on Unstable Approaches <i>Jiayi Xie, Huabo Sun, Yang Jiao, Binbin Lu</i>	603
AS317	Analysis of China Civil Aviation Turbulence Index Eddy Dissipation Rate <i>Chun Wang, Hao Sun, Qi Chen</i>	607
AS318	The Analysis of Instrument Landing System Signal Quality Based on QAR Data <i>Qingtian Zhao, Yong Zhao, Jiansheng He, Liyao Dong</i>	611
AS322	Intelligent Airport Collaborative Decision Making (A-CDM) System <i>Yinger Zheng, Jiahe Miao, Ningning Le, Yunpeng Jiang, Yang Li</i>	616
AS329	Research on Fuel Economy of Takeoff and Climb Phase Based on QAR Data Cluster Analysis <i>Lu Yang, Xiao Chen, Chi Ma</i>	621
AS330	Contingency Fuel Consumption Analysis and Optimization Based on QAR Data <i>Yu Qian, Tao Long</i>	626

AS332	Research On Estimated Time of Arrival Prediction Based Upon ADS-B and Spatiotemporal Analysis	630
	<i>Yang Jie, Chen Hui, Liu Xingyu, Wang Xuhui</i>	
AS336	Analysis on the Belt and Road Initiative flight network Based on Markov Clustering and Complex Network	635
	<i>Qixin Wang, Kun Qin, Yang Yu, Shicheng Song, Sheng Hu</i>	
AS338	A study of EEG-based flight phase recognition	640
	<i>Debao Wang, Dongsu Wu, Jinsong He, Hongbin Gu</i>	
AS339	\mathcal{L}_1 Adaptive Control of the Stewart-Gough Flight Simulator Platform in the Task Space	646
	<i>Jiangwei Zhao, Dongsu Wu, Hongbin Gu</i>	
AS349	A Flight Trajectory Prediction Method based on Trajectory Clustering	654
	<i>Guangchao Wang, Hui Chen, Kun Liu, Ruoyu Guo, Yongliang Wei</i>	