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Part I Conference Schedule

Time: November 28- 30, 2018

Location: International Asia-Pacific Convention Center Sanya
 三亚亚太国际会议中心

Date	Time	Lobby	
Oct. 28	14:00-17:00	Registration	
Date	Time	HongKong Room[香港厅]	Tokyo Room[东京厅]
Oct. 29	09:00-12:00	Computer Science: Plenary&Invited speeches Chair: Group photo & Coffee Break: 10:30-10:45	Environmental Science: Invited & Technical Session Chair: Group photo & Coffee Break: 10:30-10:45
	12:00-13:30	Lunch Pacific Cafe (太平洋咖啡厅)	
Date	Time	HongKong Room【香港厅】	
Oct. 29	14:00-18:00	Computer Science: Technical Session I Chair: Group photo & Coffee Break: 16:00-16:20	
	18:00-19:30	Dinner Pacific Cafe (太平洋咖啡厅)	
Date	Time	TBD	
Oct. 30	09:00-12:00	Computer Science: Technical Session II Chair: Group photo & Coffee Break: 10:20-10:40	
	12:00-13:30	Lunch Pacific Cafe (太平洋咖啡厅)	

Part II Invited Sessions

Computer Science: Plenary&Invited speeches

Plenary Speech 1: Deep Learning for Audio Classification

Speaker: Prof. Wenwu Wang, University of Guelph, Canada

Time: 09:00-09:45, Thursday Morning, November 29, 2018

Location: HongKong Room[香港厅], 3rd Floor, Conference Building, International Asia-Pacific Convention Center Sanya



Abstract

Audio scene analysis, event detection and tagging have attracted increasing interest recently, with a variety of potential applications in security surveillance, and acoustic sensing for smart homes and cities. This talk will present some recent and new development for several challenges related to this topic, including data challenges (e.g. DCASE 2016 & 2017), acoustic modelling, feature learning, and dealing with weakly labelled data using deep learning. We will show some latest results including the results of our proposed algorithms and some benchmark methods. We will also use some sound demos to show the potential applications of these algorithms.

Invited Speech 2: Digital Image Forensics

Speaker: Prof. Xiaofeng Wang, Xi'an University of Technology, China

Time: 09:45-10:30, Thursday Morning, November 29, 2018

Location: HongKong Room[香港厅], 3rd Floor, Conference Building, International Asia-Pacific Convention Center Sanya

Abstract

Digital visual media represent nowadays one of the principal means for communication. Lately, the reliability of digital visual information has been questioned, due to the ease in counterfeiting both its origin and content. Digital image forensics is a brand new research field which aims at validating the authenticity of images by recovering information about their history. Nowadays, thanks to the promising results attained by early studies and to the always growing number of applications, digital image forensics represents an appealing investigation domain for many researchers. In this talk, I will report the major problems that digital image forensics technology will address, introduces the development status of image forensics technology, and analyzes the existing questions and challenges.

Invited Speech 3: Design Automation of Intelligent Robotic Systems Based on Evolutionary Computation

Speaker: Prof. Fan Zhun, Shantou University, China

Time: 10:45-11:30, Thursday Morning, November 29, 2018

Location: HongKong Room[香港厅], 3rd Floor, Conference Building, International Asia-Pacific Convention Center Sanya



Abstract

The main reason why the performance of domestic robots is generally difficult to reach the same level of that of foreign countries mainly lies in the lack of systematic continuous optimization and design automation. How to form a framework of design automation of intelligent robotic systems is the main topic of this report. This report will mainly focus on multi-angle modeling methods of intelligent robotic systems, solving intelligent robot optimization problems by combining constrained multi-objective evolutionary algorithms and machine learning methods, and applying design automation methods to develop intelligent robots.

Environment Science: Invited speeches

Invited Speech 1: SULFATE REMOVAL by PHYTOREMEDIATION

Speaker: Prof. Hossein Ganjidoust, Enviro Technology Limited, India

Time: 09:00-09:45, Thursday Morning, November 29, 2018

Location: Tokyo Room[东京厅], 3rd Floor, Conference Building, International Asia-Pacific Convention Center Sanya



Abstract

One of the low cost treatments of wastewater is Phytoremediation. This has also the advantages of less operational complexity, with low energy consumption and no need for sludge disposal. In this study, hydroponic plantation was chosen for assessment of two kinds of pervasive swamp plants including pampas grass and bamboo, in sulfate removal. For this reason, the importance of pH factor and determination of detention time, the plants were got into two different distinctive experiments. After determination of the optimum detention time of 7 days, 3 periodic main experiments with 3 repetitions for each concentration were done for the evaluation of removal efficiency and sulfate massive absorption. Statistical T-Test has also been done in the order of 5% significance. The results indicated the importance of pH in both external efficiency and massive sorption for both plants. Finally, the removal efficiency in pampas grass for all concentrations of 50, 200, 300, 600, 900, 1200, 1500 and 3000 mg/L were 44, 36, 34, 31, 16, 10, 8 and 4 percent,

respectively, which were up to 50% more than the one by bamboos. Similarly, in terms of dry weight upon accumulated absorption the best ratio achieved in 600 mg/L which was about 10 for both Pampas grass and Bamboo.

Keywords: Bamboo, Hydroponic, Pampas, Phytoremediation, plantation

Invited Speech 2: Ecological remediation of contaminated soil by emerging pollutants

Speaker: Prof. Qixing Zhou, Nankai University, China

Time: 09:45-10:30, Thursday Morning, November 29, 2018

Location: Tokyo Room[东京厅], 3rd Floor, Conference Building, International Asia-Pacific Convention Center Sanya



Abstract

Emerging pollutants including pharmaceuticals and personal care products (PPCPs) such as antibiotics and their resistance genes, and nanomaterials such as graphene into the environment, are increasingly being detected at low levels in soil, groundwater, surface water and sediments, and active hormonal substances (natural hormones are active at levels of ng/l) are being widely used in human and veterinary medicine such as estrogens, anti-inflammatory cortico-steroids and anabolic androgens, in particular, there is concern that these compounds may have an adverse impact on terrestrial ecosystems and aquatic life, especially humans themselves. How to eliminate the hazard of these emerging pollutants has become a new challenge. In this report, ecological remediation of contaminated soil and water by antibiotics and their resistance genes, and graphene will be summarized, discussed and forecasted.

Keywords: emerging pollutant; ecological remediation; expectation

Invited Speech 3: Development of Portable Air Quality Detector Based On Gas

Sensors

Speaker: Prof. Xiaobing Pang, Nanjing University of Information Science & Technology (NUIST), China

Time: 10:45-14:30, Thursday Afternoon, November 29, 2018

Location: Tokyo Room[东京厅], 3rd Floor, Conference Building, International Asia-Pacific Convention Center Sanya



Abstract

A self-designed portable air quality detector was developed using gas sensors. It can monitor atmospheric compositions including O₃, NO₂, NO, TVOCs, CO, CO₂, SO₂, CH₄, PM₁₀, PM_{2.5}, PM₁, and wind speed, wind direction, temperature and humidity. To improve the accuracy of the portable device cluster optimization and machine learning method were deployed in the measuring process. The detector was combined with a tethered balloon or an unmanned aircraft to form a vertical profile observation platform for a variety of air pollutants in the atmospheric boundary layer. Several field campaigns were conducted in Tibetan area and Chengdu Basin to observe a vertical profile (0-2 km height) of atmospheric compositions. Most of the previous O₃ observations were usually conducted at the surface sites. Now more vertical measurements of chemical composition and meteorological parameters are helpful to understand the properties of the atmospheric boundary layer, the chemical composition and the effect of the ozone intrusion from the free troposphere on the vertical distribution of ozone. The effects of boundary layer height, aerosols, black carbon and free tropospheric ozone intrusion on the ozone pollution in the atmospheric boundary layer will be studied. Through the ratio of NO_x and TVOC, it can be quickly judged whether the formation of atmospheric O₃ is controlled by NO_x or TVOCs. It provides some scientific evidences for better early warning of serious atmospheric O₃ pollution and short-term mitigation of atmospheric ozone pollution in a small scale area.

Part III Technical Sessions

Computer Science: Technical Session I

Session Chair:

HongKong Room[香港厅], 3rd Floor, Conference Building

14:00-17:30, Thursday Afternoon, November 29, 2018

ID	Paper Title	Author	Affiliation
1-1 14:00-14:20	Multi-Sensor Data Fusion for Sign Language Recognition Based on Dynamic Bayesian Network and Convolution Neural Network	Yidan Zhao	Machine learning and pattern recognition
1-2 14:20-14:40	Multi - aircraft Cooperative Air Combat Target Allocation Method Based on Improved Artificial Immune Algorithm	Yangyang Gao	Air Force Engineering University
1-3 14:40-15:00	Fast and accurate phase-shifting algorithm based on geometric concept of volume enclosed by a surface	Cruz Meneses-Fabian	Facultad de Ciencias Fisico-Matematicas
1-4 15:00-15:20	A Matlab/Simulink development and verification platform for a frequency estimation system	Yingtai Li	College of Communication Engineering
1-5 15:20-15:40	PointRegNet: Invariant features for PointCloud Registration using in Image-guided Radiation Therapy	Zhengfei Ma	Beihang University
1-6 15:40-16:00	Monostatic and Bistatic Low Frequency Ultrawideband SAR Imaging Experiment	Hongtu Xie	Shanghai Jiao Tong University
16:00-16:20	Coffee Break		
1-7 16:20-16:40	The Influence of Dust and Black Carbon on Clouds, in Africa	Gerard Rushingabigwi	Qingdao University
1-8 16:40-17:00	Analysis of Seasonal Characteristics of Thermal Environment Based on Urban Subpixel Land Use Types	Cheng Jingyuan	Fujian Normal University, Fujian, China
1-9 17:00-17:20	An analysis of characteristics of typhoons in Zhejiang province and their impacts on Shengsi marine ranching	Zuli Wu	Chinese Academy of Fishery Sciences

1-10 17:20-17:40	RESEARCH ON HS OPTICAL FLOW ALGORITHM BASED ON MOTION ESTIMATION OPTIMIZATION	Wei Huang	University of Electronic Science and Technology
1-11 Poster	A Road Extraction Method Based on Region Growing and Mathematical Morphology from Remote Sensing Images	Yunhe Liu	Chang Guang Satellite Technology Co.,Ltd

Computer Science: Technical Session II

Session Chair:

HongKong Room[香港厅], 3rd Floor, Conference Building

09:00-12:00, Friday Morning, November 30, 2018

ID	Paper Title	Author	Affiliation
1-12 09:00-09:20	A Vehicle Detection Method for Aerial Image Based on YOLO	Junyan Lu	Chang Guang Satellite Technology Co., Ltd
1-13 09:20-09:40	RESEARCH ON SELF ORGANIZING OF INTERNET OF THINGS NODES IN CLOSED AREA	Qian Zou	Guiyang University
1-14 09:40-10:00	Study of the fisheries land use classification with GF-2 remote sensing data	Fei Wang	Chinese Academy of Fishery Sciences
1-15 10:00-10:20	Spatial-temporal distribution of purse seine in Arabian Sea and its relationship with sea surface environmental factors	Shenglong Yang	East China Sea Fisheries Research Institute
10:20-10:40	Coffee Break		
1-16 10:40-11:00	Land Use Change in Hongta District in Yuxi City, China based on archived Landsat Data of the past 30 years	Shanyu Zhou	Shandong University
1-17 11:00-11:20	ANALYSIS OF URBAN CHANGE IN SHENZHEN CITY BASED ON LANDSAT ARCHIVED DATA	Chen Tingting	Shandong University

1-18 11:20-11:40	Main processes for OVS-1A & OVS-1B: from manufacturer to user	Shixiang Cao	Beijing Institute of Space Mechanics & Electricity
1-19 11:40-12:00	Hot Clutter Suppression for Multichannel SAR	Li linlin	Space Star Technology Co. Ltd, China Academy of Space Technology

Environment Science: Invited&Technical Session

Session Chair:

Tokyo Room[东京厅], 3rd Floor, Conference Building 09:00-12:00, Thursday Morning, November 29, 2018

ID	Paper Title	Author	Affiliation
Invited 09:00-09:45	Sulfate Removal by Phytoremediation	Prof. Hossein Ganjidoust	Enviro Technology Limited, India
Invited 09:45-10:30	Ecological remediation of contaminated soil by emerging pollutants	Prof. Qixing Zhou	Nankai University, China
Invited 10:30-11:15	Development of Portable Air Quality Detector Based On Gas Sensors	Prof. Xiaobing Pang	Nanjing University of Information Science & Technology (NUIST), China
1-1 11:15-11:35	Removal of heavy metals from sludge by EDTA-citric acid and its resource reuse	Yingying Kou	Beijing University of Civil Engineering and Architecture
1-2 11:35-11:55	Analysis of Tropospheric Ozone by Artificial Neural Network Approach in Beijing	Muhammad Azher Hassan	School of Space and Environment, Beihang University
1-3 11:55-12:15	Thermodynamic modeling of uranium (VI) reductive immobilization in groundwater of NPCC sludge storages (Novosibirsk, Russia)	Olga Gaskova	Sobolev Institute of Geology and Mineralogy SB RAS
1-4 12:15-12:35	A new way to extracting bio-butanol from fermentation broth: aqueous two-phase extraction	Dezhang Sun	Tianjin University

Part IV Abstracts

Computer Science: Technical Session I

ID: AIR2018_10003

Title: Multi-Sensor Data Fusion for Sign Language Recognition Based on Dynamic Bayesian Network and Convolution Neural Network

Name: Yidan Zhao

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Abstract

A new multi-sensor fusion framework is proposed, which is based on Convolution Neural Network (CNN) and Dynamic Bayesian Network (DBN) for Sign Language Recognition (SLR). In this framework, a Microsoft Kinect, which is a low-cost RGB-D sensor, is used as tools of the Human-Computer-Interaction (HCI). In our method, at first, the color and depth videos are collected using the Kinect, the next, all image sequences features are extracted out using the CNN. The color and depth feature sequences are input into the DBN as observation data. Based on graph model fusion machine, the maximum hidden state probability is calculated as recognition results of dynamic isolated sign language. The dataset is tested using the existing SLR methods. Using the proposed DBN+CNN SLR framework, the highest recognition rate can reach 99.40%. The test results show that our approach is effective.

ID: AIR2018_10007

Title: Multi - aircraft Cooperative Air Combat Target Allocation Method Based on Improved Artificial Immune Algorithm

Name: Yangyang Gao

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Abstract

Aiming at the problem of multi-aircraft cooperative air combat target allocation, an improved artificial immune algorithm is proposed based on the modeling of our comprehensive superiority function. Firstly, the random generation method and artificial construction method are used to create two initial populations, which ensure the diversity of the initial populations; following is to evolve the populations by adopting two different selection, crossover and mutation operations; then, the designed new immigration operator is used to exchange information among the populations, which further increases the diversity of the populations and improves the search efficiency. Simulation results show that the improved artificial immune algorithm can effectively improve the premature convergence problem, improve the search efficiency, obtain the optimal allocation scheme, which is suitable for multi-aircraft cooperative air combat target allocation problem and meet the actual operational requirements.

ID: CSIP2018_10004

Title: Fast and accurate phase-shifting algorithm based on geometric concept of volume enclosed by a surface

Name: Cruz Meneses-Fabian

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Abstract

This work presents a fast and accurate algorithm for estimation of arbitrary unknown phase-steps and object phase in phase-shifting interferometry of three steps. The phase-steps are estimated within the range $(0, 2\pi)$ radians. It consists in eliminating algebraically background to obtain two secondary patterns, which are re-written in

three different ways, and in each one the volume enclosed by the product of two secondary patterns is calculated giving a constant that depends on the phase-steps only. Thus, a solvable system of equations is formed and the phase-steps are successfully computed. Then the object phase is possible to be estimated, as it is demonstrated in analytic and experimental form.

ID: CSIP2018_10005

Title: A Matlab/Simulink development and verification platform for a frequency estimation system

Name: Yingtai Li

Affiliation: College of Communication Engineering

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Abstract

The precise estimation of the frequency of the signal is of great significance in the Radar system, the electronic warfare system and many other systems. In this paper, we propose a development and verification platform for the frequency estimation system in the Matlab and Simulink environment. Its open-extensibility architecture enables the performance evaluation of different frequency estimation algorithms and its graphic interface can greatly promote the system design, simulation and verification efficiency.

ID: CSIP2018_10006

Title: PointRegNet: Invariant features for PointCloud Registration using in Image-guided Radiation Therapy

Name: Zhengfei Ma

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Abstract

In image-guided radiation therapy, extracting features from medical point cloud is the key technique for multimodality registration. This novel framework, denoted Con-trolPointNet (CPN), provides an alternative to the common applications of manually designed key-point descriptors for coarse point cloud registration. The CPN directly consumes a point cloud, divides it into equally spaced 3D voxels and transforms the points within each

voxel into a unified feature representation through voxel feature encoding (VFE) layer. Then all volumetric representations are aggregated by Weighted Extraction Layer which selectively extracts features and synthesizes into global descriptors and coordinates of control points. Utilizing global descriptors instead of local features allows the available geometrical data to be better exploited to improve the robustness and precision. Specifically, CPN unifies feature extraction and clustering into a single network, omitting time-consuming feature matching procedure. The algorithm is tested on point cloud datasets generated from CT images. Experiments and comparisons with the state-of-the-art descriptors demonstrate that CPN is highly discriminative, efficient, and robust to noise and density changes.

ID: ICRSTA_N2018_10000

Title: Monostatic and Bistatic Low Frequency Ultrawideband SAR Imaging Experiment

Name: Hongtu Xie

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Abstract

Due to the intrinsic property, the low frequency ultrawideband (LF UWB) synthetic aperture radar (SAR) has lately become of a particular interest to the SAR community. Monostatic and bistatic LF UWB SAR system has the well foliage penetrating ability, high-resolution imaging and providing the increased information. In 2015, a monostatic and bistatic LF UWB SAR imaging experiment was conducted. In this experiment, the monostatic and bistatic data were collected simultaneously by operating a moving vehicle-based radar in the SAR mode, in conjunction with a stationary ground-based receiver. The aim was to investigate the imaging property of the bistatic LF UWB SAR system. One pulse per second (1PPS) signal in combination with the global position system (GPS) disciplined 100MHz oscillator from the GPS receivers were used to implement the time and frequency synchronization in this SAR system. The bistatic and monostatic SAR images were obtained by the subaperture spectrum-equilibrium method integrated with

the fast factorized back projection (FFBP) algorithm. Experiment results are show to prove the validity of the monostatic and bistatic LF UWB SAR imaging experiment.

ID: ICRSTA_N2018_10004

Title: The Influence of Dust and Black Carbon on Clouds, in Africa

Name: Gerard Rushingabigwi

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Abstract

The aerosol can change the clouds properties; the clouds, however, affect the normal behavior of aerosol optical depth. Considerable effects arise while the interaction of aerosol and clouds unavoidably encounters the presence of greenhouse gases (GHGs) in atmosphere. This research discusses the influence of two selected aerosol types, on the clouds in Africa, over the selected sub-time series in the years 1980 ~ 2018. Sahara desert's dust is mainly constituted by hematite minerals; which, in return, is mainly composed by the iron oxides, a powerful solar and infra-red radiation absorbing matter and thus a strong and direct radiative forcing agent. For that reason together with the fact that it is windblown over the biggest region that surrounds the desert, dust is one of the strongly considered aerosol in this research. Besides, black carbon (BC), mostly from the anthropogenic biomass burning process in the mid latitude's African savanna, is second aerosol type selected for this research; it is one of the abundantly available aerosol types and it is one of the strongest atmospheric radiant energy absorbers. For sake of valid and trustworthy results, the data is collected from multiple satellite remote sensing tools and instruments, all targeting the aerosol-cloud interaction and effects. In this research, different measurements were carried out; those are the spatio-temporal averaged cloud cover, the aerosol (dust and BC) extinction optical thickness (AOT), the anomaly of aerosol optical depth (AAOD) as well as different scatter plots' correlation analysis. For findings: the direct influence of BC aerosol on cloud formation in central African sub-region is experimentally demonstrated; the dust aerosol highly influences the North African

sub-region's cloud formation.

ID: ICRSTA_N2018_10005

Title: Analysis of Seasonal Characteristics of Thermal Environment Based on Urban Subpixel Land Use Types

Name: Cheng Jingyuan

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Abstract

The process of urbanization led to the replacement of nonurban land covered (such as grass, forest, water body, crop field, etc.) with a large number of urban land cover (such as impervious surfaces), and this condition will result in some differences in the absorption of solar radiation and cause the urban heat island (UHI) effect. According to the previous, which is considered a severe problem associated with the deterioration of urban environments. Several types of researches have established that seasonal variations will cause the differences in the distribution of urban thermal environment. Therefore, there seems to be positively essential for studying the distribution of land surface temperature (LST) in different seasons under the same land use type. In this paper, Landsat data were used to evaluate Land-Use and Land-Cover Change (LULC). The urban thermal environment also affect by seasonal changeable. Radiation transfer equation method was used to retrieve land surface temperatures and Fully Constrained Least Squares Method of linear spectral mixture analysis which was used to extract the information of land cover fraction. The accuracy of the fractional covers is assessed with the map level by comparing it with the reference data from high-resolution images. According to the differences in the degree of the urban development, the study area is divided into three loop zones, for estimating the differences in the distribution of urban thermal environment. In order to understand how seasonal land surface temperature distribution in each loop zones, seasonal LST was described by boxplot. Ternary triangular charts were drawn based on the land surface

temperature and land cover fraction information. Normalized the land surface temperature, so that the temperature variations can be eliminated which based on the changeable of seasons. In order to establish the intensity distribution of urban heat islands in the four seasons of each loop zone, the normalized land surface temperature was divided into seven levels, and also makes statistics of the proportion of plaques at all levels and the total area of the study area. Calculate the contribution index (CI) of each land cover to the temperature at various percentages in conjunction with the LST. The results of this study indicate that the extreme differences in temperature extremes occur in summer, followed by spring, autumn, and finally winter. At the same time, the another significant finding that in the spring, the combination of high-coverage soils with low-vegetation-covered land types will cause an increase in thermal environment; in summer, the types of land-use with high-density impervious surfaces connected with two kinds of elements and three types of features will affect the ascending effect in urban thermal environment.; in autumn, the three types of land areas allow the surface temperature to be lower; in winter, vegetation and soil are the main types of surface temperature. The analytical methodologies that be used in this study can help to quantify urban thermal environmental functions effect of different LULC and explore the climate adaptation potential of cities.

ID: ICRSTA_N2018_10007

Title: An analysis of characteristics of typhoons in Zhejiang province and their impacts on Shengsi marine ranching

Name: Zuli Wu

Affiliation: East China Sea Fisheries Research Institute, Chinese Academy of Fishery Sciences

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Abstract

In order to know the activity rhythm of typhoons along the coast of Zhejiang province and meet the needs of environmental monitoring in Shengsi marine ranching areas, the best track data of tropical cyclones over 17 years from 2000 to 2016 obtained from the China Meteorological Administration and Shengsi station

weather data from 2000 to 2014 were used to make an analysis on characteristics of typhoons in Zhejiang and their impacts on wind speed of Shengsi marine ranching. The results showed that the typhoons affecting Zhejiang mainly originated from the northwest Pacific. The paths of typhoons could be divided into five types. The annual average number of passing typhoons was 3, and high frequency of typhoons were found between July and September. The annual accumulated cyclone energy (ACE) was slight variations, with ACE peaking in August. The study showed that the average wind speed of Shengsi marine ranching was 24.59 meters per second during typhoons' impacts. Based on the path types and intensity of typhoons, an applicable early warning mechanism was provided.

ID: CSN2018

Title: RESEARCH ON HS OPTICAL FLOW ALGORITHM BASED ON MOTION ESTIMATION OPTIMIZATION

Name: Wei Huang

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Abstract

The amount of computation for detecting moving objects by the optical flow algorithm is large. The optical flow information in the smooth region cannot be detected by the optical flow algorithm, and it is susceptible to noise in a complicated environment. In this study, an optimized Horn-Schunck (HS) optical flow algorithm based on motion estimation is proposed. To detect Harris corner in the image, the proposed algorithm is used in combination with the motion estimation algorithm based on macroblock to determine the region of interest (ROI)[1]. The ROI is then used as the initial motion vector for HS calculation to obtain the optical flow information. Filtering is conducted to eliminate the background noise. Experimental result shows that the application of the proposed algorithm improves the computational speed, avoids the interference of background noise, and enhances the robustness of HS. Moreover, the algorithm solves the problem rooted in the inability of the HS algorithm to detect the smooth part of

optical flow information[2].

ID: ICRSTA_N2018_10008

Title: A Road Extraction Method Based on Region Growing and Mathematical Morphology from Remote Sensing Images

Name: Yunhe Liu

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Abstract

Road traffic is the important driving factor for economic and social development. With the rapid increase of vehicle population, road traffic problems such as traffic jam and traffic accident have become the bottleneck which restricts economic development. In recent years, natural disasters frequently occur in China. Therefore, it is essential to

extract road information to compute the degree of road damage for traffic emergency management. A road extraction method based on region growing and mathematical morphology from remote sensing images is proposed in this paper. According to the road features, the remote sensing image is preprocessed to separate road regions from non-road regions preliminarily. After image thresholding, region growing algorithm is used to extract connected regions. Then we sort connected regions by area to exclude the small regions which are probably non-road objects. Finally, the mathematical morphology algorithm is used to fill the holes inside the road regions. The experimental results show that the method proposed can effectively extract roads from remote sensing images. This research also has broad prospects in dealing with traffic emergency management by the government.

Computer Science: Technical Session II

ID: ICRSTA_N2018_10009

Title: A Vehicle Detection Method for Aerial Image Based on YOLO

Name: Junyan Lu

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Abstract

With the application of UAVs in intelligent transportation systems, vehicle detection for aerial images has become a key engineering technology and has academic research significance. In this paper, a vehicle detection method for aerial image based on YOLO deep learning algorithm is presented. The method integrates an aerial image dataset suitable for YOLO training by processing three public aerial image datasets. Experiments show that the training model has a good performance on unknown aerial images, especially for small objects, rotating objects, as well as compact and dense objects, while meeting the real-time requirements.

ID: CSN2018_20003

Title: RESEARCH ON SELF ORGANIZING OF INTERNET OF THINGS NODES IN CLOSED AREA

Name: Qian Zou

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Abstract

In this paper, the intelligent application we designed focuses on a closed family area. ZigBee technology is mainly used to achieve the remote control. The most popular Android system is used in the design. The operation interface on the home intelligent gateway is completed through the designed system. It can allow people the full control by using smartphones. The system is operated and controlled through touch panel. Furthermore, it can be controlled remotely by using smartphones. ZigBee module is expected to be used to allow these devices to perform data transmission and collection. Some additional machinery, control circuits,

and sensors will be designed for doors and windows. For example, a motor and a control circuit are installed to control doors and windows, and ZigBee is used to control the power input and drive the motor. Antitheft sensors, such as infrared sensors or light sensors, are installed to monitor the objects. Home gateway can collect ZigBee information on doors and windows, and an interactive mechanism is designed to take effective remote control.

ID: ICRSTA_N2018_10012

Title: Study of the fisheries land use classification with GF-2 remote sensing data

Name: Fei Wang

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Abstract

GF-2 high spatial resolution remote sensing data has been widely used in different science studies such as the land resource survey, agriculture monitor, urban planning and so on. While little attention has been paid on the aquaculture use with GF series data. Especially the problem of different fisheries land use classification in one image effectively is still unclear. In this study, the study area is located in the Xihu Port, Xiangshan County, Ningbo City. We have analyzed the spectrum, shape and texture characteristics of the kelp, fisheries rafts and the crab culture area in GF-2 data. Then the object based image analysis method was used to make the classification of different aquaculture with the GF-2 data imaged on Feb. 28th, 2018 in the study area. Results of classification compared with the manual visual interpretation show that the accuracy of the method suggested by this thesis is higher than 90% totally. Then, we have discussed the disadvantage of the method and given the improvement suggestion in the future. At last, GF-2 remote sensing data would play more and more influence in the aquaculture survey and planning.

ID: ICRSTA_N2018_10013

Title: Spatial-temporal distribution of purse seine in Arabian Sea and its relationship with sea surface

environmental factors

Name: Yang Shenglong

Affiliation: East China Sea Fisheries Research Institute

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Abstract

Satellite-based oceanographic data of sea surface temperature (SST), sea surface chlorophyll-a concentration (Chla), sea surface current (SSC) and sea surface height (SSH) together with purse seine catch data of Chinese fishing boat during 2016-2017 were used to investigate the relationship between purse seine fishing grounds and oceanographic conditions in Arabian Sea. Frequency analysis and empirical cumulative distribution were together used to calculate preferred ranges of the four oceanographic conditions. Results indicated that the oceanographic conditions and purse seine fishing grounds were influenced by the Indian Ocean monsoon. The gravity direction of fishing grounds is similar to surface monsoon wind and most of the data were catch during winter monsoon. In winter monsoon, the sea surface temperature of the fishing grounds shows a small fluctuation trend from high to low and then high. The CPUE location moves north-south accompany with high sea surface chlorophyll-a concentration area north-south shrink, were observed along the high values area of sea surface current in longitude direction, and located between the high and low values area of sea surface height. The optimum ranges of sea surface temperature, sea surface chlorophyll-a concentration, sea surface current and sea surface height were 25~28°C, 0.2~0.5 mg/m³, 0.05~0.25m/s and 0.2~0.35m respectively.

ID: ICRSTA_N2018_10020

Title: Land Use Change in Hongta District in Yuxi City, China based on archived Landsat Data of the past 30 years

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Abstract

Urban expansion, which has affected ecosystem functioning and services at local to global scale, is

projected to have aggravating impacts on landscape in the future. A detailed study on spatiotemporal patterns of Hongta District in Yuxi City over a relatively long timeframe was conducted using multi-temporal Landsat TM, ETM+ and OLI data of 1987 ~ 2017 associated with Geographic Information System techniques and landscape analysis approaches. Results showed that sealed surfaces (urban area) have expanded from 1.4% to 11.8%, with an annually increasing rate of 7.63%. Trees, farm areas and barren lands all underwent a slight reduction during this time period, whereby 23.8% of farms and 9.8% of bare lands transferred into sealed surfaces. Focusing on the urban expansion pattern, it presents a unidirectional polarizing polygon mode illustrating the urbanization sprawl over time to all directions. The greatest expansions are seen in NNE and SSE direction, mainly because of the topographic constraints. A trade-off between urbanization and sustainable development is under investigation by reclaiming barren soil at the mountain range to transfer farming areas from low altitude plains to make way for urban growth.

ID: ICRSTA_N2018_10021

Title: ANALYSIS OF URBAN CHANGE IN SHENZHEN CITY BASED ON LANDSAT ARCHIVED DATA

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Abstract

With the ongoing development of economy and urbanization in China, the change of land use types has attracted more and more attention. In this study we focused on the urban development of Shenzhen City, Guangdong Province, analyzing Landsat 5 TM and Landsat 8 OLI data. We used a SVM based classification, a land transfer matrix approach, a directional growth analysis method and we calculated the inversion of land surface temperature to derive information of land cover changes that occurred in the time period between 1987 and 2017. The results are combined with Shenzhen's economy, transportation policy and other aspects to find the driving forces of the urban development. The results show that during the observed 30

years, the area of construction land has increased significantly. Most of it is converted from other lands, and some of them are reclaimed. Most rapidly developing areas west and northwest of the Bao'an, Nanshan and Longhua. The vegetated areas decreased slightly. Caused by the continuous increase of the construction land, the so-called heat island effect emerges slightly but continuously.

ID: ICRSTA_N2018_20001

Title: Main processes for OVS-1A & OVS-1B: from manufacturer to user

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Abstract

Commercial remote sensing has boosted a new revolution in traditional processing chain. During the development of OVS-1A and OVS-1B, we construct the main processing pipeline for ground and calibration system. Since these two satellites utilize colorful video imaging pattern, the underlying video stabilization and color adjustment is vital for end user. Besides that, a full explanation is given for researchers to shed light on how to promote the imagery quality from manufacturing satellite camera to generate video products. From processing system, the demo cases demonstrate its potential to satisfy end user. Our team also releases the possible improvement for video imaging satellite in the coming future.

ID: ICRSTA_N2018_20002

Title: Hot Clutter Suppression for Multichannel SAR

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Abstract

Hot clutter which spreads in azimuth for SAR (Synthetic Aperture Radar) is nonstationary over slowtime because of the jammer multipath. And it is required to employ

multidimensional filtering techniques to cancel. Clutter modulation in hot clutter mitigation can degrade the performance of space time adaptive processing considerably. This paper provides an analysis of the modulation effect with realistic training data. Based on the analysis, two types of clutter prefilters with adaptive and

nonadaptive structures are proposed to control the modulation. In order to reduce the computational load, the subbanding in fast time frequency domain is taken into fast-time STAP (Space Time Adaptive Processing). The simulation results confirm the validity of the presented algorithm.

Environment Science: Technical Session

ID: PTT2018_20001

Title: Removal of heavy metals from sludge by EDTA-citric acid and its resource reuse

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Abstract

Sewage sludge was recommended for agricultural reuse because it contained macronutrients [1]. But with the trend of combined treatment of industrial wastewater and municipal wastewater becoming more and more obvious, removal of heavy metals was a necessary process for agricultural reuse of sewage sludge [2]. Chemical method is a more efficient and convenient method for removing heavy metals. In the process of heavy metal removal, the same dose of complex chelating agent had better removal effect than EDTA alone[3]. In order to improve the removal efficiency of heavy metals and increase the retention of nutrients in the sludge, EDTA and citric acid were used to remove heavy metals from sludge. Heavy metals (Cu, Zn, Cd, Pb, Ni, Cr) in sludge were removed by EDTA and citric acid mixtures with different ratios (1:1, 1:2, 2:1) at the optimum concentration[4]. The contents of heavy metals, total nitrogen, total phosphorus, available nitrogen, available phosphorus and organic matter in the sludge before and after removal were analyzed. The results showed that when the ratio of EDTA to citric acid was 1:1, the removal efficiency of Cu, Zn, Cd and Pb was the best. Except for the heavy metal Zn, the removal efficiency of EDTA and citric acid at the ratio of 1:1 and 2:1 was almost similar, and both of them met the agricultural standard of

sludge. The content of available nitrogen and total nitrogen in the treated sludge were all higher than that of the original sludge. Available phosphorus and organic matter were reduced significantly and were all lower than the original sludge. Only when the ratio was 1:1 the content of total phosphorus was lower than the original sludge. The contents of available nitrogen, total phosphorus and organic matter in the sludge were all $1:2 > 2:1 > 1:1$, and the contents of available phosphorus were $2:1 > 1:1 > 1:2$. There was little difference among the three ratios of total nitrogen content in sludge, which was $1:2 > 1:1 > 2:1$. The results showed that when the ratio of EDTA to citric acid was 2:1, the removal efficiency of heavy metals and the retention degree of nutrient elements in sludge were considered comprehensively, which provided theoretical support for sludge farming and subsequent research.

ID: ESAT2018_10006

Title: Analysis of Tropospheric Ozone by Artificial Neural Network Approach in Beijing

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Abstract

Higher concentration of tropospheric ozone in atmosphere reveals its adverse effects on human health, plants, and on environment. So, there is a need for atmospheric pollutants analysis and their concentration variation, which is a key factor for air quality management in urban areas. The

Beijing Olympic center site was used as area of study and five recorded meteorological parameters temperature, dew point, wind speed, pressure, and relative humidity were employed as inputs imputes. Nitrogen Dioxide (NO₂) and hour of day are also considered as input parameters for modeling of tropospheric ozone concentrations. Several deterministic methods are available for local air quality forecasting and prediction. But, in this study, multilayer perceptron (MLP) and generalized regression neural model (GRNM) were considered for prediction of ozone ground level concentration. The root mean squared errors (RMSE) and mean absolute error (MAE) value for MLP model were lower, which confirms its fitness for forecasting purpose. Regression coefficient for MLP in this study was calculated 0.91 and for GRNM model provides 0.76 value. The dew point and relative humidity were the most dominant input imputes found by the sensitivity analysis, which results in higher concentration of tropospheric ozone.

ID: ESAT2018_10001

Title: Thermodynamic modeling of uranium (VI) reductive immobilization in groundwater of NPCC sludge storages (Novosibirsk, Russia)

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Abstract

The biochemical reduction of both nitrate and sulfate in U-containing aquifers of the Novosibirsk Plant of Chemical Concentrates (NPCC) was investigated experimentally and thermodynamically. It was observed that decrease in Eh up to -397 mV has a distinct effect on the denitrification and uranium precipitation as UO₂(s). Nitrate was denitrified with a temporary accumulation of the intermediate nitrite on the day 4th. According to the X-ray fluorescence analysis and thermodynamic calculations, more than half of the uranium is deposited in the first stage as UO_{2+x} oxides, and the rest, together with the sulfides in the reducing environment. Findings suggest that accurately thermodynamic predicting of groundwater NO₃⁻ and SO₄²⁻ fate is primarily limited by

failing to account for a kinetic of redox fluctuations in the experiment: (a) measured Eh +190 mV is low despite the high amount of nitrates (1124 mg/L), but NH₄⁺ predominates in solution according to calculations, (b) sulfate reduction lagged behind nitrate reduction by approximately 50 days unlike model simulation.

ID: PTT2018_10003

Title: Analysis on the trend of water quality in Haihe River Basin from 2005 to 2017

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Abstract

Haihe River is one of the 7 largest rivers in China. The problem of water pollution in Haihe River Basin is serious. The water quality of Haihe River Basin is generally the best in the north and the worst in the south. And the water quality of the Luanhe River is the best, the proportion of I ~III is about 60%, and the water quality of the Tuhaimajia River is the worst, the proportion of >V exceeds 60%. According to the trend of water quality change, the improvement of Shandong Province in Tuhaimajia River system is the most obvious, and proportion of >V water decreased from 100% to about 30%.

ID: ESAT2018_10005

Title: A new way to extracting bio-butanol from fermentation broth: aqueous two-phase extraction

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Abstract

An increasing demand for safe and efficient biotechnological processes has led to a growing interest in bio-butanol production and purification within the framework of green chemistry. The aqueous two-phase (ATP) extraction used in bio-butanol separation brings the advantages of energy saving, clean production, easy

operation, high bio-compatibility and etc. In this work, the ionic liquid (IL) based ATP systems were used to extracting bio-butanol from fermentation broth. Furthermore, the toxicity of the system on clostridium acetobutylicum strain was investigated with concentration and time gradient. The final result showed that IL-based ATP system of fixed composition 15wt%[BMIM][Cl] + 21wt%K₂HPO₄ performed the best and was selected as the potential one with a high extraction efficiency. And the result of toxic experiment showed that the IL-based ATP system slightly inhibited the growth of strain with a high K₂HPO₄ concentration over 72 hours. Non-inhibition happened when the culturing conditions below these two standards, which meant that IL-based ATP systems could be used in this work. The work conducted in this work expects to provide a new and sustainable process in bio-butanol production.

Part V Instructions for Presentations

Oral Presentation

Devices Provided by the Conference Organizing Committee:

- Laptops (with MS-office & Adobe Reader)
- Projectors & Screen
- Laser Sticks

Materials Provided by the Presenters:

- PowerPoint or PDF files

Duration of each Presentation:

- Regular Oral Session: 20 Minutes of Oral Presentation
- Invited Speech: 40-45 Minutes of Invited Speech

Part VI Hotel Information

About Hotel

International Asia-Pacific Convention Center Sanya is a five star standard luxury hotel, which locates beside the seashore, and is the ideal place for vacation and conference. The hotel has 254 luxury and comfortable rooms, and 16 conference rooms in different sizes. The conference rooms can accommodate people from 20-1000 and totally square 5400m². Housing, dining, recreation facilities... everything needed is ready, Even National initiative seawater swimming pool, sea recreational centre and so on, which make you a pleasant vacation. High-speed net connectors are equipped in the houses and service of renting laptops is provided, all these give you a convenient office atmosphere while you are on vacation.

Address: No.17, Haipo tourism and economic zone, Sanya Bay, Sanya city, China

三亚市三亚湾海坡旅游经济开发区17横路

URL: www.iapccsanya.com

Tel: (86 898) 88332666

Fax: (86 898) 88332266

How to Get to the Hotel

Downtown of Sanya: 30 minutes ride

Sanya Phoenix Airport: 15 minutes ride

Sanya International Golf Club: 20 minutes ride

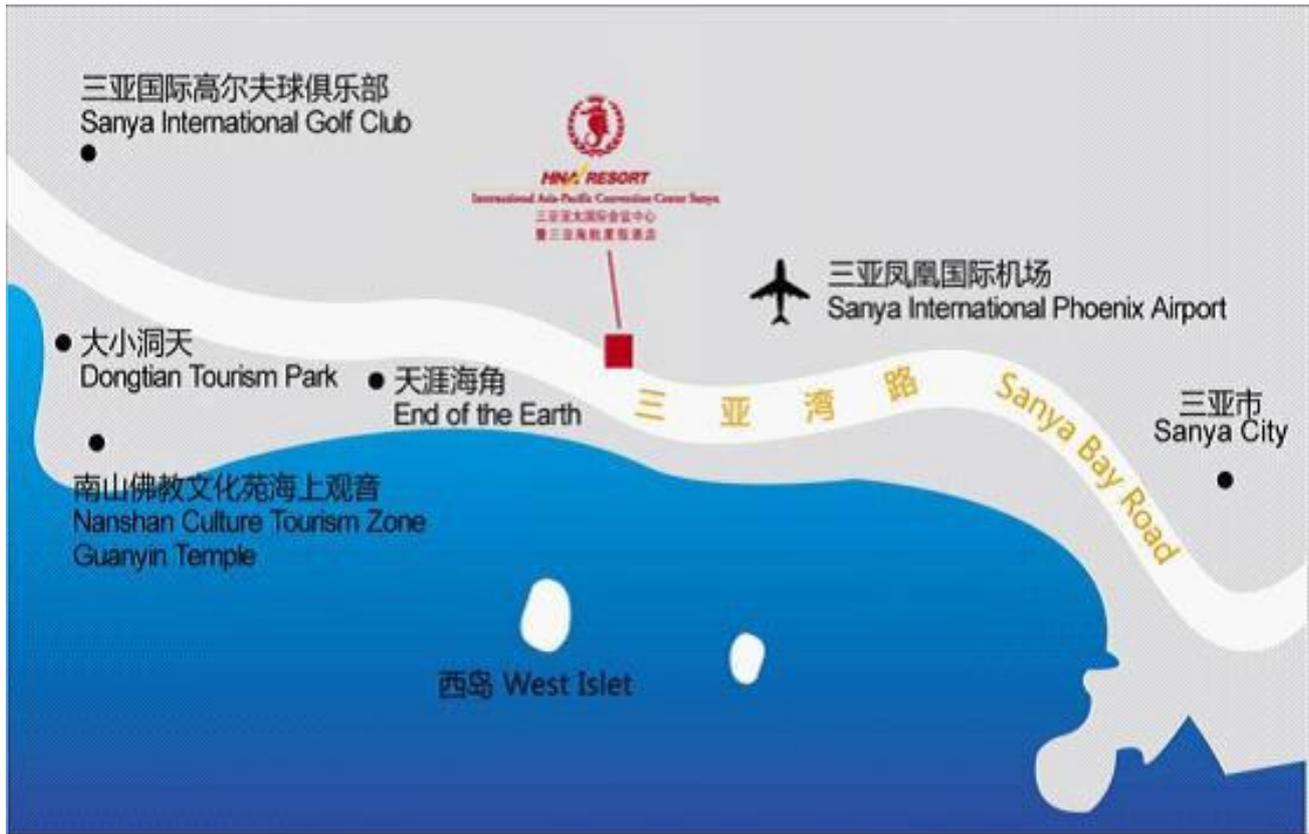
End of the Earth: 10 minutes ride

For non-Chinese author, please show the following info to the driver if you take a

taxi:

请送我到： 三亚市三亚湾海坡旅游经济开发区17横路

亚太国际会议中心暨三亚海航度假酒店



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