

**The International Conference on Applied Mathematics, Modelling and
Intelligent Computing (CAMMIC 2021)**

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**March 26-28, 2021
Guilin Park Hotel (桂林桂湖饭店)
Guilin, China**

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Conference Schedule

Time: March 26-28, 2021

Location: Guilin Park Hotel (桂林桂湖饭店)

Date	Time	Activity	Venue
March 26 Afternoon	13:00-17:00	Registration	Lobby
	18:00-20:00	Dinner	Xinghe Room (星河阁) 2nd Floor
March 27 Morning	09:00-10:30	Keynote Speeches	Xianghe Room [祥和厅] 1 st Floor
	10:30-10:45	Tea Break/Group Photo	
	10:45-12:15	Keynote Speeches	
	12:15-13:30	Lunch	Xinghe Room (星河阁) 2nd Floor
March 27 Afternoon	14:00-15:30	Oral Session	Xianghe Room [祥和厅] 1 st Floor
	15:30-15:45	Tea Break	
	15:45-18:00	Oral & Poster Session	
	18:00-20:00	Dinner	Xinghe Room (星河阁) 2nd Floor

Conference Agenda

Session I: Keynote Speeches

Session Chair: Prof. Hanhua Chen, Huazhong University of Science and Technology, China

Xianghe Room[祥和厅], 1st Floor

09:00-12:00, Saturday Morning, March 27, 2021

Time	Title	Speaker	Affiliation
09:00-09:45	Efficient Data Parallelism in Distributed Stream Processing Systems	Prof. Hanhua Chen	Huazhong University of Science and Technology, China
09:45-10:30	Linearly Stable KAM Tori for One Dimensional Forced Kirchhoff Equations	Prof. Jiansheng Geng	Nanjing University, China
10:30-10:45	Photography & Tea Break		
10:45-11:30	Conceptual Story Modeling and Model-Driven Architecture for Story Creation	Prof. Hongxing Liu	Wuhan University of Technology, China
11:30-12:15	Intelligent Computing for COVID-19 Diagnosis	Prof. Yu-Dong Zhang	School of Informatics, University of Leicester, UK

Session II: Oral & Poster Presentations

Session Chair: Prof. Jiansheng Geng, Nanjing University, China

Xianghe Room[祥和厅], 1st Floor

14:00-18:00, Saturday Afternoon, March 27, 2021

Time	Title	Speaker	Affiliation
Oral 1-1	Design of the Corn Field Straw Chopper Transmission System Based on Virtual Prototype Technology	Yanying Li	Henan University of Science and Technology, China
Oral 1-2	Discover the singular controversy of number theory calculus from Goldbach conjecture	Zhiyu Chen	
Oral 1-3	Mathematical Modelling of Alleviating Traffic Jam on Straight Lane	Xiufang Ren	Nanjing Agricultural University
Oral 1-4	Qualifying the benefits of ride-sharing on reducing fleet size	Shan Hao	Tsinghua University
Oral 1-5	Simulation of Hydraulic Suspension System of Electric Tractor Based on Matlab-AMESim	Xiao Fu	Henan University of Science and Technology, China
Oral 1-6	Probabilistic switching can solve the problem of costly prosocial exclusion	Weiwei Xie	Northwest Minzu University, China
Oral 1-7	The integration and application of BIM and GIS in modeling	Hang Zhang	Xi'an University of Science and Technology
Oral 1-8	Application of 3D Modeling in Real Estate and Land Integration Project	Qi Han	Xi'an University of Science and Technology

15:30-15:45 Coffee Break			
Oral 1-9	Modelling Study on Acetylcholine Regulation to the Pacemaker Ability of the Sinoatrial Tissue in Hearts	Hong Zhang	Xi'an Jiaotong University, China
Oral 1-10	Optimal travel strategy model study	Yiming He	Beijing Institute of Technology, China
Oral 1-11	The investigation of travelling wave solutions to the space-time fractional coupled Burgers' equations in fluids	Meimei Zhao	Xi'an Fan Yi University, China
Oral 1-12	Improved collaborative filtering recommendation algorithm based on user attributes and K-means clustering algorithm	Lihong Chen	Sichuan Agricultural University, China
Oral 1-13	Stability Analysis and Error Estimation of Variable Coefficient Convection-Diffusion Equation: Generalized Numerical Fluxes	Yuhang Liu	Harbin University of Science and Technology, China
Oral 1-14	Research on Credit Strategy of Small and Medium Enterprises Based on Subjective and Objective Comprehensive Evaluation	Yuxuan Zou	Wuhan University of Science and Technology
Poster Session			
Poster 2-1	The supply chain coordination model based on sales return and efforts	Yichuan Sun	Anhui Institute of Information Technology, China

Poster 2-2	Application of principal component analysis in evaluation of epidemic situation policy implementation	Shaojun Xiang	Wuhan University of Science and Technology, China
Poster 2-3	Pedestrian inertial navigation based on CNN-SVM gait recognition algorithm	Xiaomeng Wu	University of Science and Technology Beijing
Poster 2-4	Research on Life Distribution of Hydraulic Seal O-ring Based on Covariate	Xincheng Song	Air Force Engineering University
Poster 2-5	Iterative Method for Positive Definite Solution of a Class of Nonlinear Matrix Equation	Hao Xiong	Guangxi University for Nationalities, China
Poster 2-6	Subhyperbolic Rational Maps with Identical Julia Set	Xia Sun	Yunnan Open University, China
Poster 2-7	Pedestrian Navigation Method based on PDR/INS KF fusion and Height Update for Three-Dimensional Positioning	Yujing Meng	University of Science and Technology Beijing
Poster 2-8	The Application of the Paradigm of Soft Set Logic Formula in Recommendation System	Xiao Lu	Ocean University of China

Keynote Speeches

Keynote Speech 1: Efficient Data Parallelism in Distributed Stream Processing Systems

Speaker: Prof. Hanhua Chen, Huazhong University of Science and Technology, China

Time: 09:00-09:45, Saturday Morning, March 27, 2021

Venue: Xianghe Room[祥和厅], 1st Floor



Abstract

The recent advances in distributed stream processing systems bring the community great capability to process extremely huge volumes of real-time data streams. To achieve high processing time-efficiency, distributed stream processing systems exploit various data parallelisms technology for partitioning the stream workloads. However, the highly skewed distribution of real-world stream data raises unique challenges to distributed stream processing systems. Existing stream workload partitioning schemes usually use a "one size fits all" design, leading to notable unsatisfied system throughput and processing latency.

In this speech, we show that the key to efficient stream partitioning is to identify the popularity of the stream data. We propose PStream, a highly time-efficient distributed stream processing system which uses a novel differentiated scheme for data parallelism for stream data partitioning. PStream leverages a novel light-weighted probabilistic counting scheme for identifying the currently hot keys in dynamic real-time streams. The scheme is extremely efficient in computation and memory consumption, so that the predictor based on it can be well integrated into processing instances in the system. We implement PStream on top of Apache Storm and conduct comprehensive experiments using large-scale real-world traces to evaluate the system performance. Results demonstrate the high efficiency of PStream.

Keynote Speech 2: Linearly Stable KAM Tori for One Dimensional Forced Kirchhoff Equations

Speaker: Prof. Jiansheng Geng, Department of Mathematics, Nanjing University, China

Time: 09:45-10:30, Saturday Morning, March 27, 2021

Venue: Xianghe Room[祥和厅], 1st Floor



Abstract

We prove an abstract infinite dimensional KAM theorem, which could be applied to prove the existence and linear stability of small-amplitude quasi-periodic solutions for one dimensional forced Kirchhoff equations with Dirichlet boundary conditions

$$\begin{cases} u_{tt} - (1 + \int_0^{\pi} |u_x|^2 dx) u_{xx} + M_{\xi} u + \epsilon g(\bar{\omega}, t, x) = 0, \\ u(t, 0) = u(t, \pi) = 0, \end{cases}$$

where M_{ξ} is a real Fourier multiplier, $g(\bar{\omega}, t, x)$ is real analytic and odd in x with forced Diophantine frequencies $\bar{\omega} \in \mathbb{R}^{\nu}$, ϵ is a small parameter.

The proof is based on an improved Kuksin lemma and the off-diagonal decay property of the forcing term.

Keynote Speech 3: Conceptual Story Modeling and Model-Driven Architecture for Story Creation

Speaker: Prof. Hongxing Liu, Wuhan University of Technology, China

Time: 10:45-11:30, Saturday Morning, March 27, 2021

Venue: Xianghe Room[祥和厅], 1st Floor



Abstract

Novels, movies, and other genres of stories are popular. This paper studies the methods of computer-aided story creation by means of domain-specific conceptual modeling and model-driven architecture. Firstly, a new conceptual modeling language for story is presented, and its abstract syntax and concrete syntax are defined. The conceptual story model is a kind of graphical, highly abstract, and genre-independent model that describes the events, characters, settings, and the relationships in a given world. We developed a software tool to support the conceptual modeling. Secondly, a model-driven architecture for story creation is proposed, which consists of a series of related models, languages, and tools to support the modeling and transformation. In the architecture, a story work is represented by story models, and the story creation becomes a modeling process from abstract to concrete. We take the genre of story as the platform, so the conceptual model is a platform-independent model, which can be transformed to various platform-specific models. We believe the architecture is a new way for story creation and can make sense for the creative industry.

Keynote Speech 4: Intelligent Computing for COVID-19 Diagnosis

Speaker: Prof. Yu-Dong Zhang, School of Informatics, University of Leicester,
UK

Time: 11:30-12:15, Saturday Morning, March 27,2021

Venue: Xianghe Room[祥和厅], 1st Floor



Abstract

Intelligent computing is a rapidly advancing field in recent years. It is a set of nature-inspired computational methodologies and approaches to address complex real-world problems to which mathematical or traditional modelling can be useless. COVID-19 is a pandemic disease, which already caused more than 1.7 million deaths till now. This invited speak presents the recent intelligent computing progresses in COVID-19 diagnosis.

Abstracts for Presentations

1-1

Title: Design of the Corn Field Straw Chopper Transmission System Based on Virtual Prototype Technology

Name: Yanying Li

Affiliation: Henan University of Science and Technology,China

Abstract

The planting area of corn is large and the straw yield is high in our country. But the number of the straw returned to field is low at present, and the cost of returning straw to field is high. Thus, a set of corn straw returning machine whose productivity is high, cost is low and can be used together with self-propelled corn harvest machine is designed. This paper introduced the corn straw returning machine's general parameters and drive system's working process and design process. Then the virtual prototype model of the drive system is built, and virtual prototype technology is used to build the model of the drive system and to conduct kinematics simulation and dynamics simulation. The results show that the angular velocity and the stress of all sample points are all different in different working conditions. The response of the sample point is obvious when the pound load is big, and the response decayed to zero after three cycles of concussion. The relationships between angular velocity and stress of each sample point prove that the virtual prototype model's validity. This study provides a new method and a way for the design and optimization of corn straw returning machine.

1-2

Title: Discover the singular controversy of number theory calculus from Goldbach conjecture

Name: Zhiyu Chen

Abstract

On the test of the results of Goldbach number upper and lower limits research conducted by Mr. Chen Jingrun in 1966 and 1978, we find that there are strange nonconformities. It can be confirmed that Mr. Chen Jingrun's deduction process conforms to the logic of natural science. It is also relatively certain that the running results of the computer can be identified. In the face of difference, we assume that some important fundamental principle or principle in number theory calculus is not applicable, we also find that the sequence of prime numbers is asymmetrical, and finally we find a very controversial fundamental principle in number theory calculus.

1-3

Title: Mathematical Modelling of Alleviating Traffic Jam on Straight Lane

Name: Xiufang Ren

Affiliation: Nanjing Agricultural University

Abstract

Traffic jam refers to the phenomenon that the traffic flow stagnates for some reason in a certain period of time and in a certain road space. It causes waste of time and fuel consumption, increases the difficulty of traffic management, and is more likely to cause traffic accidents. In this talk, I will present a parametric partial differential equation in lattice form. By deducing the sensitivity line and mKdV equation, it shows that the traffic flow can be more uniform by adjusting some parameters.

1-4

Title: Qualifying the benefits of ride-sharing on reducing fleet size

Name: Shan Hao

Affiliation: Tsinghua University

Abstract

Reducing the number of operating vehicles in cities has enormous significance on mitigating traffic congestion and environment pollution. Ride-sharing is an efficient way to reduce fleet size in urban areas. In this work, we propose two integer programming models to qualify the benefits of ride-sharing on reducing fleet size. The proposed models are solved by commercial solver Gurobi. Then we conduct a series of instances based on trip records of New York City to test the proposed models. Results indicate that without delaying drop-off times, the fleet size when considering ride-sharing remains almost the same as ride-hailing service for high-density travel demand settings. Whereas the fleet size drops sharply as the demand density decreases. In addition, the number of vehicles required is reduced by nearly 30% regardless of order density under ride-sharing assumptions when a slight delay is allowed.

1-5

Title: Simulation of Hydraulic Suspension System of Electric Tractor Based on Matlab-AMESim

Name: Xiao Fu

Affiliation: Henan University of Science and Technology, China

Abstract

For electric tractor engine power output characteristic, a load sensitive hydraulic suspension system in front of the valve is designed. In order to meet the operation requirements of different soil conditions when the electric tractor is plowing, and to improve the dynamic response characteristics of the system and the uniformity of tillage depth, a fuzzy PID based resistance-position combined adjustment tillage depth control strategy is designed. The hydraulic system simulation model is established based on AMESim, and the fuzzy PID controller model is established using Matlab. Through the joint simulation of AMESim and Matlab, the control performance of hydraulic suspension system of electric tractor with different resistance-position comprehensive proportional coefficients is analyzed. The simulation results show that the control strategy of tillage depth based on fuzzy PID is more responsive and anti-interference strong ability, the resistance-position combined adjustment has higher adaptability to different soil changes and operation methods than a single resistance adjustment or position adjustment.

1-6

Title: Probabilistic switching can solve the problem of costly prosocial exclusion

Name: Wei-Wei Xie

Affiliation: Northwest Minzu University, China

Abstract

Public Goods Game (PGG) originates from “the Tragedy of Commons”, which is argued by the American scholar Hardin. PGG is a type of evolution game that these individuals in this game can affect each other, and reached a stable state. This paper demonstrates a new version PGG model which is an exclusion PGG model. Besides, combing Parrondo’s Paradox with this PGG model, and it also shows a similar “winning” outcome. Parrondo’s Paradox shows that two individual-losing games, when alternate, yield a winning outcome. Moreover, the additional periodic switching mechanism also applies to the PGG this model and obtain a similar result when compared with that of conventional Parrondo’s Paradox. The biggest contribution of this paper is that Parrondo’s Paradox can fully applicable to the exclusion PGG model, and that simulation result also presents an effective result.

1-7

Title: The integration and application of BIM and GIS in modeling

Name: Hang Zhang

Affiliation: Xi'an University of Science and Technology, China

Abstract

Refinement, intelligence, and standardization are the core requirements of today's urban construction management. From the current situation, it is impossible to meet the needs of future urban construction and management by relying on a single technology. The integration of GIS and BIM provides new opportunities for urban construction management. GIS provides a basic framework for the construction and management of today's cities, and BIM provides an accurate information model of a single building for urban construction management. The integration of GIS and BIM will bring new ideas and methods to city construction and management. A large number of high-precision BIM models provide detailed building information for city management and provide richer information for the construction of city 3D models. Although the fusion research of GIGIS and BIM has clear directions and urgent needs, the fusion research work of the two is still in the initial and exploratory stage.

1-8

Title: Application of 3D Modeling in Real Estate and Land Integration Project

Name: Qi Han

Affiliation: Xi'an University of Science and Technology, China

Abstract

With the development of science and technology, surveying and mapping technology has also advanced by leaps and bounds. More and more people in related industries have begun to pay more

attention to the application of drone tilt photogrammetry to the surveying and mapping industry, which has greatly improved the progress of surveying and mapping projects. This photography technology has gradually become an indispensable part of the surveying and mapping industry due to its advantages of speed, efficiency, flexibility, and low cost. This article is aimed at the integration of premises and land project, using a drone platform equipped with 5 lens cameras and shooting from 5 directions at the same time, that is, through 1 vertical shooting lens and 4 tilting lenses to obtain ground surface images, to achieve a large overlap of multiple angles For viewing angle, the requirement for overlap is that the heading overlap is at least 60%, and the side overlap is 30%. This article uses ContextCapture Center Master software to perform three-dimensional modeling of the acquired images and obtain orthophoto results. The three-dimensional model is loaded into the EPS software for collection. The buildings, eaves, balconies and other buildings in each parcel of land are collected, and they are finally obtained. This technology greatly improves the work efficiency of the real estate integration project.

1-9

Title: Modelling Study on Acetylcholine Regulation to the Pacemaker Ability of the Sinoatrial Tissue in Hearts

Name: Hong Zhang

Affiliation: Xi'an Jiaotong University, China

Abstract

For electric tractor engine power output characteristic, a load sensitive hydraulic suspension system in front of the valve is designed. In order to meet the operation requirements of different soil conditions when the electric tractor is plowing, and to improve the dynamic response characteristics of the system and the uniformity of tillage depth, a fuzzy PID based resistance-position combined adjustment tillage depth control strategy is designed. The hydraulic system simulation model is established based on AMESim, and the fuzzy PID controller model is established using Matlab. Through the joint simulation of AMESim and Matlab, the control performance of hydraulic suspension system of electric tractor with different resistance-position comprehensive proportional coefficients is analyzed. The simulation results show that the control strategy of tillage depth based on fuzzy PID is more responsive and anti-interference strong ability, the resistance-position combined adjustment has higher adaptability to different soil changes and operation methods than a single resistance adjustment or position adjustment.

1-10

Title: Optimal travel strategy model study

Name: Yiming He

Affiliation: Beijing Institute of Technology, China

Abstract

In this paper, we propose an appropriate algorithm to determine the best strategy of an individual in the Through the Desert game, and give the generally applicable models for single-player and multi-player games under known and unknown weather conditions respectively. We integrate ant colony

algorithm, branch-and-bound method and game theory to build and solve the optimization model.

1-11

Title: The investigation of travelling wave solutions to the space-time fractional coupled Burgers' equations in fluids

Name: Meimei Zhao

Affiliation: Xi'an FanYi University, China

Abstract

Solutions of nonlinear coupled fractional differential equations (FDEs), namely, the space-time fractional coupled Burgers' equations, are obtained by the improved fractional sub-equation method in the sense of Jumarie's modified Riemann-Liouville derivative. The form of these solutions suggests ansatz suitable for finding solutions of much more general FDEs of coupled type.

1-12

Title: Improved collaborative filtering recommendation algorithm based on user attributes and K-means clustering algorithm

Name: Lihong Chen

Affiliation: Sichuan Agricultural University, China

Abstract

Aiming at the problem of poor performance of collaborative filtering algorithm on data sets with large sparsity, this paper proposes an improved collaborative filtering recommendation algorithm which integrates user attributes and K-means clustering. When considering user similarity, the weight of user attributes is introduced to reduce the impact of data sparsity on similarity calculation. Meanwhile, the characteristics of user's age, gender and occupation are concerned. At the same time, combined with K-means clustering, the algorithm can further improve the accuracy of the recommendation model.

1-13

Title: Stability Analysis and Error Estimation of Variable Coefficient Convection-Diffusion Equation: Generalized Numerical Fluxes

Name: Yuhang Liu

Affiliation: Harbin University of Science and Technology, China

Abstract

In this paper, we study the discontinuous Galerkin (DG) method with generalized numerical fluxes for one-dimensional variable coefficient convection-diffusion equation. For the convection term, we choose the upwind numerical flux, and for the diffusion term, we choose a special type of generalized numerical fluxes, thus we first show that the stability of the DG scheme. Then, by introducing the projection method, we are able to show order optimal error estimates for the DG scheme. Finally, Numerical experiment is provided to verify the theoretical results.

1-14

Title: Research on Credit Strategy of Small and Medium Enterprises Based on Subjective and Objective Comprehensive Evaluation

Name: Yuxuan Zou

Affiliation: Wuhan University of Science and Technology

Abstract

In order to study the adjustment of national policies on medium, small and micro enterprises, and to determine the credit risk and credit strategy of banks to medium, small and micro enterprises. Firstly, the enterprise strength and comprehensive reputation of small and micro enterprises are analyzed, and their weight is determined by the subjective and objective comprehensive evaluation method, and the credit risk factors of each enterprise are calculated. A dual objective optimization model was established and solved by simulated annealing algorithm. The optimal profit amount and annual average interest rate of banks for different industries and different categories of credit strategy are obtained. Analytic Hierarchy process and Fuzzy Bayesian network are used to explore the influence of multiple emergent factors on banks adjustment credit strategy.

2-1

Title: The supply chain coordination model based on sales return and efforts

Name: Yichuan Sun

Affiliation: Anhui Institute of Information Technology, China

Abstract

Taking a two-stage supply chain model of a single manufacturer and a single retailer as the research object, this paper initially proposes the random demand function of retailers' effort to establish an integrated supply chain model based on dual factors of retailer effort and selling price. Then it discusses how to optimize the reward and punishment contracts to realize the win-win situation of supply chain members under decentralized decision-making by analyzing the coordination and optimization of supply chain under centralized and decentralized conditions. Finally, the conclusion is verified by numerical simulation experiment, effort and quantity will decrease along with the increase of the distribution coefficient and will increase with the increase of the buy-back price's coefficient.

2-2

Title: Application of principal component analysis in evaluation of epidemic situation policy implementation

Name: Shaojun Xiang

Affiliation: Wuhan University of Science and Technology, China

Abstract

In order to study the impact of various policies issued by the government on epidemic prevention and control, we first considered them from three aspects: the degree of leniency of policies, the degree of stringency of policy implementation and the degree of self-consciousness of individuals, broken down

into 10 indicators, designed a questionnaire to collect relevant data. Using Principal Component Analysis (PCA), 4 principal components were extracted from 10 indexes, and the scores and total scores of each principal component were obtained. Finally, the corresponding suggestions are given.

2-3

Title: Pedestrian inertial navigation based on CNN-SVM gait recognition algorithm

Name: Xiaomeng Wu

Affiliation: University of Science and Technology Beijing

Abstract

Pedestrian inertial navigation technology based on inertial measurement unit (IMU) has been widely used in indoor and outdoor applications in recent years. But the IMU has a relatively low measurement accuracy that leads to error accumulation. Zero speed update algorithms (ZUPT) are often used to suppress the accumulation of errors. The key to the zero-speed update algorithm is to accurately find the stance phase in the pedestrian gait cycle. In this paper, an adaptive zero-speed detection algorithm based on CNN-SVM gait recognition is proposed for pedestrian positioning. First, the CNN-SVM algorithm is used to distinguish six gaits and find the optimal detection threshold according to different gaits. At the same time, it is proposed to use the zero-angle velocity update algorithm (ZARU) to correct the angle error, and to improve the accuracy of positioning by combining the information of zero-speed update and zero-angle velocity update through Kalman filter. Finally, the validity of the proposed algorithm is verified by experiments.

2-4

Title: Research on Life Distribution of Hydraulic Seal O-ring Based on Covariate

Name: Xincheng Song

Affiliation: Air Force Engineering University

Abstract

Due to the lack of reliable big data, data-driven methods cannot be used to study the life distribution of hydraulic components. Facing the leakage failure of the hydraulic component is caused by the failure of the O-ring wear in hydraulic contact seal, According to the O-ring adhesive wear principle and Archard model, a method of fusing the internal leakage life test of hydraulic components with the simulation experiment based on the equivalent cross-sectional diameter of the O-ring is proposed. The leakage life test and simulation scheme of hydraulic cylinder designed by this method are used to solve the life distribution of piston hydraulic seal O-ring based on covariate. Finally, the life distribution response surface is established. It is proved that the method is feasible. The method provides a data channel for studying the reliability related problems of hydraulic components.

2-5

Title: Iterative Method for Positive Definite Solution of a Class of Nonlinear Matrix Equation

Name: Hao Xiong

Affiliation: Guangxi University for Nationalities, China

Abstract

In this paper, we study the matrix equation $X+A*(R+B*XB)-t A=Q$ ($0<t\leq 1$), where A, B, R, Q are matrices of appropriate size and R, Q are both positive definite matrices. Based on the fixed point theorem, we suggest four iterative algorithms for solving this equation and prove that the suggested iterative algorithms are convergent with proper conditions. What's more, the conditions for the existence of the positive definite solution are given. The convergence analysis of the suggested algorithms is established. Some numerical examples are presented to illustrate the convergence behaviour of the various algorithms.

2-6

Title: Subhyperbolic Rational Maps with Identical Julia Set

Name: Xia Sun

Affiliation: Yunnan Open University, China

Abstract

Permutable rational functions have identical Julia set. However, is the converse right? We have found a class of rational functions with degree two, they have identical Julia set but are not permutable. Moreover, they have hyperbolic periodic points only.

2-7

Title: Pedestrian Navigation Method based on PDR/INS KF fusion and Height Update for Three-Dimensional Positioning

Name: Yujing Meng

Affiliation: University of Science and Technology Beijing

Abstract

Inertial navigation system (INS) and pedestrian dead reckoning (PDR) that use wearable MEMS inertial measurement units (IMUs) can track the location of a pedestrian on two-dimensional (2D) plane. This paper proposes a pedestrian navigation method based on INS/PDR Kalman filter (KF) fusion to calculate the trajectory of a pedestrian in indoor corridors, which can effectively suppress the heading drift. Besides, the height update algorithm is introduced based on the pressure output of a barometer to constrain the height divergence for three-dimensional (3D) positioning. The results of motion experiment show that the navigation accuracy of INS/PDR Kalman filter fusion method is significantly increased compared with the INS. The proposed height update algorithm have better correction effect on the problem of height divergence compared with ZUPT-aided inertial navigation algorithm.

2-8

Title: The Application of the Paradigm of Soft Set Logic Formula in Recommendation System

Name: Xiao Lu

Affiliation: Ocean University of China

Abstract

With the development of science and technology, information has shown explosive growth. It is difficult for information consumers to find useful information from a large amount of information. This article combines soft set theory and propositional calculus to propose a recommendation algorithm that meets the requirements of users. The algorithm describes user requirements in terms of soft set logic formulas and gives reasonable recommendation results by solving the normal form of the sub-formula and its realization in the corresponding soft sub-set. Numerical example shows that the algorithm can be successfully applied to the problem of song recommendation.

Instructions for Presentations

Oral Presentation

1. **Timing:** a maximum of 15 minutes total, including speaking time and discussion. Please make sure your presentation is well timed. Please keep in mind that the program is full and that the speaker after you would like their allocated time available to them.
2. You can use CD or USB flash drive (memory stick), make sure you scanned viruses in your own computer. Each speaker is required to meet her/his session chair in the corresponding session rooms 10 minutes before the session starts and copy the slide file (PPT or PDF) to the computer.
3. It is suggested that you email a copy of your presentation to your personal inbox as a backup. If for some reason the files can't be accessed from your flash drive, you will be able to download them to the computer from your email.
4. Please note that each session room will be equipped with a LCD projector, screen, point device, microphone, and a laptop with general presentation software such as Microsoft PowerPoint and Adobe Reader. Please make sure that your files are compatible and readable with our operation system by using commonly used fonts and symbols. If you plan to use your own computer, please try the connection and make sure it works before your presentation.
5. **Movies:** If your PowerPoint files contain movies please make sure that they are well formatted and connected to the main files.

Poster Presentation

1. Maximum poster size is 59.4 CM wide by 84.1 CM high (A1) .
2. Posters are required to be condensed and attractive. The characters should be large enough so that they are visible from 1 meter apart.
3. Please note that during your poster session, the author should stay by your poster paper to explain and discuss your paper with visiting delegates.

Notice for Participants

欢迎各位专家学者们参加 2021 年应用数学、建模与智能计算国际研讨会(CAMMIC2021), 为了您在会议期间方便顺利, 请注意以下事项:

Welcome all leaders and scholars to The International Conference on Applied Mathematics, Modelling and Intelligent Computing (CAMMIC 2021). In order to make your work smooth during the conference, please pay attention to the following matters:

一、 参会 Conference

1.会场: 祥和厅, 1 楼, 桂林桂湖酒店

Conference Room: Xianghe Room, 1st Floor

2. 请您佩戴好参会证, 按照会议日程上的安排, 提前 10 分钟凭证入场;

Please wear the conference pass and enter the venue 10 minutes in advance according to the schedule;

3. 参会期间, 请您务必把手机调为静音或者关闭手机; 会议期间请勿随意走动。

Please set your mobile phone to silent mode or turn off the phone during the conference; Please do not walk around during the conference.

4. 请注意保管好自己的随身物品。

Please take care of your belongings.

二、 就餐 Meal

1. 用餐地点: 星河阁, 2 楼, 桂林桂湖酒店

Place: 2nd Floor, Guilin Park Hotel

2. 会务组免费提供餐券, 包含了 3 月 26 号晚餐、27 号午餐+晚餐

The conference group provides meal coupons for free, including dinner on March 26, lunch + dinner on March 27;

3. 一人一餐券, 请保管好, 当天有效, 过期作废。

Please keep it well, one coupon for one person, valid on specified day only.

三、 酒店信息 Hotel Information

1. 桂林桂湖饭店 中国桂林叠彩区螺蛳山路 1 号

Guilin Park Hotel Address: No.1 Luosishan Road, Guilin, 541001, Guangxi, China

2. 房间预订: 大床房 290 元/晚 (含早), 标间 270 元/晚 (含早)。如需预订酒店, 请编辑短信"AEIC 桂林站 CAMMIC+姓名+入住日期+退房日期+房型+入住人数"发送至 13737735558 (秦经理), 预订结果以收到确认为准。

Room Reservation: Standard single room: RMB 290/ night, Standard double room: RMB 270/ night (about USD 42/ night). You can make a reservation by calling the front desk +86 13737735558 before November 6, please tell that you are a guest of "AEIC Guilin academic conference (CAMMIC 2021)".

四、 联系我们 Contact us

会议期间, 如果您需要帮助, 可以咨询以下会务组工作人员。

If you need help during the conference, you can ask the following staff.

会务负责人: 王老师电话 (同微信) 19139737380

Conference Secretary: Ms. Vivian Wang: + 86 19139737380

Email: cammic2021@163.com