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Part I Conference Schedule

Time: May 30-June 1, 2023

Location: Chengdu Xinliang Hotel (成都新良大酒店)

Date	Time	Location	
May 30	14:00-17:00	Registration (Lobby)	
		TBD	TBD
May 31	08:30-12:00	Mathematics: Keynote Speech Session I Dr. Depeng Jiang, Dr. Zulqurnain Sabir, Prof. D. S. Hooda, Dr. Tao Liu, Prof. Vishwa Nath Maurya Chair: TBD Coffee Break: 10:00-10:15	Biology & Agriculture: Keynote Speech Session I Prof. Topwe Mwene-Mbeja, Dr. Gan Hong Seng, Dr. Yushan Hu, Prof. Narendra Londhe, Prof. Ahmed Hashash, Chair: TBD Coffee Break: 10:00-10:15
	12:00-13:30	Lunch [TBD]	
	14:00-18:00	Mathematics: Keynote Speech Session II Prof. Rashmi Bhardwaj, Dr. Dariusz Jacek Jakobczak, Prof. Klaus G"artner, Prof. Loc Nguyen, Dr. Changyong Zhang, Prof. Toufik Zebbiche Chair: TBD Coffee Break: 15:30-15:45	Biology & Agriculture: Keynote Speech Session II Dr. Takuma Hayashi, Dr. Jin Wang, Prof. Dr. A Taha, Prof. Sobhy Ahmed El-Sohaimy, Dr. Hongwei Si, Prof. Lijuan Xie Chair: TBD Coffee Break: 15:30-15:45
	18:00-19:30	Dinner [TBD]	
		TBD	TBD
June 1	08:30-12:00	Mathematics: Keynote Speech Session III & Technical Session Prof. Saman Babaie Kafaki, Dr. Sie Long Kek, Prof. Annamaria Barbagallo, Prof. Syariza Abdul Rahman, Dr. Selvam Avadayappan, Prof. Mohammad Reza Oboudi Chair: TBD Coffee Break: 10:00-10:10	Biology & Agriculture: Keynote Speech Session III & Technical Session Prof. Ali Aberoumand, Prof. Isham Alzoubi, Dr. Shashi Kumar Sharma, Prof. Dana Alina MAGDAS, Dr. Aisha Mohamed El-Bareg Chair: TBD Coffee Chair: Coffee Break: 10:00-10:15
	12:00-13:30	Lunch [TBD]	
June 4	6:00-18:30	One Day Tour (on pending)	

Part II Keynote Speeches

Mathematics: Keynote Speech Sessions

Keynote Speech 1: Random Intercept Latent Transition Analysis for Program Evaluation with Multilevel and Multivariate Longitudinal Data

Speaker: Dr. Depeng Jiang, University of Manitoba, Canada

Time: 08:30-09:15, Wednesday Morning, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Many intervention programs often have multiple outcome variables, each being reported for multiple time points (e.g., pre and post intervention) where data for participants are organized at more than one level (students nested in schools). The latent transition analysis (LTA) is a well-known approach for modeling transition over time. In this paper, we propose to use the LTA with random intercepts for program evaluation with multilevel and multivariate longitudinal data. Between-subject variation is separated from the within-subject latent class transition over time allowing a clear interpretation of the data. The robust standard errors in LTA were considered to consider the non-independence of observations due to the clustered or multilevel structure. We conduct both simulation studies and application to real prevention programs to compare the LTA models with different random intercept variations with the regular LTA. The strengths and limitations of these LTA models are discussed.

Keynote Speech 2: Intelligent computing approaches for the nonlinear singular

Emden-Fowler model

Speaker: Dr. Zulqurnain Sabir, Hazara University, Mansehra, Pakistan

Time: 09:15-10:00, Wednesday Morning, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

The present study shows an intelligence computational framework for solving the singular, linear, and nonlinear Emden-Fowler models using the well-known artificial neural networks (ANNs), genetic algorithm is a global search scheme, interior-point is a capable local search scheme and the hybrid of local and global search schemes. The neural network methods designate the suitable approaches to attain valuable prototypes using

the unsubstantiated error for solving the singular models. The incentive to award this research is to originate a consistent framework combines with the significant topographies of ANNs to tackle the challenges of the singular systems. Comprehensive numerical research is proficient to approve the robustness, convergence, and correctness of the proposed numerical approach. The numerical measures are also compared with the true solutions to authenticate the excellence of the proposed numerical scheme.

Keywords: Nonlinear; Singular systems; Genetic algorithm; Interior-point scheme; Hybridization

References

- [1] Ibragimov, N. H., Elementary Lie group analysis and Ordinary differential equations, J. Wiley and Sons, Chichester, (1999).
- [2] Dehghan M, Shakeri F. Approximate solution of a differential equation arising in astrophysics using the variational iteration method. New Astron 2008; 13:53–9.
- [3] Parand K, Pirkhedri A. Sinc-collocation method for solving Astrophysics equations. New Astron 2010; 15:533–7.
- [4] C.M. Bender, K.A. Milton, S.S. Pinsky and Jr. L.M. Simmons, A new perturbative approach to nonlinear problems, Journal of Mathematics and Physics 30 (1989), 1447-1455.

Keynote Speech 3: Mathematical Modeling and Simulation

Speaker: Prof. D. S. Hooda, Former PVC Kurukshetra University, India

Time: 10:15-11:00, Wednesday Morning, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Main points of the proposed talk are as follows:

1. Introduction
2. Mathematical Modeling, Why and How?
3. Types of Modeling
4. The Methodology in Practice
5. Simulation with illustration
6. Monte Carlo Simulation
7. Random Number Generation
8. Conclusion and References

Keynote Speech 4: Multigrid-Homotopy Method for PDE-Based Inverse

Problems (Video)

Speaker: Dr. Tao Liu, Nanyang Technological University, Singapore

Time: 11:00-11:45, Wednesday Morning, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

The present study develops a novel method combining the multigrid idea and the homotopy technique for nonlinear inverse problems, in which the forward problems are modeled by some forms of partial differential equations. The method first attempts to use the multigrid method to decompose the original inverse problem into a sequence of sub-inverse problems which depend on the grid variables and are solved in proper order according to the grid size from the coarsest to the finest, and then carries out the inversion on the coarsest grid by the homotopy method. The strategy may give a rapidly and globally convergent method. As a practical application, this method is used to solve the nonlinear inverse problem of a nonlinear convection-diffusion equation, which is the saturation equation within the two-phase porous media flow. The numerical results show the effectiveness of the multigrid-homotopy method in the aspects of stability, global convergence, and fast computation. Most important of all, the comparative numerical examples show that the multigrid-homotopy method not only has a larger convergence region than the multigrid method and regularized Gauss-Newton method, but also requires less computational cost than the homotopy method and regularized Gauss-Newton method.

Keynote Speech 5: An Empirical Nonlinear Estimation Model for Improved

Estimators of Population Variance of a Normal Distribution Using Two

Auxiliary Random Variables (Video)

Speaker: Prof. Vishwa Nath Maurya, Chartered International Da Vinci University, Delaware, USA

Time: 11:45-12:30, Wednesday Morning, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

In this paper we present an empirical nonlinear estimation model to explore two improved estimators over conventional estimator sample variance for estimating the population variance of a normal distribution by utilizing two auxiliary random variables and coefficient of variation (CV). Here, the proposed methodological framework involves sample mean and

chi-square variate as two auxiliary random variables to obtain improved estimates of study variable. First estimator comprises of a combination of sample mean and sample variance as nonlinear statistic whereas the second estimator comprises of a nonlinear convex combination of mean and variance of the random sample. Essence properties including optimal values of characterizing scalars, bias and minimum mean square errors (MMSE) of the proposed estimators are derived successfully and discussed sensibly. Relative efficiencies of the proposed estimators are examined theoretically and empirically as well for moderate and large sample sizes. Numerical illustrations are demonstrated to observe the variation trends of relative efficiencies of the proposed estimators for varying key factors. Corresponding tables and graphs are presented using Microsoft Excel. By way of highlighting dominating properties of so obtained improved estimators over the sample variance, major issues pertaining to their validity and admissibility are discussed reasonably. Based on theoretical and empirical results, some significant conclusions are drawn to emphasize their key features and usefulness for future study. Finally, we remark here that the novelty of our findings lies in the fact that the proposed estimators are not only improved estimators over the sample variance due to their higher relative efficiencies but also the first one is asymptotically unbiased estimator of the population variance whereas another estimator is asymptotically unbiased estimator of the sample variance. Some related research works carried out by previous noteworthy contributors are also discussed by way of presenting its concise summary to enhance the usefulness of present work for future scope.

Keywords: Normal population, sample variance, chi-squared distribution, sampling distribution, central limit theorem, asymptotic unbiased estimator, coefficient of variation.

Keynote Speech 6: TBD

Speaker: Prof. Rashmi Bhardwaj, Guru Gobind Singh Indraprastha University, India

Time: 14:00-14:45, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China

Abstract

TBD



Keynote Speech 7: Reconstruction of Multidimensional Data on Intelligent

Technology and Artificial Intelligence

Speaker: Dr. Dariusz Jacek Jakobczak, Koszalin University of Technology, Koszalin, Poland

Time: 14:45-15:30, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Artificial Intelligence is applied for prediction and calculations of unknown values of data or coordinates. Decision makers, academicians, researchers, advanced-level students, technology developers, and government officials will find this text useful in furthering their research exposure to pertinent topics in AI, computer science, numerical analysis or operations research and assisting in furthering their own research efforts in these fields. Proposed method, called Two-Points Smooth Interpolation (TPSI), is the method of 2D curve interpolation and extrapolation using the set of key points (knots or nodes). Nodes can be treated as characteristic points of data for modeling and analyzing. The model of data can be built by choice of probability distribution function and nodes combination. TPSI modeling via nodes combination and parameter γ as probability distribution function enables value anticipation in AI, risk analysis and decision making. Two-dimensional curve is extrapolated and interpolated via nodes combination and different functions as continuous probability distribution functions: polynomial, sine, cosine, tangent, cotangent, logarithm, exponent, arc sin, arc cos, arc tan, arc cot or power function.

Keynote Speech 8: TBD

Speaker: Prof. Klaus G"artner, m4sim GmbH, Germany

Time: 15:45-16:30, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Particle systems on earth can cover a pretty large range of particle energies (from meV in biology to MeV in nuclear physics), are often approximately described by large systems of elliptic or parabolic equations and have a common starting point: the Boltzmann equation and the H-theorem, which naturally involve the concept of dissipation and a free energy functional, decaying along solutions in time. Assuming some differentiability of the solutions and a shortest time scale (the smallest collision time) one ends very often up with 'diffusion approximations', that are valid outside a ball of 'three mean free flight paths' around all 'points of interest' (point sinks/sources, ..., material interfaces, non convex domains) and result in a dramatic

reduction of complexity in large parts of the domain by replacing \mathbf{v} , the velocity vector of a particle by its energy and keeping space and time coordinates together with the assumption: all collisions are dissipative in total for solutions - hence: neglecting some details never creates energy.

In case a special energy distribution is known for all time scales of interest above a critical shortest time, one calls the special situation 'Boltzmann-' or 'Fermi-statistics' and the variables are a finite number of species (or chemical potentials), their space coordinates, special interactions (e.g. an electrostatic potential acting on charged particles) and time.

For approximations with a large range of validity the related discrete equations have to fulfill the same qualitative properties as their analytic counterparts.

The setting is rather general, but it does not cover 'hyperbolic conservation laws', and the arguments used to derive them for large time scales are often questionable.

This concept is the basic assumption of the talk and it is illustrated using different semiconductor problems where we should have no need to go beyond the assumptions as long as we want to describe devices with reproducible behavior with a probability of $1 - \epsilon$, $\epsilon \ll 1$ for given boundary conditions and time scales large compared with free flight times.

The discrete versions of the equations can be chosen such that the qualitative properties of the analytic problem are preserved. The approximation order is limited due to the natural smoothness properties of the problem.

Keynote Speech 9: A Proposal of Two-step Autoregressive Model (Video)

Speaker: Prof. Loc Nguyen, Independent scholar, Vietnam

Time: 16:30-17:15, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Autoregressive (AR) model and conditional autoregressive (CAR) model are specific regressive models in which independent variables and dependent variable imply the same object. They are powerful statistical tools to predict values based on correlation of time domain and space domain, which are useful in epidemiology analysis. In this research, I combine them by the simple way in which AR and CAR is estimated in two separate steps so as to cover time domain and space domain in spatial-temporal data analysis. Moreover, I integrate logistic model into CAR model, which aims to improve competence of autoregressive models.

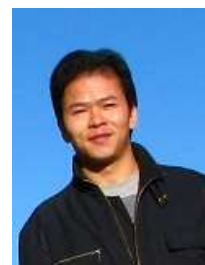
Keynote Speech 10: Problem Characterization of Unique Shortest Path Routing

(Video)

Speaker: Dr. Changyong Zhang, Curtin University Malaysia, Malaysia

Time: 17:15-18:00, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

To demonstrate the necessity and importance of solving the unique shortest path routing problem based on and tailored to a complete formulation, the problem characteristics with respect to objective functions, constraints, and solution qualities are studied, including the impacts of objective functions and lower & upper bounds of the problem. To illustrate the advantage of developing an exact solution approach to the problem, the resulting routing performance from the unique shortest path routing problem are compared with those from using two default methods as well as those from two relaxed problems. It is shown that by solving the problem based on a complete formulation and an exact algorithm, the resulting routing performance is notably improved, relative to that from using the two default methods, and is competitively close to the lower bounds.

Keynote Speech 11:TBD

Speaker: Prof. Toufik Zebbiche, Institute of Aeronautics and Space Studies
University of Blida 1, Algeria

Time: 18:00-18:45, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

TBD

Keynote Speech 12: TBD

Speaker: Prof. Saman Babaie Kafaki, Statistics and Computer Science
Semnan University, Iran

Time: 08:30-09:15, Thursday Morning, June 1, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract
TBD

Keynote Speech 13: Discrete-Time Stochastic Optimal Control Problems with Kalman Filtering Techniques (Video)

Speaker: Dr. Sie Long Kek, Universiti Tun Hussein Onn Malaysia, Malaysia

Time: 09:15-10:00, Thursday Morning, June 1, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Stochastic optimal control problems are arisen in various areas, including biology, chemistry, medicine, engineering, economics, business and finance. Many computational approaches have been developed to solve these problems, and theoretical works on this topic are also well-established in the literature. In this talk, we would like to discuss the use of Kalman filtering techniques for solving the discrete-time nonlinear stochastic optimal problem. First, the formulation of the problem is presented. In the presence of random disturbance, the dynamic system becomes random, uncertain and fluctuated. In this situation, optimizing and controlling the dynamic system become more challenging. Thus, Kalman filtering is applied to estimate the state dynamics. For this aim, a loss function, which minimizes differences between actual output and estimated output, is introduced, and the Kalman filter equations are derived after satisfying the necessary conditions. Here, the extended Kalman filter and the unscented Kalman filter are highlighted. Then, by considering the state estimate and the Hamiltonian function, the feedback control law, which satisfies the stationary condition and minimizes the cost function, is designed. The performance of state estimation is measured by mean squared errors and the performance of control law is given by cost function. For illustration, some examples from engineering and finance are studied, and their simulation results are demonstrated. In conclusion, the Kalman filtering techniques are an efficient computational approach for solving stochastic optimal control problems.

Keywords: stochastic optimal control, Kalman filtering, feedback control law, mean squared errors, cost function

Keynote Speech 14: A Random Time-Dependent Control Economic Equilibrium

Problem (Video)

Speaker: Prof. Annamaria Barbagallo, University of Naples Federico II, Italy

Time: 10:10-10:55, Thursday Morning, June 1, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

The aim of the talk is to study the inverse problem for a random time-dependent oligopolistic market equilibrium problem. The firms' point of view has been analyzed in [1]. Whereas the talk concerns the policymaker's point of view. The random time-dependent optimal control equilibrium conditions are characterized by an inverse stochastic time-dependent variational inequality. Furthermore the equivalence with a stochastic time-dependent variational inequality is presented. Some existence and well-posedness results for optimal regulatory taxes are shown (see [2]). Then, a numerical method to compute the solution to the stochastic time-dependent variational inequality is presented. Finally, an example is discussed.

References

[1] Barbagallo, A., Guarino Lo Bianco, S.: Stochastic variational formulation for a general random time-dependent economic equilibrium problem. Optim. Lett. 14, 2479-2493 (2020).

[2] Barbagallo, A., Guarino Lo Bianco, S.: A random time-dependent noncooperative equilibrium problem. Comput. Optim. Appl., doi. 10.1007/s10589-022-00368-w (2022).

Keynote Speech 15: TBD (Video)

Speaker: Prof. Syariza Abdul Rahman, Universiti Utara Malaysia, Malaysia

Time: 10:55-11:40, Thursday Morning, June 1, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

TBD

Keynote Speech 16: Dazzling etiquettes of valence based spectral graphs (Video)

Speaker: Dr. Selvam Avadayappan, Department of Mathematics VHNSN College, India

Time: 11:40-12:25, Thursday Morning, June 1, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

In the world of graph model the valence or literally the degree of vertices is the primary stepping stone which leads to the varied branches of graph concepts that finds a vast application in the real world problems. The dominating features of various concepts often engage the young research minds to explore into it to the extent that the fascinating behavior of this fundamental concept remains concealed even after centuries of research on graph models. The current technical world is getting astonished at the spectral applications of graph models. Here we can recall that the eigen values of a graph is essential for engineers in constructing a flawless system; google search engine is making use of eigen value concept in page ranking algorithm to present the utilizers the closest match of their research interest from a webbed web of pages available.

Listing out the applications might manifest the size of abstract as a series of publications would not be enough to structure out the full view of spectral applications. Thereby we restrict ourselves here to the main concept of our talk which brings out a spectacular way of handling eigen values in graph models.

Here we discuss on our work of fixing an eigen value of our need and the eigen vector to be the degree sequence of the graph model to be developed and the way of constructing flexible graph models. Also an idea of constructing non isomorphic models based on degree sequences all of which under the same operation yield same spectral behavior.

Keynote Speech 17: Properties of Sombor index of graphs

Speaker: Prof. Mohammad Reza Oboudi, Department of Mathematics, Shiraz University, Shiraz, Iran

Time: 12:25-13:05, Thursday Morning, June 1, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

The Sombor index of a graph is a new topological index of graphs. In this talk we study and investigate some properties of this index.

Biology & Agriculture: Keynote Speech Sessions

Keynote Speech 1: Enzymatic Catalysis Conceptual Study

Speaker: Prof. Topwe Mwene-Mbeja, University of Lubumbashi, Democratic Republic of the Congo, Canada

Time: 08:30-09:15, Wednesday Morning, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

This article is aimed at utilizing organic chemistry notions in order to sufficiently display the synthesis of organic compounds catalyzed by appropriate enzymes. In this perspective, readers will find the proposed detailed reaction mechanisms as a means to better understand different stages in the production of organic substances due to the enzymatic transformation of complex bioorganic substrates.

Keywords: Catalysis, Enzymes, Reaction Mechanisms.

Keynote Speech 2: TBD

Speaker: Dr. Gan Hong Seng, Xi'an Jiaotong - Liverpool University, China

Time: 09:15-10:00, Wednesday Morning, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Knee Osteoarthritis (OA) is the most prevalent joint degenerative disease affecting the aged population. Recent reports have shown the disease has become more common among younger people. Cartilage deformation is the primary feature to analysis the progression of knee OA. Therefore, segmentation of knee cartilage plays crucial role in reliable knee OA computer-aided diagnosis pipeline. Previous attempts by using convolutional neural network (CNN) have limitation in learning the varying anatomy and thin architecture of knee cartilage. On the other hand, the properties of graph have demonstrated great potential to extract salient feature representation by investigating the relationships of pairwise connections. In this work, a graph deep learning cartilage segmentation framework has been developed. The knee image data is transformed into node representation. According to the findings, the graph deep learning segmentation model has shown an accuracy of 0.8528 ± 0.16 and DSC of 0.8432 ± 0.19 . Future works should investigate the direct implementation of graph deep learning for 3D segmentation.

Keynote Speech 3: Single Cell Sequencing of Lung Macrophages and Monocytes Reveals Novel Therapeutic Targets in COPD

Speaker: Dr. Yushan Hu, Northwestern Polytechnical University, USA

Time: 10:15-11:00, Wednesday Morning, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Background: Macrophages and monocytes orchestrate the inflammatory processes in lungs. However, their role in the pathogenesis of chronic obstructive pulmonary disease (COPD), an inflammatory condition, is not well known. Here, we determined the characteristics of these cells in lungs of COPD patients and identified novel therapeutic targets.

Methods: We analyzed RNA sequencing (scRNA-seq) data of explanted human lung tissue from COPD (n=18) and control (n=28) lungs and found 16 transcriptomically distinct groups of macrophages and monocytes. We performed pathway and gene enrichment analyses to determine the characteristics of macrophages and monocytes from COPD (versus control) lungs and identify therapeutic targets, which were then validated using data from a randomized controlled trial of COPD patients (DISARM).

Results: Among alveolar macrophages, 176 genes were differentially expressed (83 up- and 93 down-regulated; $P_{adj} < 0.05$, $|\log_2FC| > 0.5$) were enriched in downstream biological processes predicted to cause poor lipid uptake, and impaired cell activation, movement, and angiogenesis in COPD versus control lungs. Classical monocytes from COPD lungs harbored a differential geneset predicted to cause cell activation, mobilization, recruitment and a hyperinflammatory responses to influenza. In silico, fluticasone propionate was one of the top compounds to modulate the abnormal transcriptional profiles of these cells. In vivo, fluticasone/salmeterol combination significantly modulated the gene expression profiles of BAL cells of COPD patients ($p < 0.05$)

Conclusions: COPD lungs harbor transcriptionally distinct lung macrophages and monocytes, reflective of a dysfunctional and hyperinflammatory state. Inhaled corticosteroids and other compounds can modulate the transcriptomic profile of these cells in patients with COPD.

Keyword:

Macrophages, Monocytes, COPD, single cell RNA sequencing, fluticasone, drug discovery

Keynote Speech 4: Machine Based Behavioral Pain Estimation Using Deep

Learning (Video)

Speaker: Prof. Narendra Londhe, National Institute of Technology Raipur, India

Time: 11:00-11:45, Wednesday Morning, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Pain is an indicator of physiological and psychological human well-being. It's subjective and based on personal experience, hence mostly self-reported by the patients. The subjective pain estimation is mostly unreliable due to dependency on the subjects and their experiences. The reliable machine based methods can be devised for pain estimation. In recent times, mostly physiological methods are proposed which have their own serious shortcomings. In this work, we are presenting the contactless behavioral methods of pain estimation. Their performances indicate that these methods are not only independent of patients but also convenient for them. The pain management, disease diagnosis and treatment can improve with the adaptation of such methods.

Keynote Speech 5: Stem cell technology in human and public health: Current applications and future promise (Video)

Speaker: Prof. Ahmed Hashash, Texas A&M University, USA

Time: 14:00-14:45, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

The potential impacts of stem cell-based technology on human and public health is vast. Stem cell research could provide both the foundation for future therapies and understanding of disease mechanisms. Tissue engineering and stem-cell based therapies have a remarkable potential to significantly impact medicine/biomedicine. For example, lung diseases are major cause of morbidity and mortality worldwide. The progress in regenerative medicine and stem cell research in the lung are currently a fast - growing research topic that can provide solutions to these major health problems. Under normal conditions, the rate of cellular proliferation is relatively low in the lung in vivo, compared to other major organ systems. Lung injury leads to the activation of stem/progenitor cell populations that re - enter the cell cycle. Yet, little is known about stem cells in the lung, despite common thoughts that these cells could play a critical role in the repair of lung injuries. Nor do we fully understand the cellular and architectural complexity of the respiratory tract, and the diverse stem/progenitor cells that are involved in the lung repair and regeneration. In

this talk, we will present and discuss the conceptual framework of lung stem/progenitor cell biology. We will also describe our research studies and related research by others on some lung diseases, in which stem cell manipulations may be physiologically significant. Furthermore, we highlight the challenges of lung stem cell - based therapy.

Keynote Speech 6: Pathological Evidence for Residual SARS-CoV-2 in the Micrometastatic Niche of a Patient with Ovarian Cancer : involvement of epithelial stem-like cells

Speaker: Dr. Takuma Hayashi, National Hospital Organization Kyoto Medical Center, Japan

Time: 11:45-12:30, Wednesday Morning, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China

Abstract

TBD



Keynote Speech 7: CRISPR/Cas12-based Next-Generation Diagnostics

Speaker: Dr. Jin Wang, CEO of ToloBio and Professor of the First Affiliated Hospital of Shenzhen University

Time: 14:45-15:30, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China

Abstract

CRISPR diagnostic technology is well-known as the "next generation diagnostic technology" due to its advantages of specificity, sensitivity, and simplicity. Up to date, merely two types of Cas proteins (i.e. Cas12 and Cas13) are found to possess the trans-cleavage activities, which nonspecifically cleave non-target single-stranded nucleic acids and can be employed for the development of next-generation CRISPR diagnostic systems. Our group first characterized the Cas12 ssDNA trans-cleavage activities and then created the HOLMES system for rapid nucleic acid detection. So far, HOLMES has been used in many scenarios of rapid nucleic acid detection. Here, I will give examples on the applications of HOLMES in rapid detection of non-nucleic acid targets.



Keywords: CRISPR, Cas12, trans-cleavage activity, HOLMES, non-nucleic acid detection

Keynote Speech 8: Genetic Polymorphism and CRISPR Technologies: Paving the Way for Future Therapies

Speaker: Prof. Dr. A Taha, WUC Malaysia & CDU China, New Zealand

Time: 15:45-16:30, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Recent advances in genetic polymorphism and gene editing technologies have opened up exciting opportunities for research and development. With the continued progress in these areas, we can look forward to a future where genetic diseases can be diagnosed and treated more effectively, ultimately improving the quality of life for millions of people worldwide. In this presentation, I will be focusing on the recent advances in genetic polymorphism and how gene editing and CRISPR technologies are shaping the future of genetic research. I will discuss the recent developments in understanding gene expression and the role it plays in genetic polymorphisms. Additionally, I will highlight the recent progress in gene editing technologies, including the development of new CRISPR systems and their applications in treating genetic diseases. Finally, I will discuss the future prospects of gene editing and CRISPR technologies, including the ethical considerations and the challenges that lie ahead.

Keynote Speech 9: Antioxidant and anti-acetylcholinesterase potential of artichoke phenolic compounds

Speaker: Prof. Sobhy Ahmed El-Sohaimy, South Ural State University, Russia

Time: 16:30-17:15, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

The present study focused on the biochemical evaluation of artichoke extract, furthermore, in vitro and in silico evaluation its potential for inhibition of acetylcholinesterase activity. The total phenolic, flavonoids, triterpenoids, tannins, and sulfide polysaccharides content were 193.63, 0.038, 71.43, 13.49, and 115.612 µg/g. (B 2) content was 60.95 µg/g, (B 9) was 6.85 µg/g, retinol (A) was 0.248422 µg/g, and (B 12) was 6.07 µg/g. Benzoic acid, ellagic acid, and caffeine were 589.91, 573.07, and 382.03 µg/100g. IC 50 values of ellagic

acid, benzoic acid, caffeine, extract, and donepezil had of 16.97, 26.0, 27.28, 31.04, and 133 $\mu\text{g/mL}$. In In vitro assay; caffeine exhibited a significant noncompetitive inhibition of acetylcholinesterase (AChE) with IC 50 of 1.013 mg/mL. ellagic acid and extract exhibited competitive inhibition with IC50 of 1.927 and 5.705 mg/mL. Donepezil exhibited mixed modes of inhibition with IC50 of 0.0034 mg/mL, but benzoic acid did not exhibit any anti-AChE. In silico molecular docking of human AChE (4EY7) with donepezil, caffeine, ellagic acid, and acetylcholine showed binding energy ΔG values of -9.47 , -6.07 , -9.39 , and -5.69 Kcal/mol, respectively. Accordingly, the current study emphasized significant of antioxidant and anti-acetylcholinesterase potential of artichoke extract and related phenolic compounds which might take the attention of scientists to explore a neuroprotective effect of artichoke extract and its promising effect towards Alzheimer disease.

Keynote Speech 10: Anti-aging effects and mechanisms of food-derived epicatechin

Speaker: Dr. Hongwei Si, Tennessee State University, USA

Time: 17:15-18:00, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Aging is a progressive, generalized systematic dysfunction of almost all organs and an escalated vulnerability to environmental challenges. These increased dysfunctions and vulnerability not only result in reduced physical activity and life quality but also increased risks of a number of degenerative diseases, including cardiovascular disease, type 2 diabetes, cancer, Alzheimer's disease, and sarcopenia. Therefore, either delaying the aging process or preventing the development of these chronic diseases is an essential strategy to promote healthy aging. In this presentation, I will evaluate the effects of epicatechin, a flavonoid from functional foods, including chocolate/cocoa, blueberries, green tea etc., based on our studies. The physiological, cellular, and molecular mechanisms underlying the health-improving actions of the bioactive components will be further highlighted.

Keynote Speech 11: TBD

Speaker: Prof. Lijuan Xie, Zhejiang University, China

Time: 18:00-18:45, Wednesday Afternoon, May 31, 2023

Location: TBD, Chengdu Xinliang Hotel, China

Abstract

TBD



Keynote Speech 12: Effects of thermal processing at different temperatures on macronutrient compounds and physic-chemical properties of *Acanthopagrus*

latus (Video)

Speaker: Prof. Ali Aberoumand, Behbahan Khatam Alanbia University of Technology, Iran

Time: 08:30-09:15, Thursday Morning, June 1, 2023

Location: TBD, Chengdu Xinliang Hotel, China

Abstract

The *Acanthopagrus latus* is a prevalent seafood in the Iran with high nutritional value. The aim of the present work was to assess the effects of processing method on the nutritional composition and physicochemical quality of *A. latus* was affected thermal processing different temperatures of 110 °C, 115 °C and 120 °C for 15 min respectively. Samples was analyzed for determination of nutritional compounds (crude protein, lipid, moisture, crude ash), pH value and water loss. The water loss percentage and energy value in the thermal method were high while in the thermal process, with a 15 % decrease in moisture content, the water loss percentage was 22 %. For longer shelf life, high protein and low lipid is desirable. The low-fat fish *Acanthopagrus latus* muscle break down, due to high heat treatment during the thermal process.



Keywords: *Acanthopagrus latus*, thermal processing, nutritive values

Keynote Speech 13: Prediction of environmental indicators in land leveling using artificial intelligence techniques

Speaker: Prof. Isham Alzoubi, University of Tehran School of Surveying Geospatial Engineering, Iran
Time: 09:15-10:00, Thursday Morning, June 1, 2023
Location: TBD, Chengdu Xinliang Hotel, China



Abstract

Land leveling is one of the most important steps in soil preparation for agricultural and other purposes. . New techniques based on artificial intelligence, such as Artificial Neural Network, integrating Artificial Neural Network and Imperialist Competitive Algorithm (ICA-ANN), or Genetic Algorithms (GA-ANN), or Particle Swarm Optimization (PSO-ANN) have been employed for developing predictive models to estimate the energy related parameters and the results were compared to SPSS and Sensitivity Analysis results. In this study, several soil properties such as cut/fill volume, compressibility factor, specific gravity, moisture content, slope of the area, sand percent, and swelling index were measured and their effects on energy consumption were investigated. Totally 90 samples were collected from 3 land areas by grid size of 20m×20m. The aim of this work was to develop predictive models based on artificial intelligence techniques to predict the environmental indicators of land leveling . Results of sensitivity analysis illustrated that only three parameters consist of soil density, soil compressibility, and soil cut/fill volume had meaningful effects on energy consumption. Among the proposed methods, the GA-ANN had the most capability in prediction of the environmental energy parameters. However, for prediction of LE and FE the ANN and ICA-ANN algorithms had better performance . On the other hand, SPSS software had higher R² value than Minitab software and sensitivity analysis and in fact close to the ANN values. Keywords: Energy; Imperialist competitive algorithm; Sensitivity analysis; ANN; Land levelling; Environmental indicators.
Keywords: Artificial Neural Network; energy; environmental research; Imperialist Competitive Algorithm; Sensitivity Analysis

Keynote Speech 14: TBD

Speaker: Dr. Shashi Kumar Sharma, Dr. Y. S. Parmar University of Horticulture and Forestry, Nauni, India
Time: 10:15-11:00, Thursday Morning, June 1, 2023
Location: TBD, Chengdu Xinliang Hotel, China



Abstract

TBD

Keynote Speech 15: TBD

Speaker: Prof. Dana Alina MAGDAS, National Institute for Research and Development of Isotopic and Molecular Technologies, Romania

Time: 11:00-11:45, Thursday Morning, June 1, 2023

Location: TBD, Chengdu Xinliang Hotel, China

Abstract

TBD



Keynote Speech 16: TBD

Speaker: Dr. Aisha Mohamed El-Bareg, Misrata University, Libya

Time: 11:45-12:30, Thursday Morning, June 1, 2023

Location: TBD, Chengdu Xinliang Hotel, China

Abstract

TBD



Part III Technical Sessions

Mathematics: Keynote Speech Session III & Technical Session

Session Chair: TBD

TBD

08:30-12:00, Thursday Morning, June 1, 2023

No.	Paper Title	Author	Affiliation
Keynote Speech	TBD	Prof. Saman Babaie Kafaki	Statistics and Computer Science Semnan University, Iran
Keynote Speech	Discrete-Time Stochastic Optimal Control Problems with Kalman Filtering Techniques	Dr. Sie Long Kek	Universiti Tun Hussein Onn Malaysia
Keynote Speech	A Random Time-Dependent Control Economic Equilibrium Problem	Prof. Annamaria Barbagallo	University of Naples Federico II, Italy
Keynote Speech	TBD	Prof. Syariza Abdul Rahman	Universiti Utara Malaysia, Malaysia
Keynote Speech	Dazzling etiquettes of valence based spectral graphs	Dr. Selvam Avadayappan	Department of Mathematics VHNSN College, India
Keynote Speech	Properties of Sombor index of graphs	Prof. Mohammad Reza Oboudi	Department of Mathematics, Shiraz University, Shiraz, Iran
10:00-10:15 COFFEE BREAK			
Oral	Bonds intersecting long paths in k-connected graphs	Qinghong Zhao	Huaqiao University
Oral	A Map Coloring Method	Shijun Han	AGRICULTURAL BANK OF CHINA
Oral	A program study of the union of semilattices on the set of subsets of grids of Waterloo language	Mikhail Abramyan	Shenzhen MSU-BIT University
Oral	On some problems of extracting the root from a given finite language	Boris Melnikov	Shenzhen MSU-BIT University

Oral	L\$(h,k)\$-Labeling of Circulant Graphs	Soumya Bhoumik, Sarbari Mitra	Fort Hays State University
Oral	A proof of four-color theorem	Tianhang Guo	National University of Defense Technology
Oral	A Genetic Simulated Annealing Algorithm to Optimize the Small-World Network Generating Process	Jiarui Fan	Xi'an Jiaotong University
Oral	Solid-liquid mixing mechanical model and experiment of UA-ELID polishing contact surfaces under mixed lubrication	Jianxing Wu	School of Mechanical Engineering Guizhou University
Oral	A one-dimensional second-order cell-centered Lagrangian scheme satisfying the entropy condition	Zhongze Li	Institute of Applied Physics and Computational Mathematics
Oral	Design and Implementation of an Augmented reality based product promotion mobile application	Chienwen Chen	Yulin Normal University

Biology & Agriculture: Keynote Speech Session III & Technical Session

Session Chair: TBD

TBD

08:30-12:00, Thursday Morning, June 1, 2023

No.	Paper Title	Author	Affiliation
Keynote Speech	Effects of thermal processing at different temperatures on macronutrient compounds and physic-chemical properties of <i>Acanthopagrus latus</i>	Prof. Ali Aberoumand	Behbahan Khatam Alanbia University of Technology, Iran
Keynote Speech	Prediction of environmental indicators in land leveling using artificial intelligence techniques	Prof. Isham Alzoubi	University of Tehran School of Surveying Geospatial Engineering, Iran
Keynote Speech	TBD	Dr. Shashi Kumar Sharma	Dr. Y. S. Parmar University of Horticulture and Forestry, Nauni, India
Keynote Speech	TBD	Prof. Dana Alina MAGDAS	National Institute for Research and Development of Isotopic and Molecular Technologies, Romania
Keynote Speech	TBD	Dr. Aisha Mohamed El-Bareg	Misrata University, Libya
Oral	Physical and chemical properties of <i>Camellia oleifera</i> shell composts with different additives and its maturity evaluation system	Zhang Jinping	Research Institute of subtropical Forestry, Chinese Academy of Forestry
Oral	Farmland boundary extraction in plain based on contour hierarchical detection	Mingxue Zheng	Institute of Agricultural Economic and Technological, Hubei Academy of Agricultural Sciences
Poster	A preliminary study on consumer sensory evaluation and acceptance of pomelo peel	MEICHU HUNG	Yulin Normal University

jelly

Oral	Accumulation and health risks of Cd and Pb in rice from China	Jiali Cheng	National Institute for Nutrition and Health, Chinese Center for Disease Control and Prevention
Oral	An algorithm for the inverse problem of matrix processing: DNA chains, their distance matrices and reconstructing	Dmitrii Chaikovskii	Shenzhen MSU-BIT University
Oral	New sights into proteomics in glioma development and prognosis	Chunyan Lan	Peking Union Medical College
Oral	Novel Rubracin A-E from the Saprophytic Fungus Tubeufia rubra Reversed Multidrug Resistance in Cancer Cells by inhibiting overexpression of P-gp	Sheng-Yan Qian	Guizhou University
Oral	LgRNA-guided Precise CRISPR Gene Editing to Cure Chronic HBV Infection	Minghong Zhong	GeneLancet Biosciences, Inc.
Oral	TCF7 loss-of-function using CRISPR-Cas9 in an in vitro human T cell development model	Xiaolin Meng	Leiden University Medical Center
Oral	PAI-1 transfected-conditioned media Promotes Osteogenic Differentiation of Human Bone Marrow Mesenchymal Stem Cells	Hexiu Jin	Capital Medical University
Oral	Agrin-YAP promotes the proliferation of epicardial cells	Xiaodong Jing	The Second Affiliated Hospital of Chongqing Medical University
Oral	A novel zwitterionic hydrogel for bone tissue engineering	Qidong Wang	dongfang hospital

Part IV Abstracts

Mathematics: Technical Session

Biology & Agriculture: Technical Session

Part VI 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: 15-20 Minutes of Presentation
- ⌋ Plenary/Keynote Speech: 30-40 Minutes of Presentation

Poster Presentation

Materials Provided by the Conference Organizing Committee:

- ⌋ X Racks & Base Fabric Canvases (60cm×160cm, see the figure below)
- ⌋ Adhesive Tapes or Clamps

Materials Provided by the Presenters:

- ⌋ Home-made Posters

Requirement for the Posters:

- ⌋ Material: not limited, can be posted on the Canvases
- ⌋ Size: smaller than 60cm×160cm
- ⌋ Content: for demonstration of the presenter's paper



Part VII Hotel Information

About Hotel

Chengdu Xinliang Hotel成都新良大酒店

Chengdu Xinliang Hotel is a four-star deluxe business hotel and it is conveniently located in Jinjiang district in Chengdu, 500 m from Chunxi Road, Chengdu Xinliang Hotel features a restaurant and free WiFi throughout the property. Free private parking is available on site. Chengdu Xinliang Hotel is a 6-minute walk from Daci Temple and a 6-minute drive from Tianfu Square. It is a 25-minute drive from Chengdu East Railway Station and Chengdu Shuangliu International Airport.

Address: NO. 246, Upper Shangdong Section, Dongda Ave, Chengdu(四川省成都市锦江区东大街上东大街段246号)

Tel: 028-86739222

Fax: +86-28-86739666

E-mail: reservations@xinlianghotel.com.cn

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

请送我到：四川省成都市锦江区东大街上东大街段246号 成都新良大酒店



Contact Us

Organizing Committee

Contact Person: Ms. Stephanie

Email: wsconf5@163.com

Tel: +86 132 6470 2250 (From Thursday to Friday)

QQ: 1349406763

WeChat: 3025797047

Official Account: Academic Communications

