ISSSR 2025 Session Schedule
All the sessions are based on the time in Beijing, China (UTC+8)

- Opening & Keynote: 安顺学院学术报告厅
- Session A: 安顺学院特教大楼五楼 502
- Session B: 安顺学院特教大楼五楼 503
- Session C: 安顺学院特教大楼五楼 504
- Lunch: 安顺学院思源居食
- Conference Banquet: 安顺豪生温泉度假酒店 (安顺市西秀区经济技术开发区航路 219 号)

Saturday, April 12, 2025		
08:30 – 09:00	Registration	报告厅前广场
09:00 – 09:30 (30 minutes)	Opening Ceremony • Welcome and Opening Remarks – Professor Hongmin Yin Vice President, Anshun University • Honorary General Chair – Professor Qiang Miao (Sichuan University) • Program Chairs (Alphabetical Order) – Professor Chunrong Fang (Nanjing University) – Professor Renyan Jiang (Changsha University of Science and Technology) – Professor Jinting Wang (Central University of Finance and Economics) • Beijing Netyu Nebula Information Technology Co., Ltd – Ms. Jin Chen Liangzi • Award Presentation to Anshun University – Professor Hongji Yang (University of Leicester)	学术报告厅
09:30 – 10:00 (30 minutes)	• Keynote Speech I (Chair: Qiang Miao) *Crossing Levels of Abstraction and Software Reliability* Professor Hongji Yang University of Leicester, United Kingdom	学术报告厅
10:00 – 10:30 (30 minutes)	• Coffee Break	报告厅侧厅
10:30 – 11:00 (30 minutes)	• Keynote Speech II (Chair: Chunrong Fang) *AI-Powered Software Reliability Engineering and it's Application* Professor Jun Ai Vice Dean and Professor School of Reliability and Systems Engineering Beihang University, China	学术报告厅
11:00 – 11:30 (30 minutes)	• Keynote Speech III (Chair: Chunrong Fang) *Application and Challenges of Cryptographic Technology in Privacy-Preserving Computing* Professor Changgen Peng Professor and Doctoral Supervisor Guizhou University, China	学术报告厅

11:30 – 12:00 (30 minutes)	• Keynote Speech IV (Chair: Chunrong Fang) *Evolutionary Algorithms for Complex Multi-Objective Optimization Problems* Professor Shuqu Qian Dean and Professor School of Mathematics and Physics Anshun University, China	学术报告厅
12:00 – 13:20 (80 minutes)	• Lunch	思源居食堂
13:20 – 15:00 (100 minutes) (5 papers)	• Session I-A: Analysis, Simulation, and Validation Chair: Professor Shirong Li • Session I-B: AI, Machine Learning & Deep Learning I Chair: Professor Jianyong Tian • Session I-C: Modeling and Optimization I Chair: Professor Hui Wang	Room 502 Room 503 Room 504
15:00 – 15:20 (20 minutes)	• Coffee Break	特教大楼五楼
15:20 – 16:20 (60 minutes) (3 papers)	• Session II-A: Measurement, Estimation, and Prediction I Chair: Professor Shirong Li • Session II-B: AI, Machine Learning & Deep Learning II Chair: Professor Jianyong Tian • Session II-C: Modeling and Optimization II Chair: Professor Hui Wang	Room 502 Room 503 Room 504
16:20 – 17:20 (60 minutes) (3 papers)	• Session III-A: Measurement, Estimation, and Prediction II Chair: Professor Shirong Li • Session III-B: AI, Machine Learning & Deep Learning III Chair: Professor Jianyong Tian • Session III-C: Modeling and Optimization III Chair: Professor Hui Wang	Room 502 Room 503 Room 504
17:20 – 18:30 (70 minutes)	• Break	
18:30 – 20:30	• Conference Banquet	安顺豪生温泉度假酒店

Sunday, April 13, 2025		
08:30 – 09:00	Registration	特教大楼五楼
09:00 – 10:40 (100 minutes) (5 papers)	• Session IV-A: Computational Creativity and Human Interactions I Chair: Professor Yongwu Wu • Session IV-B: Testing and Quality Assurance Chair: Professor Hui Li • Session IV-C: Industry Track & Fast Abstract Chair: Professor Yuhui Wu	Room 502 Room 503 Room 504
10:40 – 11:00 (20 minutes)	• Coffee Break	特教大楼五楼
11:00 – 12:00 (60 minutes)	• Session V-A: Computational Creativity and Human Interactions II Chair: Professor Yongwu Wu • Session V-B: Intelligent Algorithms for Reliable and Scalable System Operations Professor Hui Li	Room 502 Room 503
12:00 – 13:30	• Lunch	思源居食堂
13:30	• Adjourn	

ISSSR 2025 Detailed Presentation Schedule
All the sessions are based on the time in Beijing, China (UTC+8)

Saturday, April 12, 2025 (13:20 – 15:00) (100 minutes)

Session I-A: Analysis, Simulation, and Validation

Location: 安顺学院特教大楼五楼 502

Chair: Shirong Li

- R083 Working State Simulation, Weakness Analysis and Life Estimation of the Aerospace Ultrasonic Motor
- R036 Reliability Analysis Method Based on Pre-Interpolation-Active Learning Kriging
- R038 Reliability Assessment of Planetary Pin Position Errors in Large-Scale Aerospace Planetary Systems Based on the Kriging Model
- R039 Research on Gear Bending Fatigue Test and Probabilistic Life Prediction Method
- R086 ACAC_ABCD Model: Implementation and Comparative Performance Study (Video)

Session I-B: AI, Machine Learning & Deep Learning I

Location: 安顺学院特教大楼五楼 503

Chair: Jianyong Tian

- R044 A Richly Attributed Dataset for Talent Intelligence Evaluation
- R073 Fault Diagnosis of Aero-engine Bearings in Comprehensive Noise Environments Based on Multi-scale Convolution Networks
- R040 Vehicle state recognition based on improved YOLOv5 (Video)
- R065 CAAD: a High-level Customizable-Agent Gym for Dependable Autonomous Driving (Video)
- R085 Metal Surface Defect Detection based on Transformer Merging Edge Information (Video)

Session I-C: Modeling and Optimization I

Location: 安顺学院特教大楼五楼 504

Chair: Hui Wang

- R037 A Novel Approach for Analyzing Censored Lifetime Data from Designed Reliability Improvement Experiments
- R054 A Risk-Centered Mission Reliability Model Managing System Health Deterioration and Environmental Shock Effects
- R057 Optimization of Selective Maintenance for Critical Infrastructures Considering Dynamic Environments
- R032 A Quantitative Analysis Framework for Contributory Factors of Production Safety Accidents in Urban Gas Pipeline Networks of China (Video)
- R043 Enhancing Video Smoothness in Cloud Desktops: An Improved Compression Framework with Adaptive Fast Search Algorithm (Video)

Saturday, April 12, 2025 (15:20 – 16:20) (60 minutes)

Session II-A: Measurement, Estimation, and Prediction I

Location: 安顺学院特教大楼五楼 502

Chair: Shirong Li

- R053 Research of Travel Time Reliability Evaluation Method for Road Network Considering Vehicle Coordination under Unexpected Events
- R063 A Multi-Phase Resilience Evaluation Method for Cross-Domain Unmanned Swarms
- R080 SOTM : A Simulation-Oriented Trustworthiness Measurement Method for Intelligent Unmanned System (Video)

Session II-B: AI, Machine Learning & Deep Learning II

Location: 安顺学院特教大楼五楼 503

Chair: Jianyong Tian

- R090 Intelligent Recommendation Algorithm based on Non-negative Matrix Factorization and Bipartite Graph
- R091 LDM-Phys: A Lightweight Physics-Constrained Diffusion Model for Anomaly Detection in Safety-Critical Cyber-Physical Systems
- R097 An improved clonal selection algorithm for optimizing PWM switching sequences of inverters
- R062 Unsupervised Log Parsing Based on Large Language Models and Entropy (Video)

Session II-C: Modeling and Optimization II

Location: 安顺学院特教大楼五楼 504

Chair: Hui Wang

- R059 An Availability-Oriented Dynamic Group Order-Maintenance Scheduling Policy
- R064 Research on Multi-Objective Distribution Vehicle Routing Problem for Spare Parts with Pick-Up and Delivery
- R066 Reliability Assessment Method for the Underwater Motion Process of a Rigid Body

Saturday, April 12, 2025 (16:20 – 17:20) (60 minutes)

Session III-A: Measurement, Estimation, and Prediction II

Location: 安顺学院特教大楼五楼 502

Chair: Shirong Li

- R072 Reliability Modeling and Evaluation of Circuit Boards Considering Key Design Factors
- R070 A Collaborative Replacement-Spare Provision Policy for Three-State System Considering Inspection Errors
- R060 Adaptive Constraints-Based Instantaneous Frequency Estimation for Overlapped Multicomponent Signals (Video)

Session III-B: AI, Machine Learning & Deep Learning III

Location: 安顺学院特教大楼五楼 503

Chair: Jianyong Tian

- R101 Exploration of AI-Based Network Attack and Defense Platform Construction
- R102 Exploring AI-Integrated Curriculum Reform in University Computer Science Program
- R084 An End-to-End Watermarking Framework Integrates Matrix Decomposition and Deep Networks (Video)
- RIDSS001 Reinforcement Learning Algorithm for Organizational Decision making in Air Defense Kill Networks (Video)

Session III-C: Modeling and Optimization III

Location: 安顺学院特教大楼五楼 504

Chair: Hui Wang

- R074 Optimizing Mission Safety: Integrated Abort and Spare Support Policy
- R087 A Method for Aircraft Structural Corrosion Process Modeling and Maintenance Planning Considering Multi-Source Environmental Coupling Effects
- R096 Reliability Modeling and Optimization Based on Master-Supporter Unmanned Aerial Vehicle Networks

Sunday, April 13, 2025 (09:00 – 10:40) (100 minutes)

Session IV-A: Computational Creativity and Human Interactions I

Location: 安顺学院特教大楼五楼 502

Chair: Yongwu Wu

- ISCC007 A Robust Machine Learning Framework for Estimating Crop Production using Ensemble and Quantile Techniques
- ISCC008 An English Curriculum Approach to Nurture Interdisciplinary Research and Teaching for Universities
- ISCC009 An Artificial Intelligence Approach to Data Manipulation for Agricultural Curriculum Optimization Based on Factors of Industry, Research and Education
- R061 A Novel Algorithm for All Minimal Cut Vectors without Duplicates in Two-Terminal Multistate Network (Video)
- R067 An Ordering Heuristic for Reliability Evaluation of Multistate Networks (Video)
- R081 Referred Segmentation on Single/ No Target Image (Video)

Session IV-B: Testing and Quality Assurance

Location: 安顺学院特教大楼五楼 503

Chair: Hui Li

- R082 Prior Distribution Screening and Risk Calculation for Reliability Qualification Test of the Exponential Product
- R071 Fault Diagnosis of Mechanical Transmission Components with Siam-GNN under Few-Shot Noisy Conditions
- R110 ARIMA Residual Correction Energy System Grey Prediction Model and Its Application
- R033 Research on Blockchain Privacy Preservation in Healthcare Systems (Video)
- R034 Evaluating Large Language Models via Multi-Modal User Knowledge Graphs: A Comprehensive Assessment Framework (Video)

Session IV-C: Industry Track & Fast Abstract

Location: 安顺学院特教大楼五楼 504

Chair: Yuhui Wu

- IT002 Electropulsing Treatment Technology: from Damage Repair to Lifetime Prolong for Long-Service-Cycle Machinery
- IT003 The Feasibility of Applying Prompt Engineering Based on Large Language Models in the Public Domain
- FA001 Research on the Correlation between Form Accuracy, Deformation, and Geometric Tolerances in Mechanical Design
- FA003 Low-rank and Sparsity Co-induced Tensor Singular Space Decomposition Model for Variable-speed Rolling Bearings Fault Feature Extraction
- IT001 An Innovation Strategies for Solar-Energy Trucks (Video)

Sunday, April 13, 2025 (11:00 – 12:00) (60 minutes)

Session V-A: Computational Creativity and Human Interactions II (Video Session)

Location: 安顺学院特教大楼五楼 502

Chair: Yongwu Wu

- ISCC001 Simulating Emotion-Creativity Dynamics: A Default Mode Network Mediation Hypothesis Tested via Computational Approaches
- ISCC002 Applications of Virtual Reality and Augmented Reality in Enhancing the Safety of Tai Chi
- ISCC003 Applying Causal Forest of Machine Learning to Analyze the Heterogeneous Impact of China's Dual-Carbon Policy on Green Management Innovation

- ISCC004 Unlocking the Potential of AI-Driven Tourism for Healing and Well-Being: A New Frontier in Digital Health
- ISCC005 Advanced Computing Technologies and Digital Transformation: Analyzing Positive Sentiment Trends in Online Stock
- ISCC006 Increasing the Validity and Trustworthiness of Automated Facial Emotion Recognition Systems
- ISCC011 Simultaneous Performance Across Two Locations: IoT-Based Motion Capture Integration in the Performing Arts
- ISCC012 Multi-Scenario Performance Simulation and Engineering Applications of Novel Swarm Intelligence Algorithms

Session V-B: Intelligent Algorithms for Reliable and Scalable System Operations (Video Session)

Location: 安顺学院特教大楼五楼 503

Chair: Hui Li

- R109 Boosting Service Workflow Reliability through Enhanced Detection of Artifact Anomalies
- R041 Dynamic Scalable PBFT Consensus Algorithm Based on Binary K-Means
- RIDSS002 Resilience Assessment Method for Air Defense Kill Web Based on System Dynamics Mode

ISSSR 2025 Organizing Committee

- Honorary General Chair
  Qiang Miao
  Sichuan University, China

- General Chair
  Hongji Yang
  University of Leicester, United Kingdom

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  Chunrong Fang
  Nanjing University, China

  Renyan Jiang
  Changsha University of Science and Technology, China

  Jinting Wang
  Central University of Finance and Economics, China

- Publicity Chairs
  Auri Vincenzi
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- Publication Chairs
  Zizhao Chen
  University of Texas at Dallas, USA

  Siwei Zhou
  Guangdong Ocean University, China

- Local Committee Chairs
  Hanjie Zhang
  Anshun University, China

  Lei Xiao
  Xiamen University of Technology, China

- Webmaster
  Chih-Wei Hsu
  University of Texas at Dallas, USA

ISSSR 2025 Steering Committee

• W. Eric Wong (Chair)	University of Texas at Dallas	USA
• Qiang Miao	Sichuan University	China
• Tadashi Dohi	Hiroshima University	Japan
• Franz Wotawa	Graz University of Technology	Austria
• Manuel Núñez	Universidad Complutense de Madrid	Spain

ISSSR 2025 Keynote I

Crossing Levels of Abstraction and Software Reliability

Professor Hongji Yang
University of Leicester
United Kingdom

Abstract

A key component of human intelligence is abstract thinking or conducting abstraction, i.e., the ability to grasp and reason with concepts beyond concrete experiences (real but not tied to specific physical objects) to understand complex ideas, solve problems, and adapt to new situations. Abstract thinking involves summarizing different abstractions, organizing them into abstraction levels, and converting an abstraction into another abstraction at the same level (transversely) or at different levels (longitudinally), i.e., crossing levels of abstraction. This talk proposes an approach to software development with a focus on software reliability based on crossing levels of abstraction.

Speaker Bio

Professor Hongji Yang received B.S and M.S. degrees in computer science from Jilin University, China, and a Ph.D. degree in computer science from Durham University U.K., is working at the University of Leicester, has published 500+ refereed journal articles and conference papers, is interested in creative computing, software engineering, and Internet computing, and in 2010 became an IEEE Computer Society Golden Core member.

ISSSR 2025 Keynote II

AI-Powered Software Reliability Engineering and its Application

Professor Jun Ai China
Vice Dean and Professor
School of Reliability and Systems Engineering
Beihang University

Abstract

Software reliability engineering has been widely used in engineering projects since it was put forward and has played an important role in improving software reliability. However, as the scale of software becomes larger and the architecture becomes more and more complex, especially network-linked software, it becomes more and more common, which makes traditional software reliability engineering highlight many limitations in practical applications. The rise of artificial intelligence technology has brought new impetus to software reliability engineering. The report will focus on the problems faced by software reliability engineering technology in practical applications and introduce how to use artificial intelligence technology in some important units of software reliability engineering, so as to further strengthen software reliability engineering technology and provide reliability guarantee for more complex software systems.

Speaker Bio

Jun Ai, Professor, Vice Dean of the School of Reliability and Systems Engineering, Beihang University, China, Deputy Director of Reliability Engineering Technology Research Center, Chair of IEEE Reliability Society Beijing Chapter, Senior Member of IEEE and CCF. His main research fields are software and intelligent system reliability and safety, including software failure mechanism and defect prediction, software system intelligent testing, intelligent system/software reliability and safety, etc. He published more than 60 papers, 3 monograph books, more than 30 authorized patents, headed many research projects in the field of software reliability, and won the Science and Technology Progress Award, including one Innovation team award, one first prize, and two second prizes.

ISSSR 2025 Keynote III

Application and Challenges of Cryptographic Technology in Privacy-Preserving Computing

Dr. Changgen Peng
Professor and Doctoral Supervisor
Guizhou University

Abstract

Data elements play a pivotal role in propelling the growth of the digital economy, especially with the deep and extensive application of artificial intelligence and large models across various sectors, leading to increasingly severe challenges in data security. The conundrum of balancing data utilization with data security, seeking an equilibrium solution to achieve the goal of "usable yet invisible" data, has become a research topic of significant interest in both academic and industrial circles in recent years. Cryptographic technology undoubtedly stands as one of the most effective privacy-preserving solutions in privacy computing, aiming to fulfill data processing requirements and objectives without disclosing sensitive information. This report focuses on the current state and advancements in cryptographic technology research within privacy-preserving computing, further discussing its application fields and directions, along with the team's recent related research efforts, highlighting the challenges faced in theoretical research and technological application.

Speaker Bio

r. Peng Changgen is a second-level professor and doctoral supervisor at Guizhou University, serving as the academic leader in his discipline. He is an expert enjoying the special allowance of the State Council, a core expert of Guizhou Province, and a provincial-level expert. He is also a standing committee member of the 9th Guizhou Provincial Association for Science and Technology. His main research areas include big data security and privacy protection, cryptography, and information security. Currently, he holds several prestigious positions, including council member of the China Cryptography Society, chairman of the Guiyang Branch of the China Computer Federation, president of the Guizhou Computer Society, and president of the Guizhou Commercial Cryptography Industry Association. He also serves as a legislative expert for the Standing Committee of the Guizhou Provincial People's Congress.

Professor Peng is the associate editor of the 9th edition of the "Journal of Communications" and has served or is serving as an editorial board member for several journals, including "Journal of Network and Information Security," "Information Network Security," "Cyberspace Security," "Information Security Research," and "Secure Communication and Information Security." He has led six projects funded by the National Natural Science Foundation of China (including one key project and one general project), along with several other projects. His accolades include a second place award and a third place award for the Scientific and Technological Progress of Guizhou Province, two Second Prizes for Natural Science of Guizhou Province, one Second Prize for Higher Education Teaching Achievement of Guizhou Province, and one China Industry-University-Research Collaboration Innovation Award. He has also been honored with the National Baosteel Excellent Teacher Award and the title of Guizhou Province's First Outstanding Master's Supervisor.

ISSSR 2025 Keynote IV

Evolutionary Algorithms for Complex Multi-Objective Optimization Problems

Dr. Shuqu Qian
Dean and Professor
School of Mathematics and Physics
Anshun University

Abstract

Dynamic Economic Emission Dispatch (DEED) problems present a critical multi-objective optimization challenge in power systems, requiring simultaneous minimization of conflicting objectives of costs and emissions while addressing complex operational constraints. This problem becomes particularly intricate when considering the Valve-Point Effect Cost (VPEC) in generation units, which exhibits non-smooth, non-convex characteristics that significantly complicate solution landscapes. To address these challenges, this talk will discuss a Hybrid Constrained Multi-Objective Algorithm (HCMOA) incorporating three innovative mechanisms. First, a clonal selection mechanism enhances local exploitation through the systematic generation of high-quality, non-dominated solutions. Second, a most-crowded neighborhood update strategy combats premature convergence in high-dimensional DEED scenarios while optimizing archive diversity and computational efficiency. Third, a step-by-step repair strategy ensures operational feasibility through systematic output refinement. Comprehensive evaluations on 10-unit and 15-unit systems with varying VPEC configurations demonstrate HCMOA's superiority over ten state-of-the-art algorithms. Experimental results reveal that HCMOA achieves the Pareto-optimal set with superior spread and distribution uniformity compared to existing approaches. These findings collectively establish HCMOA as an effective solution for practical DEED implementations, particularly in scenarios requiring rigorous consideration of non-convex VPEC characteristics.

Speaker Bio

Qian Shuqu, Ph.D. in Engineering, Professor, Master's Supervisor, and Dean of the School of Mathematics and Physics at Anshun University. He is a visiting scholar under the “Western Light” program of the Central Organization Department, a high-level innovative talent in Guizhou Province, a municipal expert in Anshun City, Vice Chairman of the Guizhou Applied Statistics Society, Executive Director of the Guizhou Mathematical Society, member of the Guizhou Provincial College Discipline Competition Steering Committee, member of the Chinese Association for Artificial Intelligence, and member of the Guizhou Electrotechnical Society. His research interests include computational intelligence and complex system modeling and control. He has presided over the completion of three National Natural Science Foundation projects and five provincial and departmental projects. He has published over 60 academic papers, including in international journals such as “IEEE Transactions on Cybernetics,” “Soft Computing,” “Engineering Optimization,” and in important core journals such as “Control Theory & Applications” and “Control and Decision.” He has authored two monographs. He has guided students to complete five national and provincial innovation training projects. Under his guidance, students have won 1 national first prize and over ten provincial first and second prizes in the National College Students Mathematical Modeling Competition. He has received an award of third place for Natural Science from the Guizhou Provincial Science and Technology Awards, one outstanding paper award from the “CAAI Transactions on Intelligent Systems,” the first journal of the Chinese Association for Artificial Intelligence, and several municipal natural science paper awards. He has been granted two utility model patents and registered four software copyrights.