

ASP-DAC 2026

31st

Asia and South Pacific Design Automation Conference

Date: January 19-22, 2026 Place: Hong Kong Disneyland Hotel

FINAL PROGRAM

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31st Asia and South Pacific Design Automation Conference

Welcome to ASP-DAC 2026



Welcome to ASP-DAC 2026 — the 31st Asia and South Pacific Design Automation Conference

It is our great pleasure to welcome you to ASP-DAC 2026, held from January 19 to 22, 2026, at the Hong Kong Disneyland Hotel. This year marks the 31st edition of ASP-DAC, the premier international forum in the Asia and South Pacific region for research, development, and innovation in electronic design automation (EDA) and VLSI systems. Hosting ASP-DAC in Hong Kong reflects the region's vibrant semiconductor ecosystem and its growing role in shaping the future of design technologies.

ASP-DAC brings together researchers, practitioners, and industry leaders from around the world to exchange ideas, present high-impact research, and explore emerging directions in design automation and system design. The conference serves as a unique platform for fostering collaboration across academia and industry, while advancing both foundational research and real-world applications.

ASP-DAC 2026 features a rich and diverse technical program, including peer-reviewed papers covering the full spectrum of EDA and system design, one panel, three designers' forums, six tutorials, six special sessions, the Student Research Forum, and the University LSI Design Contest. To commemorate the milestone of 100 Years of the Field-Effect Transistor (FET100), we are honored to host the CEDA-EDS Special Session: "100 Years of the FET: From Technology Foundations to the EDA Ecosystem," highlighting the profound and lasting impact of the FET on modern electronics and design automation.

We are also delighted to present an outstanding keynote program featuring seven distinguished speakers from academia and industry. Their talks span a broad range of timely and forward-looking topics, including FinFET technology, edge AI, large-scale design automation, chiplets and 3D integration, agentic AI for designer productivity, hyper-scale AI systems, and control systems for quantum computers. These keynotes will provide valuable perspectives on how EDA continues to evolve in response to emerging technologies and application demands.

The success of ASP-DAC depends on the active participation of its community. We hope this conference provides a stimulating environment to reconnect with colleagues, build new collaborations, and exchange ideas that will shape the future of EDA and system design.

We also invite you to enjoy Hong Kong, a dynamic international city where innovation, culture, and tradition come together, and to make the most of your time here beyond the technical sessions.

Finally, we sincerely thank our sponsors, organizing and technical program committees, and the many volunteers whose dedication and hard work have made ASP-DAC 2026 possible.

Welcome to ASP-DAC 2026. We wish you a productive, inspiring, and memorable conference.

Tsung-Yi Ho

General Chair, ASP-DAC 2026



Message from the Technical Program Committee



On behalf of the Technical Program Committee (TPC), it is our great pleasure to welcome you to the 31st Asia and South Pacific Design Automation Conference (ASP-DAC) 2026. We are delighted to host this year's ASP-DAC from January 19 to 22, 2026, at the magical Hong Kong Disneyland in Hong Kong.

The ASP-DAC 2026 call for papers adopted a comprehensive two-step process: abstract registration, followed by full manuscript submission. We received a total of 749 abstracts from 34 countries and regions. Of these, 639 full manuscripts were submitted, and 612 advanced to the review stage. The number of full manuscript submissions marked a record high, approximately a 19% increase compared with last year. This remarkable growth underscores the continued vitality and expanding influence of our research community. While the largest number of submissions came from Asia, we also received strong contributions from North America and Europe. As machine learning-based and AI-assisted design have become increasingly prevalent, papers on AI/LLM-assisted tools and design methodologies were directed to their respective tracks to ensure expert and design-phase-appropriate review. Consequently, the "Hardware Systems and Architectures for AI" and "Physical Design and Timing Analysis" tracks emerged as the most popular this year.

Alongside sustained strong submissions in core EDA topics, such as logic synthesis, physical design, analog-mixed signal design including RF and photonic, system-level modeling, testing, simulation, design for manufacturability and reliability, we also received substantial contributions in hardware systems and related areas. In particular, the "Memory Architecture and Near/In Memory Computing" and "Hardware and Embedded Security" tracks attracted a very large number of submissions. Emerging computing paradigms, including near-/in-memory computing, approximate and bio-inspired computing, and quantum computing, continue to draw significant interest from contributing authors, and these are likely to become important drivers for ASP-DAC in the future. These trends demonstrate how ASP-DAC continues to showcase and connect with state-of-the-art research across both academia and industry.

The TPC consisted of 176 leading experts in EDA, IC design, embedded systems, memory architectures, hardware security, emerging technologies, and AI/ML systems, organized into 13 subcommittees. The paper review process was conducted with fairness and rigor through a strict double-blind policy and careful management of conflicts of interest. We held a face-to-face and partially hybrid TPC meeting at the Yoshida Campus of Kyoto University in Kyoto, Japan, on August 29, 2025. From the 612 reviewed submissions, 176 high-quality regular papers were selected, yielding an acceptance rate of 28.7%. This reflects ASP-DAC's continued commitment to maintaining premier technical excellence.

The full conference program comprises regular papers, keynote speeches, and a strong set of special sessions, designers' forums, and design contest sessions. As in previous years, tutorials are offered on the first day, followed by three days of regular programs arranged into six parallel tracks. Each morning begins with two keynote speeches that set the tone for the day's technical activities. Among the accepted regular papers, 14 were nominated by the subcommittees for the Best Paper Award. These nominees were thoroughly evaluated by the Best Paper Award Committee, chaired by Vice Technical Program Chair Prof. Seokhyeong Kang, and two papers were ultimately selected. Prof. Kang also chaired the 10-Year Retrospective Most Influential Paper selection committee, selecting one influential paper from the proceedings of the 21st ASP-DAC in 2016.

The exciting and stimulating technical program of ASP-DAC 2026 is the result of the dedicated efforts of our authors, reviewers, invited speakers, and TPC members. We extend our heartfelt gratitude to all of them. We especially thank our TPC Secretaries, Hiromitsu Awano and Jun Shiomi; the Conference Secretary, Bei Yu; the Publication Chair, Nan Guan; and the Publicity Chair, Ngai Wang, for their outstanding support. We also deeply appreciate the assistance of Sophie Guan and Joyce Zhong in managing the paper submission and review process, as well as the review management system. Finally, our deepest thanks go to the entire Organizing Committee for their exceptional work in preparing an excellent conference.

We sincerely hope you enjoy the ASP-DAC 2026 technical program and look forward to welcoming you in Hong Kong.

Takashi Sato

Technical Program Chair, ASP-DAC 2026

Takashi Sato

Session Schedule

Monday, January 19, 2026

| Sleeping Beauty 1/2 | Sleeping Beauty 3 | Sleeping Beauty 5 |
|--|--|--|
| Tutorial-1 On-Device AI to Better Mobile and Implantable Devices in Healthcare 09:00-12:00 | Tutorial-2 Design Methodologies and Toolchains for Compute-in-Memory: From Architectures to Systems 09:00-12:00 | Tutorial-3 Design Automation for the Early Fault Tolerant Quantum Computing 09:00-12:00 |
| Coffee Break 12:00-14:00 | | |
| Tutorial-4 Bi-Directional Synergy: A Tutorial on Hardware Design for Agentic AI and Agentic AI for Hardware Design 14:00-17:00 | Tutorial-5 APS: An MLIR-Based Hardware-Software Co-design Framework for Agile Processor Specialization 14:00-17:00 | Tutorial-6 Post-Silicon Validation & Hardware Security in Modern Processors 14:00-17:00 |

Tuesday, January 20, 2026

| Cinderella Ballroom 1/6/7/8 | | | | | |
|--|--|---|--|---|---|
| Snow White 1 | Snow White 2 | Snow White 3 | Sleeping Beauty 1/2 | Sleeping Beauty 3 | Sleeping Beauty 5 |
| 1A (T4-C) AI Applications for Edge and Domain-Specific Systems 10:20-12:00 | 1B (SS-4) Toward Fully Automated DTCO: ML Frameworks across Technology, Cell, and Library Layers 10:20-11:35 | 1C (T12-D) Physical Attacks and Countermeasures 10:20-12:00 | 1D (SS-2) Design Automation for Quantum Error Correction: From Algorithms to Architectures 10:20-12:00 | 1E (T11-A) Ensuring High Quality Designs through Simulation and Verification Advances 10:20-11:35 | 1F (T7-A) Efficient Design of Spiking Neural Network Accelerators 10:20-12:00 |
| Lunch & CEDA Distinguish Lecture 12:00-13:30 | | | | | |
| Luncheon Talk: Dr. Patrick Groeneveld (AMD) 12:30-13:15 | | | | | |
| 2A (T5-B) Vision and Transformer Acceleration Architectures 13:30-15:35 | 2B (CEDA-EDS Special Session: 100 Years of the FET: From Technology Foundations to the EDA Ecosystem) 13:30-15:35 | 2C (T13-B) From HDL to Hardware: Scalable Design Automation for Quantum Computing 13:30-15:35 | 2D University Design Contest 13:30-15:35 | 2E (T10-A) Reliability-Driven and Low-Power Design 13:30-15:35 | 2F (T8-C) Application of Generative and Predictive Methods to Design Optimization 13:30-15:35 |
| Coffee Break & University LSI Design Contest Poster Session 15:35-15:55 | | | | | |
| 3A (T5-A) Advanced Accelerators for Emerging AI Workloads 15:55-18:00 | 3B (T1-C) Advances in Agile Design Acceleration 15:55-18:00 | 3C (T13-A) Beyond Silicon: Emerging Paradigms in EDA for Atomic Scale Computing, Photonics, and Microfluidics 15:55-18:00 | 3D (SS-3) Advances in AI-Driven Circuit Verification and Reliability Analysis 15:55-17:35 | 3E (T9-E) Timing Analysis and Timing-Aware Physical Synthesis 15:55-18:00 | 3F (T8-B) Advanced Performance Optimization for High-level Synthesis and Scheduling 15:55-18:00 |
| ACM SIGDA Student Research Forum at ASP-DAC 2026 @ Cinderella Ballroom 2//3/5 18:15-20:15 | | | | | |

Wednesday, January 21, 2026

| Cinderella Ballroom 1/6/7/8 | | | | | |
|---|--|---|--|---|---|
| Keynote III: Prof. Yuan Xie (The Hong Kong University of Science and Technology) 08:20-09:05 | | | | | |
| Keynote IV: Dr. Charles Alpert (Cadence) 09:05-09:50 | | | | | |
| Coffee Break 09:50-10:20 | | | | | |
| Snow White 1 | Snow White 2 | Snow White 3 | Sleeping Beauty 1/2 | Sleeping Beauty 3 | Sleeping Beauty 5 |
| 4A (T4-B) AI for Hardware, Systems, and Verification 10:20-12:00 | 4B (T3-D) Accelerating LLMs with Near- and In-Memory Computing 10:20-12:00 | 4C (T11-C) Tackling Reliability Issues across the Layers 10:20-11:35 | 4D (SS-1a) Mixed-precision: Silicon-to-Model Turbo Knob 10:20-11:35 | 4E (T10-B) Explainable and Generative AI for Lithography and Yield Optimization 10:20-12:00 | 4F (T6-B) Smart Techniques for Analog & Mixed-Signal Design 10:20-11:35 |
| Lunch & Invited Talk 12:00-13:30 | | | | | |
| 5A (T3-B) Emerging Memory Architectures and Their Applications 13:30-15:35 | 5B (SS-1b) From Uniform to Adaptive: The Precision-Scalable Computing Era for Edge Intelligence 13:30-14:45 | 5C (T12-C) System-Level Security and Secure Communication 13:30-15:35 | 5D (Designer Forum 1) Toward Autonomous Chip Design: From Foundation Models to Agentic EDA 13:30-15:35 | 5E (T9-D) Performance-Driven Floorplanning and Global Placement 13:30-15:35 | 5F (T8-A) Advances in Logic Optimization and Technology Mapping 13:30-15:35 |
| Coffee Break 15:35-15:55 | | | | | |
| 6A (T3-C) Circuit- and Device-Aware Design for CIM 15:55-18:00 | 6B (T1-B) Accelerator and mapping innovations for LLMs and Neural Networks 15:55-18:00 | 6C (T12-B) Logic Locking and Hardware Trojan Detection 15:55-18:00 | 6D (Designer Forum 2) AI in Production EDA: Digital, Custom, and Manufacturing Use Cases 15:55-17:35 | 6E (T9-C) Cell Placement and Generation for Advanced Technologies 15:55-18:00 | 6F (T5-E) Hardware-Software Co-Design and Optimization Frameworks 15:55-18:00 |
| Banquet 18:30-20:30 | | | | | |

Thursday, January 22, 2026

| Cinderella Ballroom 1/6/7/8 | | | | | |
|--|---|---|--|--|--|
| Keynote V: Dr. Chih-Wei Jim Chang (TSMC) 08:20-09:05 | | | | | |
| Keynote VI: Dr. Takefumi Miyoshi (e-trees.Japan, Inc. & QuEL & The University of Osaka) 09:05-09:50 | | | | | |
| Coffee Break 09:50-10:20 | | | | | |
| Snow White 1 | Snow White 2 | Snow White 3 | Sleeping Beauty 1/2 | Sleeping Beauty 3 | Sleeping Beauty 5 |
| 7A (T4-A) Efficient AI Model Design and Training 10:20-12:00 | 7B (T2-B) Designing Predictable and Reliable Real-Time Systems 10:20-12:00 | 7C (T11-B) Scaling up Physical Design Optimization to Heterogeneous Systems 10:20-11:35 | 7D (SS-5) From Solvers to Layout: Cross-Layer Approaches for Reliable and Scalable IC Design 10:20-12:00 | 7E (T7-B) Emerging Computing Architectures and Learning Systems 10:20-12:00 | 7F (T6-A) RF and Photonic IC 10:20-12:00 |
| Lunch & Invited Talk 12:00-13:30 | | | | | |
| 8A (T3-A) Hybrid CIM Architectures and Flexible Dataflows 13:30-15:35 | 8B (T1-A) Exploring interconnect design, power modeling, and system prototyping 13:30-15:35 | 8C (T12-A) Privacy-Preserving & Secure AI Computation 13:30-15:35 | 8D (Designer Forum 3) Chiplets Go Mainstream: Design Automation for 2.5D/3D Systems 13:30-15:35 | 8E (T9-B) Advances in Routing for Chips and Advanced Packaging 13:30-15:35 | 8F (T5-D) Memory-Centric and Compute-in-Mem ory Innovations 13:30-15:35 |
| Coffee Break 15:35-15:55 | | | | | |
| 9A (T2-A) Advanced Embedded System Design and Optimization 15:55-18:00 | / | 9C (T10-C) Advanced Thermal Analysis for Advanced Chips 15:55-18:00 | 9D (Panel) AI Accelerators at a Crossroads: Who Will Power the Next Decade of AI? 15:55-18:00 | 9E (T9-A) Machine Learning and Optimization in Physical Design 15:55-18:00 | 9F (T5-C) Ultra-Low Precision and Quantization Techniques 15:55-18:00 |

Highlights

Opening Ceremony

Tuesday, January 20, 2026, 08:05-08:20 @ Cinderella Ballroom 1/6/7/8

Keynote Speech I

Tuesday, January 20, 2026, 08:20-09:05 @ Cinderella Ballroom 1/6/7/8

Prof. Chenming Hu (University of California, Berkeley)

“FinFET - from Lab to Foundry to EDA/Fabless”

Keynote Speech II

Tuesday, January 20, 2026, 09:05-09:50 @ Cinderella Ballroom 1/6/7/8

Prof. Yiran Chen (Duke University)

“Edge AI: Everything, Everywhere, All at Once”

Luncheon Talk

Tuesday, January 20, 12:30-13:15 @ Cinderella Ballroom 1/6/7/8

Dr. Patrick Groeneveld (AMD)

“When Moore Surpasses Mind: The Impact of 6 decades of Relentless Design Automation”

Keynote Speech III

Wednesday, January 21, 08:20-09:05 @ Cinderella Ballroom 1/6/7/8

Prof. Yuan Xie (The Hong Kong University of Science and Technology)

“Déjà Vu: From 3D to Chiplet and PIM/NDP — A Historical Perspective”

Keynote Speech IV

Wednesday, January 21, 09:05-09:50 @ Cinderella Ballroom 1/6/7/8

Dr. Charles Alpert (Cadence)

“Harnessing Agentic AI to Accelerate Designer Productivity”

Keynote Speech V

Thursday, January 22, 08:20-09:05 @ Cinderella Ballroom 1/6/7/8

Dr. Chih-Wei Jim Chang (TSMC)

“Unlocking Hyper-Scale AI: Navigating the Future of 3DIC Design Solutions”

Keynote Speech VI

Thursday, January 22, 09:05-09:50 @ Cinderella Ballroom 1/6/7/8

Dr. Takefumi Miyoshi (e-trees.Japan, Inc. & QuEL & The University of Osaka)

“Design and Implementation of Control System for Quantum Computers”

Special Session

1B (SS-4) Toward Fully Automated DTCO: ML Frameworks across Technology, Cell, and Library Layers

Tuesday, January 20, 2026, 10:20-11:35 @ Snow White 2

1D (SS-2) Design Automation for Quantum Error Correction: From Algorithms to Architectures

Tuesday, January 20, 2026, 10:20-12:00 @ Sleeping Beauty 1/2

2B (CEDA-EDS Special Session: 100 Years of the FET: From Technology Foundations to the EDA Ecosystem)

Tuesday, January 20, 2026, 13:30-15:35 @ Snow White 2

3D (SS-3) Advances in AI-Driven Circuit Verification and Reliability Analysis

Tuesday, January 20, 2026, 15:55-17:35 @ Sleeping Beauty 1/2

4D (SS-1a) Mixed-precision: Silicon-to-Model Turbo Knob

Wednesday, January 21, 2026, 10:20-11:35 @ Sleeping Beauty 1/2

5B (SS-1b) From Uniform to Adaptive: The Precision-Scalable Computing Era for Edge Intelligence

Wednesday, January 21, 2026, 13:30-14:45 @ Snow White 2

7D (SS-5) From Solvers to Layout: Cross-Layer Approaches for Reliable and Scalable IC Design

Tuesday, January 22, 2026, 10:20-12:00 @ Sleeping Beauty 1/2

Designers' Forum

5D (Designer Forum 1) Toward Autonomous Chip Design: From Foundation Models to Agentic EDA

Wednesday, January 21, 2026, 13:30-15:35 @ Sleeping Beauty 1/2

6D (Designer Forum 2) AI in Production EDA: Digital, Custom, and Manufacturing Use Cases

Wednesday, January 21, 2026, 15:55-17:35 @ Sleeping Beauty 1/2

8D (Designer Forum 3) Chiplets Go Mainstream: Design Automation for 2.5D/3D Systems

Wednesday, January 21, 2026, 13:30-15:35 @ Sleeping Beauty 1/2

9D (Panel) AI Accelerators at a Crossroads: Who Will Power the Next Decade of AI?

Thursday, January 22, 2026, 15:55-18:00 @ Sleeping Beauty 1/2

Tutorials

ASP-DAC 2026 offers attendees a set of 3 hours intense introductions to specific topics. If you register for the conference, you have the option to select two out of the six topics.

Tutorial-1: On-Device AI to Better Mobile and Implantable Devices in Healthcare

Monday, January 19, 2026, 09:00-12:00 @ Sleeping Beauty 1/2

Speaker: Yiyu Shi (University of Notre Dame)

Tutorial-2: Design Methodologies and Toolchains for Compute-in-Memory: From Architectures to Systems

Monday, January 19, 2026, 09:00-12:00 @ Sleeping Beauty 3

Speakers:

Xiaoming Chen (Institute of Computing Technology, Chinese Academy of Sciences)

Jianlei Yang (Beihang University)

Zhenhua Zhu (Tsinghua University, The Hong Kong University of Science and Technology)

Tutorial-3: Design Automation for the Early Fault Tolerant Quantum Computing

Monday, January 19, 2026, 09:00-12:00 @ Sleeping Beauty 5

Speakers:

Shigeru Yamashita (Ritsumeikan University)

He Li (Southeast University)

Zhiding Liang (CUHK)

Robert Wille (Technical University of Munich)

Tutorial-4: Bi-Directional Synergy: A Tutorial on Hardware Design for Agentic AI and Agentic AI for Hardware Design

Monday, January 19, 2026, 14:00-17:00 @ Sleeping Beauty 1/2

Speakers:

Chaojian Li (The Hong Kong University of Science and Technology)

Zhongzhi Yu (NVIDIA Research)

Zhiyao Xie (The Hong Kong University of Science and Technology)

Tutorial-5: APS: An MLIR-Based Hardware-Software Co-design Framework for Agile Processor Specialization

Monday, January 19, 2026, 14:00-17:00 @ Sleeping Beauty 3

Speakers:

Yun (Eric) Liang (Peking University)

Youwei Xiao (Peking University)

Yuyang Zou (Peking University)

Tutorial-6: Post-Silicon Validation & Hardware Security in Modern Processors

Monday, January 19, 2026, 14:00-17:00 @ Sleeping Beauty 5

Speaker: Ravi Monani (Senior System Design Engineer, AMD; former Intel)

University LSI Design Contest

Session 2D Oral Presentation

Tuesday, January 20, 2026, 13:30-15:35 @ Sleeping Beauty 1/2

Poster Presentation

Tuesday, January 20, 2026, 15:35-15:55 @Foyer

Invited Talk

Invited Talk I

Wednesday, January 21, 2026, 12:00-13:30 @ Cinderella Ballroom 1/6/7/8

Speaker: Shulin Zeng, Infinigence-AI

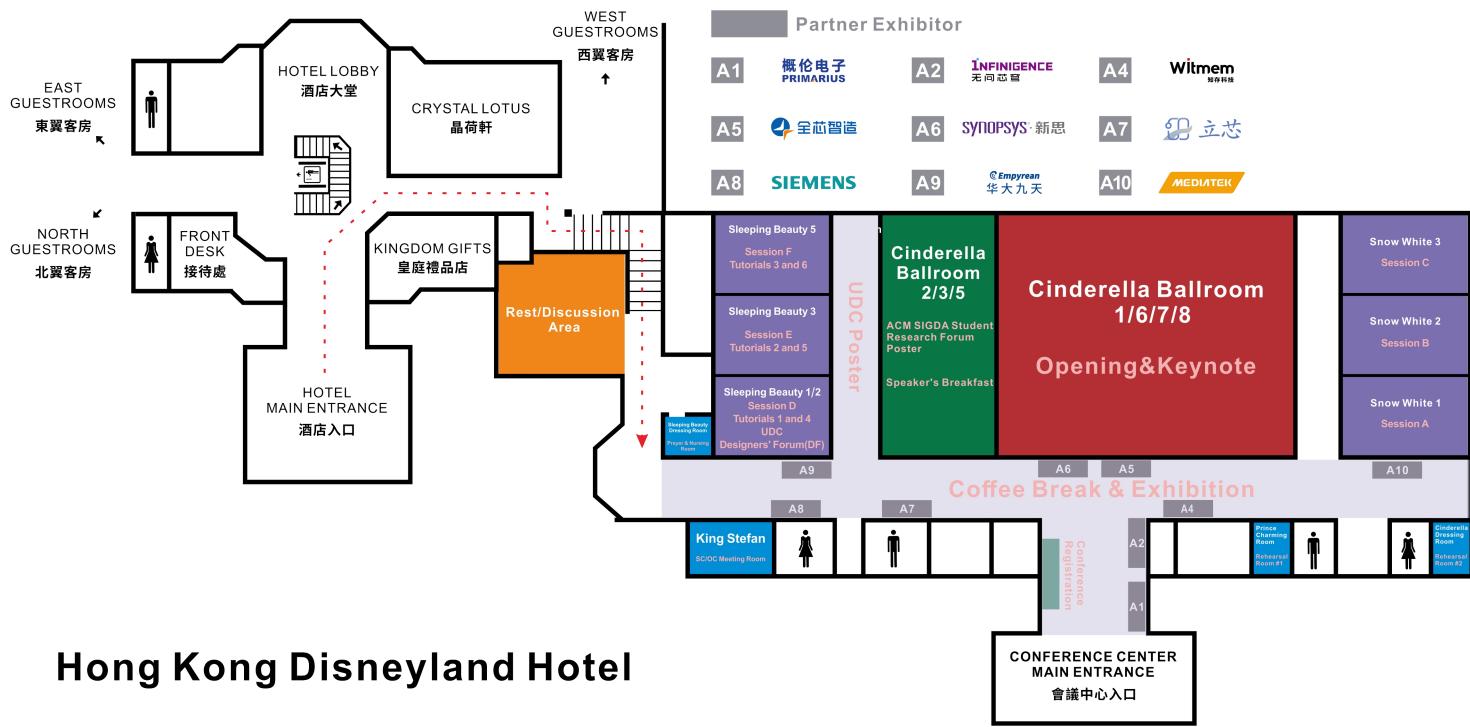
Invited Talk II

Thursday, January 22, 2026, 12:00-13:30 @ Cinderella Ballroom 1/6/7/8

Speaker: Xiaodong Meng, Advanced Manufacturing EDA Co., Ltd.

Room Assignment

| Location | Event |
|-----------------------------|---|
| Lobby | Registration, Conference Materials Collection, Information Desk |
| Cinderella Ballroom 1/6/7/8 | Opening, Keynote I-VI, CEDA Distinguish Lecture, Luncheon Talk, Invited Talk, Lunch, Banquet |
| Snow White 1 | Session A |
| Snow White 2 | Session B, Special Session 4 |
| Snow White 3 | Session C |
| Sleeping Beauty 1/2 | Session D, Tutorial 1&4, Special Session 1a, 2, 3&5, University LSI Design Contest Oral Session, Designer Forum 1, 2&3, Panel |
| Sleeping Beauty 3 | Session E, Tutorial 2&5, Special Session 1b, CEDA-EDS Special Session |
| Sleeping Beauty 5 | Session F, Tutorial 3&6 |
| Foyer | Coffee Break, University LSI Design Contest Poster Session, Supporter's Exhibition |
| Prince Charming | Rehearsal Room #1 |
| Cinderella Dressing Room 1 | Rehearsal Room #2 |
| Cinderella Ballroom 2/3/5 | Speaker's Breakfast, ACM SIGDA Student Research Forum |
| King Stefan | SC/OC Meeting Room |
| Sleeping Beauty Dressing | Prayer Room, Nursing Room |



Tutorials

ASP-DAC 2026 offers attendees a set of 3 hours intense introductions to specific topics. If you register for the conference, you have the option to select two out of the six topics.

| Monday, January 19, 2026 | | | |
|--------------------------|---|---|--|
| | Sleeping Beauty 1/2 | Sleeping Beauty 3 | Sleeping Beauty 5 |
| 09:00-12:00 | Tutorial-1 On-Device AI to Better Mobile and Implantable Devices in Healthcare | Tutorial-2 Design Methodologies and Toolchains for Compute-in-Memory: From Architectures to Systems | Tutorial-3 Design Automation for the Early Fault Tolerant Quantum Computing |
| 14:00-17:00 | Tutorial-4 Bi-Directional Synergy: A Tutorial on Hardware Design for Agentic AI and Agentic AI for Hardware Design | Tutorial-5 APS: An MLIR-Based Hardware-Software Co-design Framework for Agile Processor Specialization | Tutorial-6 Post-Silicon Validation & Hardware Security in Modern Processors |

Tutorial-1: On-Device AI to Better Mobile and Implantable Devices in Healthcare

Monday, January 19, 2026, 09:00 -12:00

Speaker: Yiyu Shi (University of Notre Dame)

Abstract: The increasing prevalence of chronic diseases, an aging population, and a shortage of healthcare professionals have prompted the widespread adoption of mobile and implantable devices to effectively manage various health conditions. In recent years, there is growing interest in leveraging rapid advances in artificial intelligence (AI) to enhance the performance of these devices, resulting in better patient outcomes, reduced healthcare costs, and improved patient autonomy. Due to privacy, security, and safety considerations, inferences must often be performed on the edge, with limited hardware resources. This challenge is compounded by inter-patient and intra-patient variability, heavy dependence on medical domain knowledge, and lack of diversified training data.

In this tutorial, we will explore how hardware–AI co-design techniques, such as joint hardware and neural architecture optimization and fairness-aware pruning, can fundamentally transform mobile and implantable devices. We will share case studies, including the world's first smart Implantable Cardioverter Defibrillator (ICD) enabled by our research, illustrating how advanced edge AI methodologies can make these devices safer, more efficient, and more personalized. Attendees will gain actionable insights into deploying AI models under stringent constraints while addressing fairness, adaptability, and reliability challenges unique to healthcare applications.

Tutorial-2:Design Methodologies and Toolchains for Compute-in-Memory: From Architectures to Systems

Monday, January 19, 2026, 09:00 -12:00

Speakers:

Xiaoming Chen (Institute of Computing Technology, Chinese Academy of Sciences)

Jianlei Yang (Beihang University)

Zhenhua Zhu (Tsinghua University, The Hong Kong University of Science and Technology)

Abstract: As the demand for computational efficiency in modern AI applications continues to rise, Compute-in-Memory (CIM) has emerged as a promising computation paradigm. By performing computations directly within memory arrays, CIM architectures overcome the von-Neumann bottleneck within traditional architectures. While recent CIM hardware

designs have demonstrated impressive efficiency gains for neural network workloads, architectural innovation has significantly outpaced the development of cohesive software toolchains necessary to program, optimize, and evaluate these novel architectures.

This tutorial addresses a critical gap in system-level CIM design by presenting comprehensive design methodologies and software frameworks, which bridge the divide between algorithm development and hardware implementation. Specifically, it aims to:

- ☆ Introduce the fundamentals of CIM design and analyze the algorithmic and architectural design space for CIM systems.

- ☆ Present state-of-the-art open-source frameworks that enable end-to-end design, simulation, compilation, and evaluation.

- ☆ Demonstrate practical workflows for algorithm mapping, performance modeling, and hardware-aware optimization.

Through detailed examination of existing design tools, intuitive examples, and hands-on demonstrations, this tutorial will offer attendees an opportunity to gain comprehensive insights into the current landscape of CIM design automation and methodologies that are essential for developing efficient AI accelerators.

Tutorial-3: Design Automation for the Early Fault Tolerant Quantum Computing

Monday, January 19, 2026, 09:00-12:00

Speakers:

Shigeru Yamashita (Ritsumeikan University)

He Li (Southeast University)

Zhiding Liang (CUHK)

Robert Wille (Technical University of Munich)

Abstract: As quantum computing transitions from NISQ experimentation to the early fault-tolerant (Early FTQC) era, progress hinges on crosslayer methods that can solve critical design automation challenges. Success in Early FTQC will require (i) reducing expensive non-Clifford resources (T-count/T-depth), (ii) co-designing algorithms and ansätze with problem structure and hardware constraints, and (iii) sustaining low physical error rates through scalable, hardware-aware calibration. This tutorial brings together four complementary perspectives to address these needs. We will explore T-depth-aware decomposition for MCT-intensive oracles, application-driven algorithm/ansatz co-design using contextual subspace strategies, and fine-grained, graph-parallel calibration protocols validated on real devices. Finally, we will present a unifying design-automation (QDA) view that connects today's tools to the emerging requirements of Early FTQC. Attendees will leave with concrete techniques, open-source pointers, and evaluation checklists to apply immediately in their research and development.

Tutorial-4: Bi-Directional Synergy: A Tutorial on Hardware Design for Agentic AI and Agentic AI for Hardware Design

Monday, January 19, 2026, 14:00-17:00

Speakers:

Chaojian Li (The Hong Kong University of Science and Technology)

Zhongzhi Yu (NVIDIA Research)

Zhiyao Xie (The Hong Kong University of Science and Technology)

Abstract: Agentic AI systems, capable of reasoning, planning, and autonomous decision-making, are transforming how we design and deploy both AI algorithms and hardware systems. This tutorial focuses on the bi-directional synergy between hardware design for agentic AI and agentic AI for hardware design. We will cover three representative works: (1) ORCHES, which accelerates Large Language Model (LLM) reasoning for agentic AI using collaborative GPU –

Processing-In-Memory(PIM) heterogeneous architectures, (2) Spec2RTL-Agent, an LLM-agent system that automates RTL code generation from complex design specifications, and (3) SLM-Agents, which makes the case that Small Language Models (SLMs) will be the future of agentic AI because of their efficiency and scalability. Participants will gain insights into (1) hardware challenges and opportunities in supporting reasoning-centric agentic AI applications, (2) LLM-based multi-agent workflows that can revolutionize hardware design automation, and (3) the significance of SLMs in shaping efficient and sustainable agentic AI systems. The tutorial concludes with a discussion on how hardware design and agentic AI can together drive a virtuous cycle of progress.

Tutorial-5:APS: An MLIR-Based Hardware-Software Co-design Framework for Agile Processor Specialization

Monday, January 19, 2026, 14:00-17:00

Speakers:

Yun (Eric) Liang (Peking University)

Youwei Xiao (Peking University)

Yuyang Zou (Peking University)

Abstract: The rapid evolution of domain-specific applications demands specialized processors with competitive performance and efficiency. While the open RISC-V instruction set architecture (ISA) simplifies the adoption of custom instruction extensions (ISAXs), the overall process of processor specialization remains challenging. It involves a complex interplay of multiple tasks, including behavioral architecture description, hardware synthesis and implementation, processor-ISAX adaptation, and compiler co-generation. Existing RISC-V ecosystems often address these challenges manually, lacking a fully automated and integrated solution. This tutorial introduces APS for agile processor specialization based on Multi-Level Intermediate Representation (MLIR). MLIR can support multiple different requirements in a unified infrastructure. APS provides a unified framework of powerful, open-source EDA tools for seamless hardware-software co-design, empowering designers to navigate the complexities of specialization with greater ease and efficiency.

Tutorial-6: Post-Silicon Validation & Hardware Security in Modern Processors

Monday, January 19, 2026, 14:00-17:00

Speaker: Ravi Monani (Senior System Design Engineer, AMD; former Intel)

Abstract: Modern processors face a dual challenge: achieving peak performance while ensuring robust security and reliability. With increasing complexity in CPU/GPU/SoC architectures, post-silicon validation has become critical in detecting design flaws, mitigating microarchitectural vulnerabilities, and balancing power-performance tradeoffs. This tutorial provides a practitioner's perspective, drawing on experiences from AMD and Intel, to bridge the gap between academic research and industrial practice. Topics will include silicon bring-up methodologies, case studies of hardware security vulnerabilities (e.g., speculative execution, side-channel attacks), debug and measurement techniques, and future challenges in secure processor design. Participants will gain insights into practical validation flows, security-hardening strategies, and opportunities for research collaboration with industry.

Keynote Addresses

Keynote I: FinFET - from Lab to Foundry to EDA/Fabless

Tuesday, January 20, 2026, 08:20-09:05 @ Cinderella Ballroom 1/6/7/8

Chenming Hu

TSMC Distinguished Professor Emeritus
University of California, Berkeley



Abstract: 25 years ago, the keynote speaker of the 2001 ISSCC in San Francisco projected that processor chips would dissipate more heat per area than nuclear reactor cores and rocket engine nozzles in a decade. His projection echoed the 1996 industry consensus of an end to Moore's Law in 2007 "with no known solution" (in ITRS - International Technology Roadmap of Semiconductors).

What was the cause of that chip heating crisis? How did FinFET prevent it from happening? How did FinFET find its way from the research laboratory to fabs, and the EDA/DAC and fabless communities? These and other FinFET stories will be told.

Keynote II: Edge AI: Everything, Everywhere, All at Once

Tuesday, January 20, 2026, 09:05-09:50 @ Cinderella Ballroom 1/6/7/8

Yiran Chen

John Cocke Distinguished Professor
Duke University



Abstract: Edge Artificial Intelligence (Edge AI) refers to systems that execute AI models directly on devices located at or near the point of data generation. Operating locally, these interconnected systems collect and process diverse forms of data, offering distinct advantages such as enhanced privacy and reduced latency. However, deploying AI models on resource-constrained platforms remains a major challenge. Such devices are limited in computing power, memory, energy, and communication capacity, creating a gap between the demands of advanced AI models and the capabilities of current hardware — ultimately hindering the widespread adoption of Edge AI systems. In this talk, we will explore algorithmic and hardware innovations that enable Edge AI to process multimodal data efficiently and effectively (Everything), operate reliably under stringent resource constraints (Everywhere), and collaborate seamlessly across heterogeneous platforms (All at Once).

Luncheon Talk: When Moore Surpasses Mind: The Impact of 6 decades of Relentless Design Automation

Tuesday, January 20, 2026, 12:30-13:15 @ Cinderella Ballroom 1/6/7/8

Patrick Groeneveld

Senior Fellow at AMD

Adjunct Professor, Stanford University



Abstract: After sixty years of scaling, we've crossed a symbolic threshold: a single chip now contains more transistors than the human brain has neurons. Machines built from these devices are beginning to rival—or surpass—human intelligence. This transformation forces us to revisit a question raised at the very first Design Automation Conference in 1964: how does automation reshape our work and our society? Today, that question is more urgent than ever—not only for electronic designers but for the broader world that depends on automation. Decades of progress in Electronic Design Automation made these trillion-transistor systems possible. Synthesis, placement, and routing of billions of components—while balancing cost, performance, power, and reliability—represent one of the most intricate engineering achievements in human history.

Keynote III: Déjà Vu: From 3D to Chiplet and PIM/NDP — A Historical Perspective

Wednesday, January 21, 2026, 08:20-09:05 @ Cinderella Ballroom 1/6/7/8

Yuan Xie

Fang Professor of Engineering

Chair Professor, Department of Electronic and Computer Engineering

The Hong Kong University of Science and Technology



Abstract: In this talk, the speaker reflects on a career journey marked by exploration at the intersection of technology and architecture, transitioning between academia and industry. The discussion highlights how technological advancements can drive architectural innovation, while architectural choices, in turn, influence the adoption and evolution of new technologies. Drawing from personal experience, the speaker offers a historical perspective on the dynamic interplay between 3D integration, chiplet-based design, and Processing-in-Memory (PIM) / Near-Data Processing (NDP) paradigms.

Keynote IV: Harnessing Agentic AI to Accelerate Designer Productivity

Wednesday, January 21, 2026, 09:05-09:50 @ Cinderella Ballroom 1/6/7/8

Charles Alpert

Cadence AI Fellow

Cadence Design Systems, Inc.



Abstract: As the complexity of chip designs continues to escalate and design cycles shrink, the demand for enhancing designer productivity becomes imperative. Currently, designers are entrenched in manual tasks such as writing RTL, creating verification test plans, and arduously debugging physical design flows. The industry is eagerly turning to agentic AI to elevate the abstraction level for design engineers. This talk delves into how to leverage frontier models to address vexing EDA problems and outlines the challenges ahead. By harnessing the power of agentic AI, we can accelerate the design process, reduce manual effort, and optimize outcomes, meeting the growing demands of the industry.

Keynote V: Unlocking Hyper-Scale AI: Navigating the Future of 3DIC Design Solutions

Thursday, January 22, 2026, 08:20-09:05 @ Cinderella Ballroom 1/6/7/8



Jim Chang

TSMC Academician/Deputy Director

3DIC Design Methodology Development, TSMC

Abstract: The era of hyper-scale AI demands a radical rethinking of 3DIC design, a paradigm shift unlocking unprecedented opportunities for architectural innovation for superior system performance. Yet, this explosion of possibility brings an exponential surge in design complexity, challenging even the most seasoned engineers.

This presentation will delve into the forefront of this revolution. We begin with a review of the TSMC 3DFabric™ family of solutions, specifically engineered to power the most advanced AI systems on the market today. We will then pivot to a comprehensive exploration of the critical 3DIC design challenges that emerge at this bleeding edge: from intricate 3D integration and feasibility assessment to robust implementation, power integrity, physical verification, thermal analysis, and substrate design optimization.

Join us to discover how a cohesive suite of solutions is forming the foundation for designing the AI systems of tomorrow - systems that will redefine what's possible. This is your essential guide to conquering complexity and harnessing the full potential of 3DIC for the next generation of intelligent machines.

Keynote VI: Design and Implementation of Control System for Quantum Computers

Thursday, January 22, 2026, 09:05-09:50 @ Cinderella Ballroom 1/6/7/8



Takefumi Miyoshi

Director at e-trees.Japan, Inc.

Adjunct Professor, The University of Osaka

Founder, QuEL, Inc.

Abstract: Quantum computing has advanced rapidly in recent years, raising strong expectations for its transformative impact on information processing. As quantum processors scale in size and complexity, progress in their control systems becomes increasingly essential.

This talk first introduces the roles of control systems in quantum computing and then presents our efforts in developing scalable and precise quantum computer controllers featuring high-accuracy microwave transceivers and synchronization mechanisms for reliable qubit manipulation and measurement. As we approach fault-tolerant quantum computing (FTQC), the scalability and efficiency of control electronics emerge as major challenges.

To address these challenges, compact, high-performance, and energy-efficient LSI-based control systems are required, supported by advanced design methodologies and electronic design automation (EDA) tools. Promising directions such as cryogenic CMOS integration may also open new possibilities for co-design between quantum and classical electronics. The talk will highlight how innovations in digital and analog integrated circuit design and system integration can accelerate the realization of large-scale quantum computing.

University LSI Design Contest

The University LSI Design Contest is a unique program at ASP-DAC. The contest aims to encourage research in LSI design at universities and connect the EDA community with LSI designers by providing opportunities to present and discuss innovative and state-of-the-art designs. The scope of the contest covers circuit techniques for (1) Analog, RF and Mixed-Signal Circuits, (2) Digital Signal Processing, (3) Microprocessors, (4) Custom ASIC. Methods or technology used for implementation include: (a) Custom ASIC and Cell-Based LSIs, (b) Gate Arrays, (c) FPGA/PLDs.

This year, 7 excellent designs will be presented, covering LLM / AI Inference, FPGA Acceleration, power management, ADC, Neuromorphic Computing, Wireless Interconnect, and Analog IC. The selected designs will be discussed on January 20 with short presentations and an interactive poster session. The interactive session will be held during coffee break, so you can enjoy the poster session with the delicious food. Please come and enjoy the cutting-edge design techniques. The banquet will present the Best Design Award and two Special Feature Awards for three outstanding designs. We sincerely acknowledge the contributions of all program committee and organizing committee members. We earnestly believe in promoting and enhancing research and education of LSI design in academic organizations through collaboration between circuit and EDA researchers. Please join the University LSI Design Contest and enjoy the stimulating discussions.

Date: Tuesday, January 20, 2026

Oral Presentation: Session 2D, Sleeping Beauty 1/2 (13:30 ~ 15:35)

Poster Presentation: Foyer (15:35-15:55)

| Title | |
|-------|---|
| 2D-1 | A 100V 86.2% Efficiency Fibonacci-Dickson Hybrid Boost Converter for Acoustic Screen Applications |
| 2D-2 | A 5-to-1V DLDO-Hybrid-Sigma Converter Achieving Fast Transient for High-Density Power Delivery |
| 2D-3 | Full-Stack System Design and Prototyping for Fully Programmable Electronic-Photonic Neurocomputing |
| 2D-4 | Analysis and Design of Oblong Coils and Standard-Cell-Based Receiver for Area-Efficient Edge-Coupled Inductive Coupling Transceiver |
| 2D-5 | A RHP-Zero-Free Hybrid Step-Up Converter With 95.1% Peak Efficiency for Fast-Transient Applications |
| 2D-6 | A Relaxation Oscillator with 2.93 μ J/cycle Energy Efficiency and 0.068% Period Jitter |
| 2D-7 | TFLOP: Towards Energy-Efficient LLM Inference: An FPGA-Affinity Accelerator with Unified LUT-based Optimization |

University LSI Design Contest Committee Chair

Fengbin Tu (The Hong Kong University of Science and Technology)

Members

Yanan Sun (Shanghai Jiao Tong University)

Jun-Seok Park (Samsung Electronics)

Hailong Jiao (Peking University)

Xin Si (Southeast University)

Arindam Basu (City University of Hong Kong)

Dajiang Liu (Chongqing University)

Bing Li (Institute of Microelectronics, Chinese Academy of Sciences)

Wei-Han Yu (University of Macau)

Tianyu Jia (Peking University)

Patrick Yue (The Hong Kong University of Science and Technology)

Designers' Forum

Designers' Forum is conceived as a unique program that shares the design experience and solutions for real product developments among LSI designers and EDA academia/developers. The topics discussed in this forum include Autonomous Chip Design using Agentic AI, AI applications in Production EDA, Design Automation for Chiplet and 2.5D/3D Systems, and the future trajectory of AI Accelerators.

5D (Designer Forum 1) Toward Autonomous Chip Design: From Foundation Models to Agentic EDA

Wednesday, January 21, 2026, 13:30-15:10 @ Sleeping Beauty 1/2

This session explores the transformative shift from traditional algorithmic optimization to autonomous, agent-based workflows in chip design. The presentations will discuss integrating agentic AI into the core of EDA systems to dynamically adjust strategies across design stages, from floorplanning to timing closure. Speakers will highlight how Large Language Models (LLMs) and autonomous agents can redefine design productivity, enable intelligent orchestration of complex toolchains, and bridge the gap between generative AI and verified industrial synthesis.

6D (Designer Forum 2) AI in Production EDA: Digital, Custom, and Manufacturing Use Cases

Wednesday, January 21, 2026, 15:55-17:35 @ Sleeping Beauty 1/2

This session focuses on the practical deployment of AI technologies in production-grade EDA flows. It covers a broad spectrum of applications, including AI-supercharged digital implementation for faster design closure and the shaping of full-custom design ecosystems through industry-academia collaboration. The session also addresses AI-driven solutions for analog/mixed-signal design automation and the application of machine learning in accelerating critical manufacturing steps such as model and mask optimization for advanced technology nodes.

8D (Designer Forum 3) Chiplets Go Mainstream: Design Automation for 2.5D/3D Systems

Thursday, January 22, 2026, 13:30-15:35 @ Sleeping Beauty 1/2

With AI hardware driving the evolution of advanced packaging, this session delves into the critical design automation challenges for 2.5D and 3D systems. Presentations will cover "shift-left" integrated System Technology Co-Optimization (STCO) methods that incorporate multi-physics constraints early in the design phase. The session will also explore breakthroughs in electromagnetic simulation and optimization for chiplet-based designs, as well as integrated full-custom 3DIC design methodologies and flows essential for next-generation heterogeneous integration.

9D (Panel) AI Accelerators at a Crossroads: Who Will Power the Next Decade of AI?

Thursday, January 22, 2026, 15:55-18:00 @ Sleeping Beauty 1/2

As AI models continue to scale exponentially, the hardware powering them faces a critical juncture. This panel brings together leading experts from academia and industry to debate the future of AI accelerators. The discussion will examine the architectural innovations, memory hierarchies, and system-level optimizations required to sustain the growth of AI, addressing the question of which technologies and paradigms will dominate the next decade of intelligent computing.

Designers' Forum Co-Chair:

Qiang Xu (The Chinese University of Hong Kong)

ACM SIGDA Student Research Forum at ASP-DAC 2026

The Student Research Forum at the ASP-DAC is a traditional poster session hosted by ACM SIGDA for PhD students to present and discuss their dissertations with experts in the design automation community. Starting from 2015, the forum has included both PhD and MS students, offering a great opportunity for the students to establish contacts for their future careers. In addition, the forum helps companies and academic institutes to get an overview of the latest research and discover extraordinary candidates for their employment.

The forum welcomes all students, professors, and industrial professionals from the relevant research community.

Date and Time: 18:15-20:15, Tuesday, January 20, 2026

Location: Cinderella Ballroom 2/3/5

We would like to thank the following committee members for their support and contribution to this forum.

Technical committee:

Zhiyao Xie (The Hong Kong University of Science and Technology)
 Jianlei Yang (Beihang University)
 Zhenge Jia (Shandong University)
 Lang Feng (Sun Yat-sen University)
 Shiju Lin (The Hong Kong University of Science and Technology (Guangzhou))
 Hongce Zhang (The Hong Kong University of Science and Technology (Guangzhou))
 Yuzhe Ma (The Hong Kong University of Science and Technology (Guangzhou))
 Qi Sun (Zhejiang University)
 Bonan Yan (Peking University)
 Zhiang Wang (Fudan University)
 Zhiding Liang (The Chinese University of Hong Kong)

Cong Callie Hao (Georgia Institute of Technology)
 Yibo Lin (Peking University)
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 Zheyu Yan (Zhejiang University)
 Xinfei Guo (Shanghai Jiao Tong University)

The sponsors of this forum are ACM SIGDA and Cadence Design Systems, Inc. We would also like to thank ASP-DAC 2026 for supporting this forum.

ACM SIGDA Student Research Forum Chair:
 Zhiyao Xie (The Hong Kong University of Science and Technology)

| Poster ID | Title | Authors and Affiliation |
|-----------|---|--|
| 1 | Efficient Compute-in-Memory based Accelerators for Point Cloud Neural Networks | Xipeng Lin (The Hong Kong University of Science and Technology, (Guangzhou)) |
| 2 | Towards Robust and Efficient Machine Learning Systems Against Uncertainty | Dongning Ma (Villanova University) |
| 3 | Gau++: Algorithm and Hardware Co-Optimized Accelerator Towards Efficient 3D Gaussian Splatting Deployment and Application | Lizhou Wu (Fudan University) |

| | | |
|----|---|--|
| 4 | Research on Energy-Efficiency-Driven Design-Technology Co-Optimization Methods | Tianliang Ma (Shanghai Jiao Tong University) |
| 5 | A Study of Performance Optimization Techniques of Digital Integrated Circuit Test Generation System | Zhiteng Chao (Chinese Academy of Sciences) |
| 6 | Design of Predictable and Reliable Computing Architecture for Robotic Systems:Includes work accepted at GLSVLSI '25, ICRA '25 and JFR | Wenhai Sun (Institute of Computing Technology, Chinese Academy of Sciences) |
| 7 | Mask Optimization in EDA: Mathematical Approaches | Ziyang Yu (The Chinese University of Hong Kong) |
| 8 | Fully Digital Hybrid Compute-in-ROM/SRAM Architecture for On-Chip Deployment of Large-Scale Deep Neural Networks | Tianyi Yu (Tsinghua University) |
| 9 | Multi-objective Full-Process Design Space Exploration for Chiplet Heterogeneous Integration | Shixin Chen (The Chinese University of Hong Kong) |
| 10 | Physically Aware Synthesis: From Optimization and Technology Mapping to Logic Resynthesis | Hongyang Pan (Fudan University) |
| 11 | Ferroelectric Compute-in-Memory Framework for Combinatorial Optimization Problems | Yu Qian (Zhejiang University) |
| 12 | Bridging Uncertainty in EDA with GNNs: Harnessing Consistency As the Key | Ziyi Wang (The Chinese University of Hong Kong) |
| 13 | Towards Performance-driven Analog Layout Design | Peng Xu (The Chinese University of Hong Kong) |
| 14 | E2S: Exploiting Effective, Efficient, and Secure Brain-Inspired Computing System | Haomin Li (Shanghai Jiao Tong University) |
| 15 | Optimizing Design Closure with Learning-Driven Approaches | Xinyun Zhang (The Chinese University of Hong Kong) |
| 16 | Reliable and Secure Analog Circuit Design and Optimization for Ultra-Resource-Constrained Edge Intelligence | Priyanjana Pal (Karlsruhe Institute of Techology Germany) |
| 17 | Design Tools for Adiabatic Superconducting Logic Circuits Toward Energy-Efficient Computing | Rongliang Fu (The Chinese University of Hong Kong) |
| 18 | Multiphysics Simulation and Optimization for Chiplet Integration Systems | Qipan Wang (Peking University) |
| 19 | Towards Better VLSI Mask Optimization | Su Zheng (The Chinese University of Hong Kong) |
| 20 | Modernizing Storage System Designs with Emerging Storage Abstractions | Yingjia Wang (The Chinese University of Hong Kong) |
| 21 | A Study of Hardware Accelerator Design Methodologies for Lattice-Based Cryptographic Algorithms | Jianan Mu (Institute of Computing Technology, Chinese Academy of Sciences) |
| 22 | Scalable and Multimodal Circuit Representation Learning | Zhengyuan Shi (The Chinese University of Hong Kong) |
| 23 | Intelligence-Native Integrated Systems: A Vertical Approach from Automated CIM to Neural SoCs | Fengshi Tian (The Hong Kong University of Science and Technology) |
| 24 | Empowering Chip Design Optimization and Verification with CPU-GPU Heterogeneous Computing | Zizheng Guo (Peking University) |
| 25 | Intelligent Computational Lithography Across Masks, Sources, and Geometries | Xiaoxiao Liang (The Hong Kong University of Science and Technology, (Guangzhou)) |
| 26 | Hardware-Software Co-Design Methodology for Digital SRAM-based Processing-in-Memory Architectures | Cenlin Duan (Beihang University) |
| 27 | Software-Hardware Co-design Methodology for Compute-In-Memory Architecture Evaluation and Exploration | Yingjie Qi (Beihang University) |
| 28 | Multi-Dimensional Hardware Architecture for Artificial Intelligence | Jun Liu (Shanghai Jiao Tong University) |
| 29 | ECS: Exploiting Encoding-Centric, Efficient and Secure Computing System | Ning Yang (Shanghai Jiao Tong University) |

Supporter's Exhibition

Supporter's exhibition is held by nine companies which support ASP-DAC 2026 and have exhibition booths. The supporter's exhibition is presented at Foyer of the Conference Center at Hong Kong Disneyland Hotel from January 20 through January 22.

Exhibit Hours:

08:30-18:00, January 20-22

Location: Foyer of the Conference Center at Hong Kong Disneyland Hotel

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<https://www.amedac.com/>

Advanced Manufacturing EDA Co., Ltd. (AMEGADAC) was founded in September 2019 with a registered capital of RMB 231 million. Headquartered in Hefei, the company has established wholly-owned subsidiaries in Shanghai, Beijing, Guangzhou, Jinan, Shenzhen, Wuhan, Hong Kong, and Hangzhou.

AMEGADAC is a high-tech enterprise specializing in R&D and delivery of professional software and services for integrated smart manufacturing solutions. With industrial software as its core driver, we actively build collaborative partnerships across the entire industrial chain, facilitating the deep integration of fragmented segments into a fully connected ecosystem. By leveraging cutting-edge technologies such as intelligent systems, we have established a distinctive and comprehensive portfolio covering the full lifecycle of industrial manufacturing software, delivering pivotal breakthroughs in the field of smart manufacturing.

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<https://ledatech.cn/>

Founded in 2020, LEDA develops Electronic Design Automation (EDA) tools for digital design. It provides solutions for RTL synthesis, physical implementation, power integrity analysis, physical verification, and 3DIC/chiplet system design.



<https://www.witmem.com/>

Witmem (Zhicun) Technology is a global leader in CIM(computing-in-memory) chips, pioneering AI-driven solutions for cutting-edge industrial applications. By leveraging groundbreaking innovations, Witmem has revolutionized traditional computing architectures, significantly reducing data movement through in-memory computation. This approach enhances AI efficiency by two orders of magnitude, addressing the exponential demand for computational power in rapidly evolving AI models. Since its establishment in 2017, Witmem has earned support from top-tier investors and industry leaders. Moving forward, the company remains committed to advancing CIM technology. For more information, please visit www.witmem.com



<https://www.empyrean-tech.com/>

Empyrean Technology, founded in 2009, is an EDA and services provider to the global semiconductor industry. The company strives to be the world's leading EDA provider, delivering a comprehensive front-to-back design flow across all industries.

In the EDA domain, Empyrean Technology offers EDA solution for full custom design, digital SoC design solutions, foundry EDA solutions, advanced packaging design solutions and 3DIC design solutions. Additionally, EDA solution for full custom design includes complete solutions for analog design, complete solutions for memory IC design, complete solutions for RF IC design, and complete solutions for flat panel display design. The company provides EDA-related services, including foundation IP and foundry design enablement services. EDA and services find applications mainly in the fields of IC design, foundry, and packaging.



<https://www MEDIATEK.com/>

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Monday, January 19, 2026

T1 Tutorial-1: On-Device AI to Better Mobile and Implantable Devices in Healthcare

Time: 09:00-12:00, Monday, January 19, 2026

Location: Sleeping Beauty 1/2

Speaker: Yiyu Shi (University of Notre Dame)

T2 Tutorial-2: Design Methodologies and Toolchains for Compute-in-Memory: From Architectures to Systems

Time: 09:00-12:00, Monday, January 19, 2026

Location: Sleeping Beauty 3

Speakers: Xiaoming Chen (Institute of Computing Technology, Chinese Academy of Sciences), Jianlei Yang (Beihang University), Zhenhua Zhu (Tsinghua University), The Hong Kong University of Science and Technology)

T3 Tutorial-3: Design Automation for the Early Fault Tolerant Quantum Computing

Time: 09:00-12:00, Monday, January 19, 2026

Location: Sleeping Beauty 5

Speakers: Shigeru Yamashita (Ritsumeikan University), He Li (Southeast University), Zhiding Liang (CUHK), Robert Wille (Technical University of Munich)

T4 Tutorial-4: Bi-Directional Synergy: A Tutorial on Hardware Design for Agentic AI and Agentic AI for Hardware Design

Time: 14:00-17:00, Monday, January 19, 2026

Location: Sleeping Beauty 1/2

Speakers: Chaojian Li (The Hong Kong University of Science and Technology), Zhongzhi Yu (NVIDIA Research), Zhiyao Xie (The Hong Kong University of Science and Technology)

T5 Tutorial-5: APS: An MLIR-Based Hardware-Software Co-design Framework for Agile Processor Specialization

Time: 14:00-17:00, Monday, January 19, 2026

Location: Sleeping Beauty 3

Speakers: Yun (Eric) Liang (Peking University), Youwei Xiao (Peking University), Yuyang Zou (Peking University)

T6 Tutorial-6: Post-Silicon Validation & Hardware Security in Modern Processors

Time: 14:00-17:00, Monday, January 19, 2026

Location: Sleeping Beauty 5

Speaker: Ravi Monani (Senior System Design Engineer, AMD; former Intel)

Tuesday, January 20, 2026

Opening and Keynote Session I

Time: 08:05-09:50, Tuesday, January 20, 2026

Location: Cinderella Ballroom 1/6/7/8

Chair(s): Tsung-Yi Ho (The Chinese University of Hong Kong)

ASP-DAC 2026 Opening

Opening Address from General Chair Tsung-Yi Ho (The Chinese University of Hong Kong)

TPC Report from Technical Program Chair Takashi Sato (Kyoto University)

Keynote Address I: FinFET - from Lab to Foundry to EDA/Fabless

Chenming Hu (University of California, Berkeley)

Keynote Address II: Edge AI: Everything, Everywhere, All at Once

Yiran Chen (Duke University)

1A (T4-C) AI Applications for Edge and Domain-Specific Systems

Time: 10:20-12:00, Tuesday, January 20, 2026

Location: Snow White 1

Chair(s): Sunmean Kim (Kyungpook National University); Jeongwoo Park (Sungkyunkwan University)

1A-1 (Time: 10:20-10:45)

Video-based Visible-Event Cross-modal Person Re-identification for Edge AI Surveillance Systems..... 1

*Xinyun Zhang, Zixiao Wang (The Chinese University of Hong Kong), Yurui Kuang (The Chinese University of Hong Kong), Bei Yu (The Chinese University of Hong Kong)

1A-2 (Time: 10:45-11:10)

REDM: Regression-Guided Diffusion Modeling for Universal Soft Sensor Enhancement in Semiconductor Process Control..... 8

*Weiping Xie, Yumeng Shi, Pang Guo, Yining Chen (Zhejiang University)

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Benchmarking Continual Learning on Netlists with Circuit-Targeted Graph Neural Networks..... 15

*Rupesh Raj Karn, Johann Knechtel, Ozgur Sinanoglu (New York University Abu Dhabi)

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LiveHPS-Lite: A Lightweight LiDAR-based Motion Capture System for Edge Applications..... 22

*Yiren Zhu, Junsheng Zhou, Yiming Ren, Hanshu Hezi, Yuexin Ma, Xin Lou (ShanghaiTech University)

Tuesday, January 20, 2026

| | |
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| 1B | (SS-4) Toward Fully Automated DTCO: ML Frameworks across Technology, Cell, and Library Layers |
| | Time: 10:20-11:35, Tuesday, January 20, 2026 |
| | Location: Snow White 2 |
| | Chair(s): Taewhan Kim (Seoul National University) |

1B-1 (Time: 10:20-10:45)

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| Hyunbae Seo, Handong Cho, Sehyeon Chung (Seoul National University), Kyumyung Choi (SungKyunKwan University), *Taewhan Kim (Seoul National University) | |

1B-2 (Time: 10:45-11:10)

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| Standard Cell Layout Generation: Methodological Evolution and Architectural Impacts..... | 35 |
| Junghyun Yoon, Ikkyum Kim, Gyumin Kim, Sojung Park, *Heechun Park (Ulsan National Institute of Science and Technology) | |

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| Location: Snow White 3 |
| Chair(s): Qiang Liu (Tianjin University); Jiaji He (Tianjin University) |

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1D (SS-2) Design Automation for Quantum Error Correction: From Algorithms to Architectures

Time: 10:20-12:00, Tuesday, January 20, 2026

Location: Sleeping Beauty 1/2

Chair(s): Zhiyao Xie (The Hong Kong University of Science and Technology)

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Location: Sleeping Beauty 5

Chair(s): Can Li (Hong Kong University); Tingting Zhang (McGill University)

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 Location: Cinderella Ballroom 1/6/7/8
 Chair(s): Iris Hui-Ru Jiang, National Taiwan University

Luncheon Talk: When Moore Surpasses Mind: The Impact of 6 decades of Relentless Design Automation

Patrick Groeneveld (AMD)

2A (T5-B) Vision and Transformer Acceleration Architectures

Time: 13:30-15:35, Tuesday, January 20, 2026
 Location: Snow White 1
 Chair(s): Caiwen Ding (University of Minnesota - Twin Cities); Sungju Ryu (Sogang University)

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Time: 13:30-15:35, Tuesday, January 20, 2026

Location: Snow White 2

Chair(s): Yu [Kevin] Cao (University of Minnesota)

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(Special Session) FET100: Celebrating the Past and Inspiring the Future

*Bin Zhao (Jr. Past President, IEEE Electron Devices Society)

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*Greg Yeric

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(Special Session) CMOS 2.0: UnFETtering the Scaling of CMOS

*Julien Ryckaert (IMEC)

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(Special Session) Compact Modeling - A Bridge between Foundry and Circuit Design

*Yogesh Singh Chauhan (IIT, Kanpur)

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(Special Session) Nanoelectronic Modeling (NEMO): From Esoteric Quantum Theory to Software that Helps Design Tomorrow's Atomic-scaled Transistors and Global Impact in nanoHUB

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2C (T13-B) From HDL to Hardware: Scalable Design Automation for Quantum Computing

Time: 13:30-15:35, Tuesday, January 20, 2026

Location: Snow White 3

Chair(s): Zhiding Liang (The Chinese University of Hong Kong); Johannes Geier (Technical University of Munich)

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Location: Sleeping Beauty 3

Chair(s): Bei Yu (The Chinese University of Hong Kong); Yu-Guang Chen (National Central University)

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2F (T8-C) Application of Generative and Predictive Methods to Design Optimization

Time: 13:30-15:35, Tuesday, January 20, 2026

Location: Sleeping Beauty 5

Chair(s): Victor Kravets (IBM Inc.); Xinyu Chen (The Hong Kong University of Science and Technology (Guangzhou))

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Time: 15:55-18:00, Tuesday, January 20, 2026

Location: Snow White 1

Chair(s): Guohao Dai (Shanghai Jiao Tong University); Zhenhua Zhu (Tsinghua University, The Hong Kong University of Science and Technology)

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Time: 15:55-18:00, Tuesday, January 20, 2026

Location: Snow White 2

Chair(s): Hiroki Nishikawa (The University of Osaka); Shih-Hao Hung (National Taiwan University)

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| Location: Snow White 3 | |
| Chair(s): Xunzhao Yin (Zhejiang University); Andy Yu-Guang Chen (National Central University) | |

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Time: 15:55-17:35, Tuesday, January 20, 2026

Location: Sleeping Beauty 1/2

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Location: Sleeping Beauty 3

Chair(s): Jeong-Tyng Li (National Tsing Hua University); Yi-Yu Liu (National Taiwan University of Science and Technology)

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Time: 15:55-18:00, Tuesday, January 20, 2026

Location: Sleeping Beauty 5

Chair(s): Wei Zhang (The Hong Kong University of Science and Technology); Zeke Wang (Zhejiang University)

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Wednesday, January 21, 2026

Keynote Session II

Time: 08:20-09:50, Wednesday, January 21, 2026

Location: Cinderella Ballroom 1/6/7/8

Chair(s): Tsung-Yi Ho (The Chinese University of Hong Kong)

Keynote Address III: Déjà Vu: From 3D to Chiplet and PIM/NDP — A Historical Perspective

Yuan Xie (The Hong Kong University of Science and Technology)

Keynote Address IV: Déjà Vu: From 3D to Chiplet and PIM/NDP — A Historical Perspective

Charles Alpert (Cadence)

4A (T4-B) AI for Hardware, Systems, and Verification

Time: 10:20-12:00, Wednesday, January 21, 2026

Location: Snow White 1

Chair(s): Lin Ting-Jung (Ningbo Institute of Digital Twin, EIT); Heechun Park (Ulsan National Institute of Science and Technology)

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Location: Snow White 2

Chair(s): Shanshi Huang (The Hong Kong University of Science and Technology (Guangzhou)); Shanlin Xiao (Sun Yat-sen University)

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Time: 10:20-11:35, Wednesday, January 21, 2026

Location: Snow White 3

Chair(s): Michihiro Shintani (Kyoto Institute of Technology); Yutaka Masuda (Nagoya University)

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Time: 10:20-11:35, Wednesday, January 21, 2026

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Chair(s): Li Jiang (Shanghai Jiao Tong University & Shanghai Qi Zhi Institute)

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Time: 10:20-12:00, Wednesday, January 21, 2026

Location: Sleeping Beauty 3

Chair(s): Yuzhe Ma (The Hong Kong University of Science and Technology (Guangzhou)); Binwu Zhu (Southeast University)

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Location: Sleeping Beauty 5

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Time: 13:30-15:35, Wednesday, January 21, 2026

Location: Snow White 1

Chair(s): Yuhong Liang (Great Bay University (GBU)); Chun-Yi Lee(National Taiwan University)

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Time: 13:30-14:45, Wednesday, January 21, 2026

Location: Snow White 2

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Location: Snow White 3

Chair(s): Song Bian (Beihang University); Danella Zhao (The University of Arizona)

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Location: Sleeping Beauty 1/2

Chair(s): Zhiyao Xie (The Hong Kong University of Science and Technology)

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(Designer Forum) From Algorithmic Optimization to Autonomous Agents: Redefining EDA Workflows with AI
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Time: 13:30-15:35, Wednesday, January 21, 2026

Location: Sleeping Beauty 3

Chair(s): Wai Kei Mak (National Tsing Hua University); Yi-Yu Liu (National Taiwan University of Science and Technology)

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Time: 13:30-15:35, Wednesday, January 21, 2026

Location: Sleeping Beauty 5

Chair(s): Hongce Zhang (The Hong Kong University of Science and Technology (Guangzhou)); Yuanqing Cheng (Beihang University)

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Time: 15:55-18:00, Wednesday, January 21, 2026

Location: Snow White 1

Chair(s): Hiromitsu Awano (Kyoto University); Arindam BASU (City University of Hong Kong)

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Location: Snow White 2

Chair(s): Zhe Lin (Sun Yat-sen University); Jianwang Zhai (Beijing University of Posts and Telecommunications)

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Time: 15:55-18:00, Wednesday, January 21, 2026

Location: Snow White 3

Chair(s): Amin Rezaei (California State University, Long Beach); Qiaoyan Yu (University of New Hampshire)

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Time: 15:55-17:35, Wednesday, January 21, 2026

Location: Sleeping Beauty 1/2

Chair(s): Min Li (Southeast University)

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*Ko-Lung Yuan (Siemens)

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*Yutao Ma (PRIMARIUS)

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Time: 15:55-18:00, Wednesday, January 21, 2026

Location: Sleeping Beauty 3

Chair(s): Pingqiang Zhou (ShanghaiTech University); Yibo Lin (Peking University)

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Location: Sleeping Beauty 5

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6F-5 (Time: 17:35-18:00)

MoBiLE: Efficient Mixture-of-Experts Inference on Consumer GPU with Mixture of Big Little Experts..... 999
 *Yushu Zhao, Yubin Qin, Yang Wang, Xiaolong Yang, Huiming Han, Shaojun Wei, Yang Hu, Shouyi Yin (Tsinghua University)

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Keynote Session III

Time: 08:20-09:50, Thursday, January 22, 2026

Location: Cinderella Ballroom 1/6/7/8

Chair(s): Tsung-Yi Ho (The Chinese University of Hong Kong)

Keynote Address V: Unlocking Hyper-Scale AI: Navigating the Future of 3DIC Design Solutions

Jim Chang (TSMC)

Keynote Address VI: Design and Implementation of Control System for Quantum Computers

Takefumi Miyoshi (e-trees.Japan, Inc. & QuEL & The University of Osaka)

7A (T4-A) Efficient AI Model Design and Training

Time: 10:20-12:00, Thursday, January 22, 2026

Location: Snow White 1

Chair(s): Masanori Hashimoto (Kyoto University); Chen Wu (Ningbo Institute of Digital Twin, Eastern Institute of Technology, Ningbo)

7A-1 (Time: 10:20-10:45)

StabiFreeze: Early Stopping for Training Binary Neural Networks via Internal Dynamics Stabilization 1006
*Jisu Kim, Tae-Hwan Kim (Korea Aerospace University)

7A-2 (Time: 10:45-11:10)

Constrained NAS via Symbolic Expressions in Declarative Hierarchical Search Spaces 1014
*Moritz Reiber, Christoph Gerum, Oliver Bringmann (University of Tübingen)

7A-3 (Time: 11:10-11:35)

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*Yipu Zhang, Chaofang Ma, Jinming Ge (The Hong Kong University of Science and Technology), Lin Jiang (Northeastern University), Jiang Xu (The Hong Kong University of Science and Technology (Guangzhou)), Wei Zhang (The Hong Kong University of Science and Technology)

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Quan Cheng, Haoyuan Li, Weirong Dong (Kyoto University), Mingqiang Huang, Longyang Lin (Southern University of Science and Technology), *Masanori Hashimoto (Kyoto University)

7B (T2-B) Designing Predictable and Reliable Real-Time Systems

Time: 10:20-12:00, Thursday, January 22, 2026

Location: Snow White 2

Chair(s): Zhenyu Yan (The Chinese University of Hong Kong); Zhiding Liang (The Chinese University of Hong Kong)

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7B-1 (Time: 10:20-10:45)

TTI: An Instruction Set Supporting Priority-Inversion-Free Time-Triggered Preemptive Scheduling in Real-Time Embedded Systems 1035
 *Yinkang Gao, Yixuan Zhu, Bo Zhang, Haoyuan Ren, Cheng Tang, Xi Li (University of Science and Technology of China)

7B-2 (Time: 10:45-11:10)

DRAPP: An end-to-end Latency Evaluation Tool for Containerized ROS Applications 1042
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7B-3 (Time: 11:10-11:35)

LaPOD: Latency Prediction for Real-Time LiDAR Object Detection 1049
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7B-4 (Time: 11:35-12:00)

Flowmap Overapproximation for Linear Time-Varying Stochastic Systems 1056
 *Xin Chen (University of New Mexico)

7C (T11-B) Scaling up Physical Design Optimization to Heterogeneous Systems

Time: 10:20-11:35, Thursday, January 22, 2026

Location: Snow White 3

Chair(s): Senling Wang (Ehime University); Michihiro Shintani (Kyoto Institute of Technology)

7C-1 (Time: 10:20-10:45)

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Φ-BO: Physics-Informed Bayesian Optimization for Multi-Port Decoupling Capacitor Placement in 2.5-D Chiplets 1070
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7C-3 (Time: 11:10-11:35)

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7D (SS-5) From Solvers to Layout: Cross-Layer Approaches for Reliable and Scalable IC Design

Time: 10:20-12:00, Thursday, January 22, 2026

Location: Sleeping Beauty 1/2

Chair(s): Tony Geng (Rice University)

7D-1 (Time: 10:20-10:45)

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*Wenjian Yu, Jiawen Cheng, Baiyu Chen (Tsinghua University)

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Zizheng Guo, Haichuan Liu, Xizhe Shi, Shenglu Hua, Zuodong Zhang, Chunyuan Zhao (Peking University), Runsheng Wang, *Yibo Lin (Peking University; Beijing Advanced Innovation Center for Integrated Circuits)

7D-3 (Time: 11:10-11:35)

IR Drop-Aware ECO: A Fast Approach to Minimize Layout and Timing Disturbance 1096

Jingchao Hu (Zhejiang University) , Yibo Lin (Peking University), Hao Yu, *Quan Chen (Southern University of Science and Technology), Zhou Jin, Cheng Zhuo (Zhejiang University)

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*Xingquan Li, Weiguo Li (Pengcheng Laboratory), Xinhua Lai (University of Chinese Academy of Sciences), Junfeng Liu (Pengcheng Laboratory), Rui Wang (Shenzhen University)

7E (T7-B) Emerging Computing Architectures and Learning Systems

Time: 10:20-12:00, Thursday, January 22, 2026

Location: Sleeping Beauty 3

Chair(s): Ke Chen (Nanjing University of Aeronautics and Astronautics); Hao Geng (ShanghaiTech University)

7E-1 (Time: 10:20-10:45)

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*Yuehai Chen, Farhad Merchant (Bernoulli Institute and CogniGron, University of Groningen)

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*Zhan Shen, Yi Qi Zhou, Tian Yi Xu, Shan Shen, Zhen Mei , Da Ying Sun (Nanjing University of Science and Technology), Zi Chen Zhang (Beihang University)

7E-3 (Time: 11:10-11:35)

LMESN: A Leakage-Driven MOSFET Reservoir for Scalable and Ultra-Low-Power Temporal Inference 1124

*Haoyuan Li (Xi'an Jiaotong University, Kyoto University), Masami Utsunomiya, Ryuto Seki, Quan Cheng, Weirong Dong (Kyoto University), Feng Liang (Xi'an Jiaotong University), Takashi Sato (Kyoto University)

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7E-4 (Time: 11:35-12:00)

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7F (T6-A) RF and Photonic IC

Time: 10:20-12:00, Thursday, January 22, 2026

Location: Sleeping Beauty 5

Chair(s): Yuanqing Cheng (Beihang University); Yibo Lin (Peking University)

7F-1 (Time: 10:20-10:45)

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Houbo He, Yizhou Xu, Lei Xia, Yaolong Hu (Rice University), Fan Cai (Keysight Technologies), *Taiyun Chi (Rice University)

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 *Huifan Zhang, Pingqiang Zhou (ShanghaiTech University)

7F-3 (Time: 11:10-11:35)

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 *Kota Nishida, Yoshihiro Midoh, Noriyuki Miura (The University of Osaka), Satoshi Kawakami (Kyushu University), Alex Orailoglu (University of California, San Diego), Jun Shiomi (The University of Osaka)

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BEAM: Bidirectional MEEF-Driven Mask Optimization for Curvilinear Photonic Design..... 1160
 *Xiaoxiao Liang, Yang Luo (HKUST(GZ)), Bei Yu (The Chinese University of Hong Kong), Yuzhe Ma (The Hong Kong University of Science and Technology (Guangzhou))

8A (T3-A) Hybrid CIM Architectures and Flexible Dataflows

Time: 13:30-15:35, Thursday, January 22, 2026

Location: Snow White 1

Chair(s): Ren-Shuo Liu (National Tsing Hua University); Atsutake Kosuge (University of Tokyo)

8A-1 (Time: 13:30-13:55)

OAH-CIM: Outlier-Aware Hybrid RRAM-SRAM CIM Accelerator with Variation-Robust Sparsity..... 1167
 *Zhiwei Zhou, Tong Hu, Han Bao, Houji Zhou, Yuyang Fu (School of Integrated Circuits, Huazhong University of Science and Technology), Jiancong Li (Department of Electronic and Computer Engineering, HongKong University of Science and Technology), Jia Chen (AI Chip Center for Emerging Smart Systems (ACCESS) University of Science and Technology), Yi Li, Xiangshui Miao (School of Integrated Circuits, Huazhong University of Science and Technology)

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FlexMem: High-Parallel Near-Memory Architecture for Flexible Dataflow in Fully Homomorphic Encryption 1174
 *Shangyi Shi, Husheng Han, Jianan Mu, Xinyao Zheng (Institute of Computing Technology), Ling Liang (Peking University), Hang Lu, Zidong du, Xiaowei Li, Xing Hu (Institute of Computing Technology)

8A-3 (Time: 14:20-14:45)

Data Flow-Aware Weight Remapping for Efficient Fault Tolerance in ReRAM-Based Accelerators 1181
 *Hyeonsu Bang (Sungkyunkwan University), Kang Eun Jeon, Jong Hwan Ko (Sungkyunkwan University)

8A-4 (Time: 14:45-15:10)

MIREDO: MIP-Driven Resource-Efficient Dataflow Optimization for Computing-in-Memory Accelerator 1188
 *Xiaolin He, Cenlin Duan, Yingjie Qi, Xiao Ma, Jianlei Yang (Beihang University)

8A-5 (Time: 15:10-15:35)

Hy2S-CIM: Hybrid-Cache-LUT FP/INT-CIM with 2-Stage Alignment and Area-efficient LUT for High Precision Vision AI Tasks 1195
 *Xiang Li (Tsinghua Shenzhen International Graduate School), Wenbin Jia (Tsinghua University), Sheng Zhang (Tsinghua Shenzhen International Graduate School), Yongpan Liu (Tsinghua University)

8B (T1-A) Exploring interconnect design, power modeling, and system prototyping

Time: 13:30-15:35, Thursday, January 22, 2026

Location: Snow White 2

Chair(s): Chester Park (Konkuk University); Fitzgerald Sungkyung Park (Pusan National University)

8B-1 (Time: 13:30-13:55)

DOME: A Domain-Orchestrated Multi-GPU Optical Network for Rack-Scale Systems 1202
 *Chongyi Yang, Peiyu Chen, Bohan Hu (The Hong Kong University of Science and Technology (Guangzhou)), Yinyi Liu, Wei Zhang (The Hong Kong University of Science and Technology), Jiang Xu (The Hong Kong University of Science and Technology (Guangzhou))

8B-2 (Time: 13:55-14:20)

H²NoC: A Hybrid NoC Architecture for FPGAs with Hardened Interconnects 1209
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8B-3 (Time: 14:20-14:45)

CommILP: Synthesizing Communication Infrastructure for Domain Computing Platforms 1216
 *Qucheng Jiang, Jacob Ginesin, Oscar Kellner (Northeastern University), Tianrui Ma (Washington University in St. Louis), Gunar Schirner (Northeastern University)

8B-4 (Time: 14:45-15:10)

ReadyPower: A Reliable, Interpretable, and Handy Architectural Power Model Based on Analytical Framework 1223
 *Qijun Zhang, Shang Liu, Yao Lu, Mengming Li, Zhiyao Xie (The Hong Kong University of Science and Technology)

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8B-5 (Time: 15:10-15:35)

A RISC-V CHERI VP: Enabling System-Level Evaluation of the Capability-Based CHERI Architecture..... 1230
 *Manfred Schlägl, Andreas Hinterdorfer (Johannes Kepler University Linz), Daniel Große (Johannes Kepler University Linz & DFKI Bremen)

8C (T12-A) Privacy-Preserving & Secure AI Computation

Time: 13:30-15:35, Thursday, January 22, 2026

Location: Snow White 3

Chair(s): Danella Zhao (The University of Arizona); Song Bian (Beihang University)

8C-1 (Time: 13:30-13:55)

EP-HDC: Hyperdimensional Computing with Encrypted Parameters for High-Throughput Privacy-Preserving Inference..... 1237
 Jaewoo Park, Chenghao Quan, *Jongeun Lee (Ulsan National Institute of Science and Technology)

8C-2 (Time: 13:55-14:20)

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 *Yuhao Liu (Institute of Microelectronics of the Chinese Academy of Sciences, University of Chinese Academy of Sciences), Ying Li, Yinhao Zhou, Chang Guo, Zhenfeng Li, Yanyun Lu (Institute of Microelectronics of the Chinese Academy of Sciences)

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8C-5 (Time: 15:10-15:35)

FedBit: Accelerating Privacy-Preserving Federated Learning via Bit-Interleaved Packing and Cross-Layer Co-Design..... 1266
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8D (Designer Forum 3) Chiplets Go Mainstream: Design Automation for 2.5D/3D Systems

Time: 13:30-15:35, Thursday, January 22, 2026

Location: Sleeping Beauty 1/2

Chair(s): Hailong Yao (University of Science and Technology Beijing)

8D-1 (13:30-13:55)

(Designer Forum) Implementation of Shift-Left Integrated STCO Design Method for Advanced Packaging
 *Kai Zhao (Huatian Technology (Jiangsu) Co., Ltd.)

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8D-2 (13:55-14:20)

(Designer Forum) Integrated Full-custom 3DIC Design Methodology and Flow

*Michael Liu (Empyrean Technology)

8D-3 (14:20-14:45)

(Designer Forum) AI for EDA: Chiplets Simulation New Era

*Jimin Wen (Xpeedic)

8D-4 (14:45-15:10)

(Designer Forum) Breakthroughs in Chiplet-Based Electromagnetic Designs: Efficient Simulation and AI-Driven Optimization

*Peng Zhao(Faraday Dynamics)

8D-5 (15:10-15:35)

(Designer Forum) A Shift-Left Design Methodology for Chiplet Architecture: Automation, Multi-Physics Modeling and Converaence

*Chen Wu (BTD Technology/EIT)

8E (T9-B) Advances in Routing for Chips and Advanced Packaging

Time: 13:30-15:35, Thursday, January 22, 2026

Location: Sleeping Beauty 3

Chair(s): Siting Liu (The Chinese University of Hong Kong); Hung-Ming Chen (National Yang Ming Chiao Tung University)

8E-1 (Time: 13:30-13:55)

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*Zhen Zhuang (The Chinese University of Hong Kong), Zheng Yang (Georgia Institute of Technology), Yuxuan Zhao (The Chinese University of Hong Kong), Jiawei Hu (Georgia Institute of Technology), Bei Yu (The Chinese University of Hong Kong), Sung Kyu Lim (Georgia Institute of Technology), Tsung-Yi Ho (The Chinese University of Hong Kong)

8E-2 (Time: 13:55-14:20)

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*Hyunbae Seo, Sehyeon Chung, Taewhan Kim (Seoul National University)

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8F (T5-D) Memory-Centric and Compute-in-Memory Innovations

Time: 13:30-15:35, Thursday, January 22, 2026

Location: Sleeping Beauty 5

Chair(s): Zhengwu LIU (The University of Hong Kong); Hongwu Jiang (The Hong Kong University of Science and Technology (Guangzhou))

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 *Homer Gamil (New York University), Michail Maniatakos (New York University Abu Dhabi)

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Exploiting the Irregular Input Sparsity in Systolic Array-based DNN Accelerators via Local Soft Pooling 1315
 Desheng Fu (College of Informatics, Huazhong Agricultural University), Jingbo Jiang, Xiaomeng Wang (The Hong Kong University of Science and Technology), Jingyang Zhu (NVIDIA Corporation), *Xizi Chen (College of Informatics, Huazhong Agricultural University), Chi-Ying Tsui (The Hong Kong University of Science and Technology)

8F-3 (Time: 14:20-14:45)

Input Reuse, Weight-Stationary Dataflow and Mapping Strategy for Depthwise Convolution in Computing-in-Memory Neural Network Accelerators 1322
 *Chia-Chun Wang (National Tsing-Hua University), Yu-Chih Tsai, Ren-Shuo Liu (National Tsing Hua University)

8F-4 (Time: 14:45-15:10)

A Unified Compute-In-Memory Framework for Multisensory Emotion Recognition 1329
 *He Xiao (The University of Hong Kong), Yue Zhou, Dirui Xie, Qi Cheng, Xiaofang Hu (Southwest University), Zhengwu Liu, Ngai Wong (The University of Hong Kong)

8F-5 (Time: 15:10-15:35)

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9A (T2-A) Advanced Embedded System Design and Optimization

Time: 15:55-18:00, Thursday, January 22, 2026

Location: Snow White 1

Chair(s): Xin Chen (University of New Mexico); Caiwen Ding (University of Minnesota - Twin Cities)

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 *Yuwei Qu, Yiqing Mao, Jin Yanxing, Wai-Shing Luk, Lingli Wang (State Key Laboratory of Integrated Chips and Systems, Fudan University)

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 *Weidong Yang, Xinmo Li, Xiangmin Guo, Jianfei Jiang, Naifeng Jing, Qin Wang, Zhigang Mao, Weiguang Sheng (Shanghai Jiao Tong University)

9A-3 (Time: 16:45-17:10)

WPU: A Pipelined WebAssembly Processing Unit for Embedded IoT Systems 1357
 *Jinyeol Kim, Chaebin Lee, Jongwon Oh, Joungmin Park, Seung Eun Lee (Seoul National University of Science and Technology)

9A-4 (Time: 17:10-17:35)

SARA: A Stall-Aware Memory Allocation Strategy for Mixed-Criticality Systems 1365
 *Meng-Chia Lee, Wen Sheng Lim, Yuan-Hao Chang, Tei-Wei Kuo (National Taiwan University)

9A-5 (Time: 17:35-18:00)

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 *Ming-Feng Wei (National Taiwan University), Yun-Chih Chen (National Tsing Hua University), Yuan-Hao Chang, Tei-Wei Kuo (National Taiwan University)

9C (T10-C) Advanced Thermal Analysis for Advanced Chips

Time: 15:55-18:00, Thursday, January 22, 2026

Location: Snow White 3

Chair(s): Zhiyao Xie (The Hong Kong University of Science and Technology); Tianshu Hou (The Chinese University of Hong Kong)

9C-1 (Time: 15:55-16:20)

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 *Jing Li (Beihang University), Wei Xing (The University of Sheffield), Yuquan Sun, Yuanqing Cheng (Beihang University)

9C-2 (Time: 16:20-16:45)

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 *Zheng Yang (Georgia Institute of Technology), Zhen Zhuang (The Chinese University of Hong Kong), Tsung-Yi Ho (National Tsing Hua University), Sung Kyu Lim (Georgia Institute of Technology)

9C-3 (Time: 16:45-17:10)

Efficient Simulation of IC Packages with TEC Based on Adaptive Segmented Method and Spatially-Aware Thermal Neural Network 1393
 *Longfei Li, Xinyue Li, Shunxiang Lan (Shanghai Jiao Tong University), Liang Chen (Shanghai University), Haibao Chen, Min Tang (Shanghai Jiao Tong University)

9C-4 (Time: 17:10-17:35)

Domain Transformation and Decomposition Method for Composable Thermal Modeling and Simulation of Chiplet-Based 2.5D Integrated System 1400
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9C-5 (Time: 17:35-18:00)

ThPA: Thermal Simulation for Advanced ICs..... 1407
Bo-Wen Chen, *Yong-Han Lin, Chien-Yu Lin, Yu-Min Lee (National Yang Ming Chiao Tung University)

9D (Panel) AI Accelerators at a Crossroads: Who Will Power the Next Decade of AI?

Time: 15:55-18:00, Thursday, January 22, 2026

Location: Sleeping Beauty 1/2

Chair(s): Li Jiang (Shanghai Jiao Tong University)

Panelists: Yuan Xie (The Hong Kong University of Science and Technology), Yu Wang (Tsinghua University), Gang Chen (Shanghai Houmo Technology Co.,Ltd.), Shaodi Wang (Hangzhou Zhicun (Witmem) Technology Co., Ltd.), Guangyu Sun (Peking University)

9E (T9-A) Machine Learning and Optimization in Physical Design

Time: 15:55-18:00, Thursday, January 22, 2026

Location: Sleeping Beauty 3

Chair(s): Heechun Park (Ulsan National Institute of Science and Technology); Rupesh Karn (NYU)

9E-1 (Time: 15:55-16:20)

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9E-4 (Time: 17:10-17:35)

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9E-5 (Time: 17:35-18:00)

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9F (T5-C) Ultra-Low Precision and Quantization Techniques

Time: 15:55-18:00, Thursday, January 22, 2026

Location: Sleeping Beauty 5

Chair(s): Ngai Wong (The University of Hong Kong); Yuzhe Ma (The Hong Kong University of Science and Technology (Guangzhou))

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9F-1 (Time: 15:55-16:20)

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*Haoxuan Shan, Cong Guo, Chiyue Wei, Feng Cheng, Junyao Zhang, Hai Li, Yiran Chen (Duke University)

9F-2 (Time: 16:20-16:45)

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Hao Liang (Shanghai Jiao Tong University), Shijie Cao (Microsoft Research Asia), Ningyi Xu (Shanghai Jiao Tong
University)

9F-3 (Time: 16:45-17:10)

Noise-Agnostic One-Shot Training and Retraining for Robust DNN Inferencing on Analog Compute-in-Memory
Systems 1463
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National Laboratories), Matthew Marinella, *Krishnendu Chakrabarty (Arizona State University)

9F-4 (Time: 17:10-17:35)

Activation-free Implicit Neural Representation via Finite-State-Machine Based Stochastic Computing 1469
*Xincheng Feng, Wenyong Zhou, Taiqiang Wu (The University of Hong Kong), Meng Li (Peking University),
Zhengwu Liu (The University of Hong Kong), Ngai Wong (The University of Hong Kong)

9F-5 (Time: 17:35-18:00)

dLLM-OPU: An FPGA Overlay Processor for Accelerated Diffusion Large Language Models 1476
*Yangbo Wei, Shaoqiang Lu (Shanghai Jiao Tong University), Junhong Qian (Southeast University), Lei He
(Eastern Institute of Technology, Ningbo), Qin Dongge, Xiao Shi (Southeast University), Chen Wu (Ningbo
Institute of Digital Twin, Eastern Institute of Technology, Ningbo), Linfeng Zhang (Shanghai Jiao Tong University)

Information

Proceedings:

ASP-DAC 2026 will be providing an authority to access the download site for the conference proceedings. Conference registration in any of the categories will include it. The site will be open on Jan. 19, 2026. Please note that neither CD-ROM nor USB memory are provided.

Banquet:

Conference in-person registrants are invited to attend a banquet to be held on January 21, 2026. The banquet will be held from 18:30 to 20:30 at the "Cinderella Ballroom 1/6/7/8". Registrants receive a banquet ticket to the banquet when they register at the conference.

Free WiFi:

Free Public WiFi is available.

Insurance:

The organizer cannot accept responsibility for accidents that might occur. Delegates are encouraged to obtain travel insurance (medical, personal accident, and luggage) in their home country prior to departure.

Climate:

The temperature in Hongkong during the period of the Conference ranges between 17 degrees Celsius and 20 degrees Celsius.

Currency Exchange:

Only Hong Kong Dollars (HKD, HK\$) is accepted at ordinary stores and restaurants. Certain foreign currencies may be accepted at a limited number of hotels, restaurants and souvenir shops. You can exchange your currency for Hong Kong Dollars at foreign exchange banks and other authorized money exchange offices with your passport.

Tipping:

In Hong Kong, tips are not necessary, even at hotels and restaurants.

Electricity:

Hong Kong's power supply operates at a voltage of 220 volts (V) with a frequency of 50 hertz (Hz), utilizing the British-style three-pin flat plug (Type G).

Prayer Room:

There is a prayer room in the Sleeping Beauty Dressing Room. Please feel free to contact the registration desk if you would like to use it.

Nursing Room:

There is a nursing room in the Sleeping Beauty Dressing Room. Please feel free to contact the registration desk if you would like to use it.

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31st Asia and South Pacific Design Automation Conference

Invitation to ASP-DAC 2027



On behalf of the Organizing Committee, it is my great pleasure and honor to invite you to the 32nd ASP-DAC, to be held in the very center of Tokyo, Japan, January 25-28, 2027.

We are planning to hold ASP-DAC 2027 at the Hitotsubashi Hall. This venue not only has very excellent access from Haneda and Narita airports, but also only 15 minutes walk, or you can take 1 station by subway from Tokyo Station.

We are also planning complimentary tours of Tokyo for participants from overseas. In recent years, artificial intelligence has seen rapid progress, accompanied by renewed momentum in the semiconductor industry. As large-scale semiconductor systems continue to increase in scale and complexity, there is a growing academic and technological demand for advanced design automation techniques, AI-assisted semiconductor design methodologies, and novel algorithms for artificial intelligence itself.

ASP-DAC 2027 provides a premier international forum for exploring state-of-the-art research results and future directions in electronic design automation, semiconductor and system design, and embedded systems. The conference offers an exceptional opportunity for in-depth technical discussions and the exchange of ideas among researchers and practitioners from around the world, fostering innovation at the intersection of artificial intelligence and design automation.

We look forward to seeing you in Tokyo during ASP-DAC 2027.

Makoto Ikeda
General Chair, ASP-DAC 2027

池田 誠

