ASME ISPS 2023

Conference on Information Storage and Processing Systems

Program

CONFERENCE
August 28–29, 2023

Western Digital,
Milpitas, CA

https://event.asme.org/ISPS

The American Society of Mechanical Engineers®
ASME®

ASME
SETTING THE STANDARD

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WELCOME LETTER

FROM THE CONFERENCE CHAIRS

On behalf of the American Society of Mechanical Engineers (ASME) Information Storage and Processing Systems (ISPS) Executive Committee, it is our pleasure to welcome you to the 2023 ASME ISPS Conference.

This year marks the 32nd ISPS conference held since 1981. The conference focuses on information storage and processing systems as well as intelligent and precision equipment. Topics ranging from magnetic and solid state data storage and memory to intelligent materials and devices in medical systems and human-machine interfaces will be presented at this year's conference. This year, we added several new tracks to our conference, covering the areas of smart systems, machine learning, human–machine interactions, and artificial intelligence in mechanical engineering. In those applications, data storage, memory, and processing are crucial. Attracting more than 30 high-quality technical presentations and papers from both industry and academia, ISPS provides a forum for international researchers from all over the world to share their findings, to network, and to foster new opportunities for collaboration. A key objective is also to attract and support graduate students and researchers in ISPS technical areas and related industries.

As is customary, the ISPS 2023 annual conference will be held in the state of California, known for its world-renowned universities and trailblazing industrial innovations in science and technology. This year's ISPS conference is hosted by the ASME ISPS Division at the beautiful campus of Western Digital, Milpitas. The ISPS conference features keynote speeches during both lunch events and the dinner banquet. At the ISPS banquet, Prof. Bharat Bhushan, Academy Professor from The Ohio State University, will deliver a distinguished talk on the Historical Evolution of Magnetic Storage Devices and Conferences. The banquet will also include the ISPS award ceremony to recognize the student fellowships and scholarships. In the first day's lunch event, Dr. Lidu Huang from Meta will discuss Miniature Actuators and Cameras for AR and VR Applications. On the second day, lunch will feature a talk by Dr. Huan Tang, who will discuss HAMR – The Ultimate HDD Technology.

On behalf of the ISPS organizing committee, we acknowledge all volunteers who have taken time to invite speakers, organize tracks, and review papers and awards. We would also like to acknowledge the invaluable assistance provided by the ASME staff during the coordination of the ISPS conference year after year.

Finally, we would like to thank all conference participants and hope that everyone will have a wonderful and rewarding experience at ISPS 2023.

Sincerely,

Yuan Ma and Tan Trinh

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Schedule at a Glance

MONDAY, AUGUST 28

	9:15AM – 10:45AM	10:45AM – 11:00AM	11:00 AM – 12:30 PM	12:45PM – 2:15PM	2:30PM – 4:00PM	4:30PM – 7:30PM
MP3	**01-01** Advanced Simulation in Science and Engineering-Part 1	Coffee Break	**10-01** Tribology, Dynamics and Servo Control of Nano-Micro Systems		**02-01** Application of Data and Artificial Intelligence in Mechanical Engineering	
MP4	**06-01** Micro/Nano Systems for Human Machine Interaction-Part 1		**06-02** Micro/ Nano Systems for Human Machine Interaction-Part 2		**09-01** Smart Sensors and Actuators-Part 1	
All Hands Space				Keynote Lunch		Awards Banquet Dinner

TUESDAY, AUGUST 29

	9:15AM – 10:45AM	11:00AM – 11:45AM	11:45AM – 12:30PM
MP3	**09-02** Smart Sensors and Actuators-Part 2		
MP4	**01-02** Advanced Simulation in Science and Engineering-Part 2		
All Hands Space		Keynote	Lunch

AUDIOVISUAL EQUIPMENT IN SESSION ROOMS

Conference rooms at Western Digital, where all the technical sessions will be held, are equipped with an LCD projector and screen. Laptops will NOT be provided in the sessions. Presenters should either bring their own or make arrangements in advance with the session chairs to bring their laptops. If you are not bringing your own laptop, please bring your presentations on a thumb drive before the technical sessions begin each day to upload it onto the laptop provided by the session chair.

BADGE REQUIRED FOR ADMISSION

All conference attendees must wear the official ASME 2023 ISPS badge at all times in order to gain admission to technical sessions and other conference events. Without a badge, you will NOT be allowed to attend any conference activities. Your badge also provides a helpful introduction to other attendees.

CONFERENCE PROCEEDINGS

Each attendee will be provided with an individual link to the online papers via email. In the event you do not receive the email, send a request to **toolboxhelp@asme.org**. Access to all of the papers accepted for presentation at the conference will be found online with this link. The official conference archival proceedings will be published after the conference and will not include accepted papers that were not presented at the conference. The official conference proceedings will be registered with the Library of Congress and submitted for abstracting and indexing. The proceedings will be published in the ASME Digital Library.

REGISTRATION

Registration will be located in the Lobby at the *CMMR Building* of Western Digital.

The hours are as follows:

Monday, August 28	7:00AM–6:00PM
Tuesday, August 29	8:00AM–1:00PM

REGISTRANTS WITH DISABILITIES

Whenever possible, we are pleased to make arrangements for registrants with disabilities. Advance notice may be required for certain requests. For on-site assistance, please visit the conference registration area and ask to speak with a conference representative.

NETWORKING BREAK

Monday, August 28 10:45AM–11:00AM
Pre-function area

Keynote Speakers

ISPS KEYNOTE LUNCHEON SPEAKER

Monday, August 28 12:45PM–2:15PM
(Lunch will be from 12:45PM to 1:30PM, followed by the Keynote.)
All Hands Space

Lidu Huang

Meta
Keynote Title: Miniature Actuators and Cameras for AR and VR Applications

Biography: Lidu Huang received his Ph.D. in mechanical engineering from Rensselaer Polytechnic Institute, Troy, NY in 1997, where he focused on developing electroelastic equations to describe hysteresis in piezoelectric materials using polarization as an internal variable. Lidu gained his HDD experience at WD and HGST involved VCM optimization, inertial and magnetic latch designs, HDD dynamics and resonance frequency tuning to improve track seeking and shock performances. He also developed a novel thermal model for HAMR (Heat-Assisted Magnetic Recording) heads, which includes the back-heating effect from a stationary hot spot located approximately 1 nm directly below the NFT (Near-Field Transducer). His research further expanded to non-volatile phase change memory design. During this research, he invented a taped array structure that equalizes thermal density for all cells, resulting in a significant improvement in reliability. Lidu joined Apple in 2017, and Meta in 2020 to lead the development of miniature auto-focusing and optical image stabilization actuators for cameras. These specialized cameras are tailored specifically for wearable devices, where space and power are critical factors. Lidu has 60+ granted/pending U.S. patents, 30+ international patents, in addition to publishing 20+ papers in engineering journals.

AWARDS BANQUET, DISTINGUISHED SPEAKER *

Monday, August 28 4:30PM–5:00PM: Reception
5:00PM–5:45PM: Presentation
5:45PM–6:15PM: Awards
6:15PM–7:30PM: Dinner

All Hands Space

Bharat Bhushan

The Ohio State University
Keynote Title: Historical Evolution of Magnetic Storage Devices and Conferences

Abstract: Telegraphic invention by Danish engineer Valdemar Poulson in 1898 was the first demonstration that a magnetic recording medium could be used to record information. It was not until 1947 that 3M shipped their first commercial oxide tape coated on paper backing, and in 1953, IBM shipped the first magnetic tape drive for data processing. IBM invented the first rigid disk drive technology called the IBM 305 Random Access Memory Accounting Machine (RAMAC). The RAMAC stored 5 MB of data and used fifty 24-inch diameter disks. The drive could be housed in a room of about 9 m x 15 m and weighed over a ton and had to be moved around by forklifts. The cost was USD $250,000 at the time (a whopping $50,000 per MB!). In 2023, one can buy a 45 TB LTO- 9 tape cartridge and 18 TB portable rigid disk drives for less than USD $150 and $300, respectively.

The magnetic recording process is accomplished by relative motion between a magnetic medium against a stationary or rotating read/write magnetic head.1,2 For high reproduced signal amplitude, the magnetic medium needs to be in close proximity to the magnetic head. However, close proximity results in tribological issues. To minimize tribological issues, under steady operating conditions, a load carrying air film is formed. There is a physical contact between the medium and the head when starting and stopping. In modern high-end computer tape and disk drives, the surfaces are coated with ultrathin (couple of nm thick) films for corrosion and wear protection and have roughness on the order of 2 nm rms. The head-to-medium separation is on the order of 3–5 nm. Since the early 1980s, the tribology of head-medium interface has been considered a limiting technology for development of reliable and ever increasing recording densities.

1. Bhushan, B., *Tribology and Mechanics of Magnetic Storage Devices*, 2nd ed., Springer-Verlag, 1996.
2. Bhushan, B., *Mechanics and Reliability of Flexible Magnetic Media*, 2nd Ed., Springer-Verlag, 2000.

Given the importance of tribology, a first ever conference on Tribology and Mechanics of Magnetic Storage Systems was held in 1984 in conjunction with ASME/STLE Tribology Conference, co-organized by Bhushan, Eiss, Bogy, and Talke, and annually thereafter. Many electromechanical, materials science, design, and manufacturing issues also became important. To cover an expanded scope, the first International Symposium on Advances in Information Storage Systems was organized at the ASME Winter Annual Meeting in 1990 by B. Bhushan and annually thereafter. B. Bhushan and colleagues founded an Information Storage and Processing Systems (ISPS) Sub-division in ASME in 1993 which was elevated to a Division level in 1996. In 2018, the 28th ISPS annual symposium was held and the division celebrated its silver jubilee.

The dinner keynote lecture will present the historical evolution of magnetic storage devices and conferences.

Biography: Dr. Bharat Bhushan is an Academy Professor (San Jose, CA), and has served as an Ohio Eminent Scholar and Howard D. Winbigler Professor, and Director of Nanoprobe Laboratory for Bio- & Nanotechnology and Biomimetics at Ohio State University, Columbus, Ohio. In 2013–14, he served as ASME/AAAS Science & Technology Policy Fellow, U.S. Congress. He holds B.S., two M.S., a Ph.D. in mechanical engineering, MBA, and five honorary doctorates, a total of 10 College degrees. His research interests include Fundamental studies in the interdisciplinary areas of Bio/nanotribology/nanomechanics, Nanomaterials Characterization, Scanning Probe Techniques, Magnetic Storage, Bio/nanotechnology, Nanomanufacturing, Bioinspired Liquid Repellency, Self-cleaning, Anti-icing, Anti-fouling, and Water Harvesting, Science and Technology Policy. He has authored 10 scientific books, 100+ handbook chapters, and 900+ scientific papers. He is Google Scholar's one of 1248 Highly Cited Researchers in All Fields, h-index - 141+ with 100 k+ citations; Scopus's one of 401 Scientists for Career-long Citation Impact Across All Fields out of over 8 million scientists from around world; Fourth Highly Cited Researcher in Mechanical Eng.; ISI Highly Cited Researcher in Materials Science and in Cross-field Category. He has given 400+ invited presentations, including 300+ keynote/plenary addresses at major international conferences on six continents. He delivered a TEDx 2019 lecture. He is the recipient of numerous awards and international fellowships and a member of the International Academy of Engineering (Russia). He has previously worked for various industrial research labs, including Mechanical Technology Inc., SKF, and IBM Almaden Research Center, San Jose, CA.

ISPS KEYNOTE LUNCHEON SPEAKER

Tuesday, August 29
Keynote presentation from 11:00AM to 11:45AM
(Lunch will be served from 12:45PM to 1:30PM, followed by the Keynote.)
All Hands Space

Dr. Huan Tang

Fremont Research Center of Seagate Technology
Keynote Title: HAMR - The Ultimate HDD Technology

Abstract: As perpendicular magnetic recording (PMR) approaches its physical limits, heat assisted magnetic recording (HAMR) is poised to take center stage and propel the hard-disk drive (HDD) technology yet to new heights. In this presentation, the author will review the critical aspects of HAMR technology encompassing the head, media, and drive system. A number of the important new phenomena unique to HAMR, including the roles of the disc carbon overcoat and interface materials in the HAMR writing process and the high-temperature effects on the HAMR head disk interface and tribology, will be discussed.

Biography: Dr. Huan Tang is a Sr. Director at the Fremont Research Center of Seagate Technology, a leading data storage and solutions company in the U.S. and in the world. During a 26-year tenure at Seagate, Dr. Tang has served in many leadership roles in hard-disk drive (HDD) and recording media R&D, including technology and product roadmap architecting, technology invention, technology productization, product development, and product qualification. His research interests include head-disk interface and tribology, head-disk interaction physics during close-proximity flying and contact, disk overcoat and lubricant, disk mechanical robustness, advanced metrology, and analytical and numerical modeling. Dr. Tang has 21 issued patents in HDD technology and has authored or co-authored over 100 papers in peer-reviewed journals in physics and tribology. He received a Ph.D. in physics from Johns Hopkins University in 1990 and was a Staff Physicist at Stanford Linear Accelerator Center prior to joining Seagate in 1997.

TECHNICAL TRACKS AND ORGANIZERS

ADVANCED SIMULATION IN SCIENCE AND ENGINEERING	**DR. ABHISHEK SRIVASTAVA** WESTERN DIGITAL
APPLICATION OF DATA AND ARTIFICIAL INTELLIGENCE IN MECHANICAL ENGINEERING	**PROF. MINGHUI ZHENG** UNIVERSITY AT BUFFALO
DYNAMICS AND CONTROL FOR FUTURE TECHNOLOGIES	**PROF. OH KWANGSEOK** HANKYONG NATIONAL UNIVERSITY
FLEXIBLE MEDIA HANDLING MACHINES AND PRINTED ELECTRONICS, EXPOSING, AND PRINTING TECHNOLOGIES	**PROF. WANCHIN KIM** HANBAT NATIONAL UNIVERSITY
FUNDAMENTALS OF ENERGY ASSISTED MAGNETIC RECORDING	**DR. RAHUL RAI** WESTERN DIGITAL
MICRO/NANO SYSTEMS FOR HUMAN MACHINE INTERACTIONS	**DR. SHAOMIN XIONG** META
OPTICAL IMAGING DEVICES AND OPTO-MECHATRONIC SYSTEMS	**PROF. PAUL C.-P. CHAO** NATIONAL YANG MING CHIAO TUNG UNIVERSITY
SMART MATERIALS	**DR. QILONG CHENG** COLUMBIA UNIVERSITY
SMART SENSORS AND ACTUATORS	**PROF. KENJI FUKUZAWA** NAGOYA UNIVERSITY **PROF. JA CHOON KOO** SUNGKYUNKWAN UNIVERSITY
TRIBOLOGY, DYNAMICS, AND SERVO CONTROL OF NANO-MICRO SYSTEMS	**PROF. JUANG JIA-YANG** NATIONAL TAIWAN UNIVERSITY

MONDAY, AUGUST 28, 2023

9:15AM–10:45AM

01-01 Advanced Simulation in Science and Engineering
Part 1

Room: MP3

Chair:
Wanchin Kim
Hanbat National University

9:15AM–9:35AM

Design and Implementation for the High Efficiency Hardware Accelerator Applied to the Compensation of IR Drop on AMOLED Panel
Technical Paper Publication: ISPS2023-110515

Tai-Chi Su - National Yang Ming Chiao Tung University
Jen-Yi Hsu - National Yang Ming Chiao Tung University
Paul C.-P. Chao - National Yang Ming Chiao Tung University

9:37AM–9:57AM

Optimization of Rotor Pole Design to Improve Torque Characteristics of Novel Consequent Pole Machine
Technical Presentation Only: ISPS2023-110540

Soo-Whang Baek - Sangmyung University
Wan-Chin Kim - Hanbat National University

9:59AM–10:19AM

Aerodynamic Performance on Dual and Tandem Wheel of Commercial Vehicles
Technical Presentation Only: ISPS2023-110542

Seong Jin Cho - Wonkwang University
Sangwook Lee - Wonkwang University

10:21AM–10:41AM

Modal Analysis and Static Structure Analysis for 3-Axis Cartesian Robot Used in Injection Molding Machine
Technical Paper Publication: ISPS2023-110651

Chen-Wei Fan - Chung Yuan Christian University
Tse-Yi Tu - Chung Yuan Christian University
Chih-We Chen - Hi-More Co. Ltd.

MONDAY, AUGUST 28, 2023

9:15AM–10:45AM

06-01 Micro/Nano Systems for Human Machine Interaction-Part 1

Room: MP4

Chair:
Shaomin Xiong
Meta

9:15AM–9:35AM

Alignment and Error Analysis to Improve Overlay Accuracy in Roll-to-Roll Screen Printing

Technical Paper Publication: ISPS2023-109321

Daehyeon Kim - Chungnam National University
Youngjin Kim - Chungnam National University
Hyeongrae Kim - Chungnam National University
Juyeon Kim - Chungnam National University
Jongmo Kang - Chungnam National University
Dongho Oh - Chungnam National University

9:37AM–9:57AM

Multi-Material 4D Printing Technology of Masks via the Inverse Design of Fully Convolutional Network Models

Technical Paper Publication: ISPS2023-109752

Yan-Ting Lin - National Taiwan University
Yi-Hung Chiu - National Taiwan University
Yi-Xian Xu - National Taiwan University
Yu-Ting Huang - National Taiwan University
Jia-Yang Juang - National Taiwan University

9:59AM–10:19AM

Effect of Temperature on Skin-Textile Friction

Technical Presentation Only: ISPS2023-110843

Zhirui Liu - The Hong Kong Polytechnic University
Qiutong Liu - The Hong Kong Polytechnic University
Ziyi Lin - The Hong Kong Polytechnic University
Yuan Ma - The Hong Kong Polytechnic University

10:21AM–10:41AM

Evaluation of Surface Wave Propagation Along Skin Surface During Haptic Actuation

Technical Presentation Only: ISPS2023-119229

Qiutong Liu - The Hong Kong Polytechnic University
Zhirui Liu - The Hong Kong Polytechnic University
Yuan Ma - The Hong Kong Polytechnic University

MONDAY, AUGUST 28, 2023

11:00AM–12:30PM

06-02 Micro/Nano Systems for Human Machine Interaction-Part 2

Room: MP4

Chair:
Qilong Cheng
Columbia University

11:00AM–11:20AM

Lateral Motion of Slender Flat Belt in Two-Roller Belt System With In-Plane Misalignment

Technical Presentation Only: ISPS2023-119274

Kazushi Yoshida - Sanyo-Onoda City University
Hayato Kawamata - Sanyo-Onoda City University

11:22AM–11:42AM

The Use of an Artificial Cornea for Validation of a Novel Intraocular Pressure Measurement Device

Technical Paper Publication: ISPS2023-110608

Avinash Laha - University of California, San Diego
Aravind Srinath - University of California, San Diego
Frank Talke - University of California, San Diego

11:44AM–12:04PM

Dual Axes Scanning Micro Mirror Using Electromagnetic Actuators and Elastic Compliant Membrane

Technical Paper Publication: ISPS2023-110712

Buhyun Shin - Hanbat National University
Youngshik Kim - Hanbat National University
Wan-Chin Kim - Hanbat National University

12:06PM–12:26PM

An Optical Tracking Approach to Computer-Assisted Surgical Navigation via Stereoscopic Vision

Technical Paper Publication: ISPS2023-111020

Darin Tsui - University of California, San Diego
Capalina Melentyev - University of California, San Diego
Ananya Rajan - University of California, San Diego
Rohan Kumar - University of California, San Diego
Frank E. Talke - University of California, San Diego

Schedule

MONDAY, AUGUST 28, 2023

11:00AM–12:30PM

10-01 Tribology, Dynamics, and Servo Control of Nano-Micro Systems

Room: MP3

Chair:
Tan Trinh
Western Digital

11:00AM–11:20AM

Analysis of Vibration and Acoustic Response of the Solid State Drive Due to the Vibration of Multilayer Ceramic Capacitors With Blocked Force Method

Technical Paper Publication: ISPS2023-109220

Wheejae Kim - Yonsei University
Youngjin Park - Yonsei University
No-Cheol Park - Yonsei University

11:22AM–11:42AM

Predicting Drive-to-Drive Frequency Response Function Variation

Technical Presentation Only: ISPS2023-118829

Siddhesh Vivek Sakhalkar - Western Digital
Brandon Kaplan - Western Digital
Rasool Koosha - Western Digital
Hitoshi Shindo - Western Digital

11:44AM–12:04PM

Adsorption and Tribological Properties of Perfluoropolyether Lubricant Films Having Main-Chains With Different Carbon Number

Technical Paper Publication: ISPS2023-109769

Hiroshi Tani - Kansai University
Yuki Yamaji - Kansai University
Ryosuke Sagata - Moresco Co.
Tomomi Hatta - Moresco Co.
Renguo Lu - Kansai University
Shinji Koganezawa - Kansai University
Norio Tagawa - Kansai University

12:06PM–12:26PM

On-Track Overwrite Testing in Heat-Assisted Magnetic Recording

Technical Presentation Only: ISPS2023-110612

Tan Trinh - Western Digital
Sukumar Rajauria - Western Digital
Qing Dai - Western Digital

MONDAY, AUGUST 28, 2023

2:30PM–4:00PM

02-01 Application of Data and Artificial Intelligence in Mechanical Engineering

Room: MP3

Chair:
Yuan Ma
The Hong Kong Polytechnic University

2:30PM–2:50PM

Synchronization Method of Mobile Base Through Waypoint Indexing for Stable Movement of MCDPR With 8 Cables

Technical Presentation Only: ISPS2023-110541

Byeong-Geon Kim - Gachon University
Jin-Hwan Lim - Gachon University
Dong-Yeop Shin - Gachon University
Kyoung-Su Park - Gachon University

2:52PM–3:12PM

Sudden Cardiac Arrest Due to VT/VF Classification Based on Heart Rate Variability and Classification Model Hardware Design

Technical Paper Publication: ISPS2023-110673

Sheng-Yueh Pan - National Yang Ming Chiao Tung University
Cheng-Han Tsai - National Yang Ming Chiao Tung University
Paul C.-P. Chao - National Yang Ming Chiao Tung University
Duc Huy Nguyen - National Yang Ming Chiao Tung University

3:14PM–3:34PM

Automatic Pattern Recognition of Microstructure by Acoustic Emission Features and Decision-Tree Classifier

Technical Presentation Only: ISPS2023-110809

Ali Kahirdeh - The Precursor

MONDAY, AUGUST 28, 2023

2:30PM–4:00PM

09-01 Smart Sensors and Actuators Part 1

Room: MP4

Chair:
Rahul Rai
Western Digital

2:30PM–2:50PM

Gallium-doped Zinc Oxide with Silver Nanowire Transparent Electrode for Photovoltaic Applications by Atmospheric Pressure Plasma Jet

Technical Paper Publication: ISPS2023-109751

Chih-Yun Chou - National Taiwan University
Yu-Tang Luo - National Taiwan University
Ying-Chin Yeh - National Taiwan University
Zhang-Bo Huang - National Taiwan University
Zhehan Zhou - National Taiwan University
Li Xu - National Taiwan University
Jia-Yang Juang - National Taiwan University

2:52PM–3:12PM

3D Printed Gyroid Elastomer and Silicone Composite for Controlled Anisotropy Simulating Human Tissue

Technical Paper Publication: ISPS2023-110531

Yu M. Li - University of California, San Diego
Po-Han Chen - University of California, San Diego
Raphaelle Paracuellos - University of California, San Diego
Karcher Morris - University of California, San Diego
Milan Makale - University of California, San DIego
Joyti Mayadev - University of California, San Diego
Frank E. Talke - University of California, San Diego

3:14PM–3:34PM

Shape Memory Alloy Based Soft Gripper

Technical Paper Publication: ISPS2023-109566

Hangyeol Baek - Hanbat National University
Abdul Manan Khan - Hanbat National University
Vishwanath Bijalwan - Hanbat National University
Youngshik Kim - Hanbat National University

3:36PM–3:56PM

Design of an Axial-Type Gravity Compensator Using Permanent Magnets

Technical Presentation Only: ISPS2023-109574

Leimeng Shan - Chungnam National University
Weizheng Zhu - Chungnam National University
Kyung-Min Lee - Chungnam National University

TUESDAY, AUGUST 29, 2023

9:15AM–10:45AM

01-02 Advanced Simulation in Science and Engineering
Part 2

Room: MP4

Chair:
Siddhesh Sakhalkar
Western Digital

9:15AM–9:35AM

Advanced Simulation

Technical Presentation Only: ISPS2023-110755

Shaomin Xiong - Meta RL

9:37AM–9:57AM

Predicting Luminance Decay of a Micro-LED Display via Machine Learning on Temperature Distribution and LED Degradation With Implementation by FPGA

Technical Paper Publication: ISPS2023-110557

Chi-En Lin - National Yang Ming Chiao Tung University
Hao-Ren Chen - National Yang Ming Chiao Tung University
Paul C.-P. Chao - National Yang Ming Chiao Tung University

9:59AM–10:19AM

A Dynamic Frequency-Temperature Modeling Method of Crystal Resonator Based on Long Short-Term Memory

Technical Paper Publication: ISPS2023-110560

Bo-Chen Su - National Yang Ming Chiao Tung University
Paul C.P. Chao - National Yang Ming Chiao Tung University
Duc Huy Nguyen - National Yang Ming Chiao Tung University
Kuei-Ting Huang - National Yang Ming Chiao Tung University

TUESDAY, AUGUST 29, 2023

9:15AM–10:45AM

09-02 Smart Sensors and Actuators Part 2

Room: MP3

Chair:
Paul C.-P Chao
National Chiao Tung University

9:15AM–9:35AM

A Low-Area Hardware Realization of 2-Shares Threshold Implementation AES for IoT Biosensor Device

Technical Paper Publication: ISPS2023-110546

Yi Sun - National Yang Ming Chiao Tung University
Po-Ying Cheng - National Yang Ming Chiao Tung University
Paul C.-P. Chao - National Yang Ming Chiao Tung University

9:37AM–9:57AM

A Low Area Overhead SPA-Resistance Edwards25519 Accelerator for IoT Biosensors

Technical Paper Publication: ISPS2023-110551

Kuan-Lin Li - National Yang Ming Chiao Tung University
Chun-Heng You - National Yang Ming Chiao Tung University
Paul C.-P. Chao - National Yang Ming Chiao Tung University

9:59AM–10:19AM

Linear System Identification and Control of a Small-Scale Hip Exoskeleton Using Shape Memory Alloy Springs in Hexagonal Architecture

Technical Paper Publication: ISPS2023-110859

Hussein F.M. Ali - Benha University
Youngshik Kim - Hanbat National University
Shuaiby Mohamed - Assiut University

AWARDS

The following awards are being presented during the awards banquet, distinguished speaker.

ISPS Division Graduate Student Fellowship

Chih-Yun Chou
National Taiwan University
"Gallium-doped Zinc Oxide with Silver Nanowire Transparent Electrode for Photovoltaic Applications by Atmospheric Pressure Plasma Jet"

Avinash Laha
University of California, San Diego
"The Use of an Artificial Cornea for Validation of a Novel Intraocular Pressure Measurement Device"

Darin Tsui
University of California, San Diego
"An Optical Tracking Approach to Computer-Assisted Surgical Navigation via Stereoscopic Vision"

Youngshik Kim
Hanbat National University
"Shape Memory Alloy Based Soft Gripper"

Yan-Ting Lin
National Taiwan University
"Multi-Material 4D Printing Technology of Masks via the Inverse Design of Fully Convolutional Network Models"

Yu 'Brian' Li
University of California San Diego
"3D Printed Gyroid Elastomer and Silicone Composite for Controlled Anisotropy Simulating Human Tissue"

ASME ISPS Distinguished Institution Award

Professor Wan-chin Kim
Hanbat National University, Korea

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