41st International Conference on
Computers And Their Applications
(CATA 2026)

PROGRAM

March 23–25, 2026

Hilton Waikiki Beach Resort & Spa,
Honolulu, Hawaii, USA

Sponsored by

International Society for
Computers and Their Applications

41st International Conference on
Computers And Their Applications
(CATA 2026)

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Program Chair: **Dr. Mohammad Hossain, Indiana University Indianapolis, USA**

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Program at a Glance (All times in Hawaii Time)

Monday 3 / 23	8:00 am - 8:45 am	**Registration and Breakfast with Coffee/Pastry (Kaiulani I, II, III Lobby Area)**
	8:45 am - 9:00 am	**Opening of CATA and BICOB by Chairs (Kaiulani II)**
	9:00 am - 10:00 am	**CATA and BICOB Keynote 1 (Kaiulani II)**
	10:00 am - 10:30 am	Coffee Break (Kaiulani Rooms Lobby Area)
	10:30 am - 12:00 pm	**Session 1:** Paper ID: 63 Paper ID: 6 Paper ID: 51 Paper ID: 7
	12:00 pm - 1:30 pm Lunch Break (Lunch on your own)	
	1:30 pm - 3:00 pm	**Session 2:** Paper ID: 25 Paper ID: 3 Paper ID: 23 Paper ID: 30
	3:00 pm - 3:30 pm	Coffee Break (Kaiulani Lobby Area)
	3:30 pm - 5:00 pm	**Session 3:** Paper ID: 39 Paper ID: 60 Paper ID: 14 Paper ID: 61 Paper ID: 38

Tuesday 3 / 24	8:00 am – 9:00 am	**Registration and Breakfast (Coffee and Pastry)**
	9:00 am – 10:00 am	**CATA and BICOB Keynote 2 (Kaiulani II)**
	10:00 am – 10:30 am	Coffee Break (Kaiulani Lobby Area)
	10:30 am –12:00 pm	**Session 4:** Paper ID: 42 Paper ID: 47 Paper ID: 19 Paper ID: 20
	12:00 pm – 1:30 pm CATA and BICOB CONFERENCE Luncheon and Best Paper Awards (Kaiulani I)	
	1:30 pm – 3:00 pm	**Session 5:** Paper ID: 40 Paper ID: 57 Paper ID: 37 Paper ID: 62

	3:00 pm - 3:30 pm	Coffee Break (Kaiulani II Lobby Area)
	3:30 pm - 5:00 pm	**Session 6:** Paper ID: 41 Paper ID: 55 Paper ID: 44 Paper ID: 56

Wednesday 3 / 25	8:00 am - 8:30 am	**Registration and Breakfast with Coffee/Pastry** **(Kaiulani II - III Lobby Area)**
	8:30 am - 9:30 am	**CATA and BICOB Keynote 3 (Kaiulani II)**
	9:30 am - 11:00 am	**Session 7:** Paper ID: 26 Paper ID: 52 Paper ID: 59 Paper ID: 54
	11:00 am - 12:30 pm	**Session 8:** Paper ID: 16 Paper ID: 24 Paper ID: 53 Paper ID: 22 Paper ID: 32

8:00 a.m. - 8:45 a.m.	**REGISTRATION and BREAKFAST (Coffee / pastries)** **Location: Kaiulani I, II, III Lobby Area**

8:45 a.m. - 9:00 a.m.	**Opening of CATA and BICOB by Chairs** **Dr. Ajay Bandi, Northwest Missouri State University, USA (CATA General Chair)** **Dr. Mohammad Hossain, Indiana University Indianapolis, USA (CATA Program Chair)** **Dr. Reshmi Mitra, Southeast Missouri State University, USA (CATA Program Chair)** **Location: Kaiulani II**

9:00 a.m. – 10:00 a.m.   KEYNOTE SESSION I

Speaker: Kishwar Shafin
Senior Research Scientist, Google, USA

Title: Creating the Next Generation of Genome Analysis Tools with Deep Learning

Session Chair: Dr. Hisham Al-Mubaid, Univ. of Houston-Clear Lake, USA

Location: Kaiulani II

10:00 a.m. – 10:30 a.m. COFFEE BREAK (Kaiulani Rooms Lobby Area)

SESSION 1	**AI for Smart Infrastructure and Environmental Systems** Monday, March 23, 10:30 a.m. - 12:00 p.m. Session Chair: Indranil Roy (Southeast Missouri State University, USA) Location: Kaiulani II

1. **Machine-Learning-Based Prediction of Magnetic Recovery of Fine SUS304 Particles Using Magnetic Susceptibility Differences with a Minimum Effective Flux Density Design**
   Takashi Ohnishi, Keiichi Watanuki (Saitama University, Saitama, Japan)
2. **Leveraging Large Language Models for Automated Scalable Development of Open Scientific Databases**
   Nikita Gautam and Doina Caragea (Kansas State University, Manhattan, KS, USA), and Ignacio Ciampitti and Federico Gomez (Purdue University, West Lafayette, IN, USA)
3. **Geo-Intelligent Wildfire Risk Prediction Using Machine Learning**
   Subrata Paul, Rishita Hazra, Sougata Uttahasani, and Rudradip Mukherjee (Brainware University, WB, India) and Anirban Mitra (Eastern International University, Ho Chi Minh City, Vietnam) and Indranil Roy (Southeast Missouri State University, USA)
4. **Quantum Feature Mapping in QSVMs for Industrial HVAC Energy Optimization**
   Narayan Debnath (Eastern International University, Vietnam), Reinaldo Gomez (National Universityof Villa Mercedes, Argentina), Corina Abdelahad, Daniel Riesco, German Montejano (National University of San Luis, Argentina)

12:00 p.m. - 1:30 p.m.　　LUNCH BREAK (Lunch on your own)

SESSION 2

AI in Healthcare and Public Health
Monday, March 23, 1:30 p.m. - 3:00 p.m.
Session Chair: Takaaki Goto, (Toyo University, Saitama, Japan)
Location: Kaiulani II

1. **Harnessing Machine Learning to Optimize Community Health Worker Interventions for High-Risk Patients**
   Jainam Shah, Shilpa Musale, Ankita Mishra, Navika Maglani, Jacob Furst, Daniela Raicu, John Mazzeo (DePaul University, Chicago, USA), Aaron Chestnut, Anubhav Kidambi, Rene Bucio, Melinda Banks, Gloria Seals, Kelly McCabe, and Roselyne Tchoua (Sinai Urban Health Institute, Chicago, Illinois, USA)

2. **Practical Insights into Semi-Supervised Object Detection Approaches**
   Chaoxin Wang (Dominican University, River Forest, IL, USA; Peak Technologies, Littleton, MA, USA), Bharaneeshwar Balasubramaniyam and Doina Caragea (Kansas State University, Manhattan, KS, USA), and Anurag Sangem and Nicolais Guevara (Peak Technologies, Littleton, MA, USA)

3. **Improving and Piloting the Application of 360° Virtual Reality Technology in Nursing Education**
   Sri Vidya Rani Narala, Sai Lokesh Reddy Gayam, Jathin Kalyanam, Jacob Miranda, and Jiaofei Zhong (California State University East Bay, Hayward, CA, USA)

4. **Applications of Homomorphic Encryption towards Preserving Healthcare Privacy in the Context of Artificial Intelligence**
   Narayan Debnath (Eastern International University, Binh Duong, Vietnam), Andrés Francisco Farías and Andrés Alejandro Farías (National University of La Rioja, La Rioja, Argentina), Germán Antonio Montejano, Ana Gabriela Garis, and Daniel Riesco (National University of San Luis, San Luis, Argentina), and Sara Mohamed Naguib Hassan Gheita (German University in Cairo, Cairo, Egypt)

3:00 p.m. – 3:30 p.m.　　COFFEE BREAK (Kaiulani Lobby Area)

SESSION 3

Cybersecurity and Secure Systems
Monday, March 23, 3:30 p.m. - 5:00 p.m.
Session Chair: Reshmi Mitra, Southeast Missouri State University, USA
Location: Kaiulani II

1. **A Multi-Model Analytical Framework for Sentiment Dynamics**
   Jongyeop Kim (Georgia Southern University, Statesboro, GA, USA), Hong Liu (Indiana University Kokomo, Kokomo, IN, USA), and Jongho Seol (Middle Georgia State University, Warner Robins, GA, USA)

2. **Cybersecurity RAG: Retrieval-Augmented Generation with Custom Faithfulness Metrics**
   Tadiwa Hukuimwe, Takudzwa Mambosasa, Mufaro Muwirimi, Hemant Upadhyay, and Reshmi Mitra (Southeast Missouri State University)

3. **MLA-Net: Attention-Driven MobileNet–LSTM Framework for Robust Alzheimer's Disease Detection from MRI Data**

Md Abbas Mahmud Suzon and Md Habibur Rahman (Islamic University, Kushtia, Bangladesh), Mohammad Al Hasan (Indiana University Indianapolis, IN, USA), Mohammad Hossain (Indiana University Indianapolis, IN, USA), and Md Aktaruzzaman (Indiana University Kokomo, IN, USA)

4. **Security Enforcement and Governance in Cloud Integrated UAV Swarm**

Sai Kumar Moguluri, Emily Jeffcott, Miraj Rahman Sanjid, and Reshmi Mitra (Southeast Missouri State University), and Prasad Calyam (University of Missouri)

5. **DANTE.v2: A Scenario-Specific Breakdown of an LSTM-Based Approach to Predict Insider Threat on Daily System Logs**

Alabhya Pahari, Aryan Adhikari, Oluseyi Olukola, Ahmed Sherif, and Nick Rahimi (The University of Southern Mississippi)

8:00 a.m. - 9:00 a.m. **REGISTRATION – Coffee / pastries**
Kaiulani I, II, III, Lobby Area

9:00 a.m. – 10:00 a.m. **KEYNOTE SESSION II**

SPEAKER: Dr. Kim Binsted
Professor, University of Hawaii, Manoa

Title: AI and Humor

Session Chair: Dr. Ajay Bandi, Northwest Missouri State University, USA

Location: Kaiulani II

10:00 a.m. – 10:30 a.m. **COFFEE BREAK: Kaiulani Lobby Area**

SESSION 4

AI for Finance, Social Media, and Business Analytics
Tuesday, March 24, 10:30 a.m. – 12:00 p.m.
Session Chair: Cheryl Hinds, Norfolk State University, USA
Location: Kaiulani II

1. **Country-Level ESG Modeling Using Open Indicators**
   Yan Shi (University of Wisconsin–Platteville, Platteville, WI, USA) and Jinghua Wang (New Jersey Institute of Technology, Newark, NJ, USA)

2. **Deep Reinforcement Learning for Risk-Adjusted Portfolio Optimization**
   Tahmid Mostafa Ali, Ziping Liu, Benjamin Dow, and Juefei Yuan (Southeast Missouri State University, Cape Girardeau, MO, USA), and Charles McAllister (Fort Hays State University, Hays, KS, USA)

3. **Hyperparameter Tuning for Detecting Credit Card Fraud Using Machine Learning**
   Shawn Sanders, and Cheryl Hinds (Norfolk State University, USA)

4. **Detecting Fake Instagram Accounts Using Machine Learning**
   Nizah Dillon, and Cheryl Hinds (Norfolk State University, USA)

12:00 p.m. - 1:30 p.m. *CATA and BICOB Conference Luncheon and Best Paper Awards (Kaiulani I)*

SESSION 5

NLP, Sentiment, and Educational Data Mining
Tuesday, March 24, 1:30 p.m. – 3:00 p.m.
Session Chair: Juefei Yuan (Southeast Missouri State University, USA)
Location: Kaiulani II

1. **Temporal Context in Sentiment Polarity Study on Microwave Oven Reviews**
   Nicholas Loehrke and Hynek Bořil (University of Wisconsin–Platteville, Platteville, WI, USA)

2. **Modeling Student AI Stances in Education with Text Mining**
   Abena Primo (Huston-Tillotson University, USA)

3. **Efficient Facial Emotion Recognition with a Lightweight CNN**
    Dhruvkumar Patel, Zequn Yuan, and Juefei Yuan (Southeast Missouri State University, USA)

4. **Latent Space Visualization of Point Cloud Autoencoder Using UMAP**
    Takahiro Miki, Yusuke Osawa, and Keiichi Watanuki (Saitama University, Saitama, Japan)

3:00 p.m. – 3:30 p.m.   COFFEE BREAK (Kaiulani II Lobby Area)

SESSION 6	**Advanced Software and AI for Networked Systems** Tuesday, March 24, 3:30 p.m. – 5:00 p.m. Session Chair: Toshihiro Yoshizumi (Kaetsu University, Tokyo, Japan) and Takaaki Goto, (Toyo University, Saitama, Japan) Location: Kaiulani II

1. **Analyzing Overlapping Communities in Heterogeneous Information Networks with Self-Supervised HGNN and Fuzzy C-Means**
    Toshihiro Yoshizumi (Kaetsu University, Tokyo, Japan) and Tadaaki Kirishima (Toyo University, Saitama, Japan)

2. **Understanding Overlapping Community Structures in Heterogeneous Information Networks via View-Specific Fuzzy Clustering**
    Toshihiro Yoshizumi (Kaetsu University, Tokyo, Japan) and Tadaaki Kirishima (Toyo University, Saitama, Japan)

3. **Modelling and Evaluation of System Constructions Based on Blockchain Network**
    Takaaki Goto and Yasunori Shiono (Toyo University, Saitama, Japan)

4. **Enhancing Graph RAG Using LLM Generated Ontology from Text**
    Rafi Rashid Chowdhury, Yasunori Shiono, Takaaki Goto, and Kensei Tsuchida (Toyo University, Saitama, Japan), and Ajay Bandi (Northwest Missouri State University, Maryville, MO, USA)

8:00 a.m. - 8:30 a.m.   **REGISTRATION – Coffee / pastries**
Kaiulani II - III, Lobby Area

8:30 a.m. – 9:30 a.m.   **KEYNOTE SESSION III**

SPEAKER: Dr. Mohammad Hasan
Professor, Indiana University, USA

Title: Machine Learning on Hierarchical Data: Representation, Model and Learning

Session Chair: Dr. Reshmi Mitra, Southeast Missouri State University, USA

Location: Kaiulani II

SESSION 7

Privacy, Cryptography, and Secure Architectures
Tuesday, March 25, 9:30 a.m. – 11:00 a.m.
Session Chair: Christer Karlsson (South Dakota Mines, Rapid City, SD, USA)
Location: Kaiulani II

5. **Mixed Boolean Arithmetic Obfuscation for Scripting Languages**
Ronald Scarpa, Christopher Protheroe, Ryan Stapleton, Nicholas Dellagrotte, and Tirthankar Ghosh (University of New Haven, USA)

6. **NIZKP-Enhanced RC-Based P2P Networks: Secure and High-Performance Framework**
Indranil Roy, Hemanth Kumar Peddameti, Jannat Ara Ferdouse Raya, and Reshmi Mitra (Southeast Missouri State University, Cape Girardeau, MO, USA), and Ansuman Bhattacharya and Bidyut Gupta (Southern Illinois University Carbondale, Carbondale, IL, USA)

7. **Machine Learning in Corneal Ectasia Screening: Performance and Interpretability**
Daniel Sá, Madalena Passos, Tayan Peller, Inês Mendes, Hugo Peixoto (Universidade do Minho, Braga 4715, PORTUGAL), and António Abelha, Ana Abreu, Vasco Miranda (Unidade Local de Saúde de Santo António, PORTUGAL)

8. **Parallel Level Ancestors and Tree Accumulations**
Luke Videckis and Christer Karlsson (South Dakota Mines, Rapid City, SD, USA)

SESSION 8

Advanced AI Models and Learning Architectures
Tuesday, March 25, 11:00 a.m. – 12:30 p.m.
Session Chair: Reshmi Mitra (Southeast Missouri State University, USA)
Location: Kaiulani II

1. **Knowledge-Enhanced Transfer Learning for Water Demand Prediction**
Claudia Maussner and Erich Teppan (University of Klagenfurt, Klagenfurt, Austria)

2. **Evaluation of the Generalization Performance of Policy Optimization Algorithms Under Systematic Environment Perturbations**
Sayeshen Govender and Asad Jeewa (University of KwaZulu-Natal, Berea, Durban, South Africa)

3. **FPGA-Driven Nonlinear Analogue Networks for Deterministic Machine Learning**
Takato Chiba, Taiki Matsunaga, Tetsuya Gokan, Andre Antezana, and Rinya

Tajima (Kanagawa Institute of Technology, Atsugi, Kanagawa, Japan), and Noriko F. Hiroi (Keio University School of Medicine, Tokyo, Japan)

4. **Leveraging Artificial Intelligence for Proactive Insider Threat Mitigation in Cybersecurity**
   Archit Kumar, Shilpi Sharma (Amity University Uttar Pradesh, India), Reshmi Mitra (Southeast Missouri State University, USA)

5. **Design Pseudo-Random Binary Generators Based on the Combination of New Self-Shrinking Generators Using Threshold Generators and Geffe Generators**
   Narayan Debnath (Eastern International University, Binh Duong, Vietnam), Andrés Francisco Farías and Andrés Alejandro Farías (National University of La Rioja, La Rioja, Argentina), and Germán Antonio Montejano, Ana Gabriela Garis, and Daniel Riesco (National University of San Luis, San Luis, Argentina)