Volume 25, Issue 1
Summer Fall '24

CECS eNEWS

Center for Embedded and Cyber-physical Systems, University of California, Irvine

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Meeting with Amrita University

Amrita University is a multi-disciplinary, research-intensive private university in India with a 3+2 partnership with UCI. On July 2024, our CECS faculties have the honors of meeting with four delegations from Amrita University:

- Dr. Maneesha Vinodini Ramesh, Provost and Dean of School for Sustainable Futures,
- Dr. Krishnashree Achuthan, Dean of PG programs and Director in Cyber Security,
- Dr. Karen Sneha Moawad, Associate Dean of Amrita Center for International Programs,
- and Dr. Shyam Diwakar, Professor and Director of Amrita Mind Brain Center.

With Amrita University, CECS looks forward to research collaborations, faculty exchange programs, joint publications, joint internship programs for students, early admission program for MECPS, and more!



Chen, Al Faruque Awarded for Research in Autonomous Security



With autonomous vehicle on the rise, CECS affiliated CS Assistant Professor Alfred Chen and EECS Professor Mohammad Al Faruque have shown that these vehicles, like self-driving cars and autonomous drones, can be hijacked and tricked into dangerous driving. Prof. Chen and Prof. Al Faruque are leading a team to discover end-to-end security vulnerabilities in any cyber-physical system. Their project is part of the Faithful Integration, Reverse-engineering, and Emulation (FIRE) program, backed by a three year fund of $15 million from the U.S. Defense Advanced Research Projects Agency.

Do Awarded $2M for Intelligent Biocomputing



CECS affiliated Associate Professor of Neurology An Do leads a collaboration project between UCI and USC to combine systems engineering and steam cell research to treat damaged brain regions from strokes or other neurological problems. Do and team hope to apply advanced biofabrication and steam cell to construct 3D neural networks and encourage brain repairment. For their efforts, NSF granted them $2 million in funding over 4 years.

Nika Mansouri Ghiasi - "Storage-Centric Computing for Genomics and Metagenomics"



Title: Storage-Centric Computing for Genomics and Metagenomics

Speaker: Nika Mansouri Ghiasi

Date and Time: Thursday, October 17, 2 p.m.

Location: ISEB 1310

Hosted By: Prof. Alex Veidenbaum

Lawrence Rauchwerger - "In Vitro Biological Neural Networks"

Title: In Vitro Biological Neural Networks

Speaker: Prof. Lawrence Rauchwerger

Date and Time: Friday, October 18, 2 p.m.

Location: EH 2430

Hosted By: Prof. Alex Veidenbaum



Visitor Profile: Jinane Bazzi



Jinane Bazzi is a PhD student in Electrical and Computer Engineering (ECE) at King Abdullah University of Science and Technology (KAUST). She specializes in hardware acceleration for machine learning workloads, with a focus on optimizing AI accelerator architectures using digital in-memory computing. Her research aims to improve the efficiency and scalability of deep learning computations.

As a visiting scholar at the UCI, Jinane collaborated with Professor Fadi Kurdahi's research group on advancing hardware acceleration techniques for large language models (LLMs). Her work focused on accelerating the decoding phase (GEMV operations) of edge-LLMs on in-memory compute hardware. This project tackles a crucial aspect of enabling efficient and scalable generative AI, particularly for resource-constrained edge devices.

Jinane's visit to UCI was an enriching experience that fostered meaningful collaboration and facilitated knowledge exchange between KAUST and UCI. This opportunity allowed her to engage in cutting-edge research and connect with leading experts in the field while aligning her research with the latest advancements in AI hardware technologies.

Publications

The following papers were published by CECS affiliates from July 2024 through December 2024 (and unreported papers from previous eNews).

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Yuxin (Myles) Liu, Zhihao Yao, Mingyi Chen, Ardalan Amiri Sani, Sharad Agarwal, Gene Tsudik: **ProvCam: A Camera Module with Self-Contained TCB for Producing Verifiable Videos**. MobiCom 2024: 588-602, November 18-22, 2024, Washington DC, DC, USA

Yunpeng Xing, Chaoyi Lu, Baojun Liu, Haixin Duan, Junzhe Sun, Zhou Li: **Yesterday Once More: Global Measurement of Internet Traffic Shadowing Behaviors**. IMC 2024: 230-240, November 4-6, 2024, Madrid, Spain

Danyu Sun, Joann Qiongna Chen, Chen Gong, Tianhao Wang, Zhou Li: **NetDPSyn: Synthesizing Network Traces under Differential Privacy**. IMC 2024: 545-554, November 4-6, 2024, Madrid, Spain

Mohanad Odema, Luke Chen, Hyoukjun Kwon, Mohammad Abdullah Al Faruque: **SCAR: Scheduling Multi-Model AI Workloads on Heterogeneous Multi-Chiplet Module Accelerators**. MICRO 2024: 565-579, November 2-6, 2024, Austin, TX, USA

Ajan Subramanian, Zhongqi Yang, Iman Azimi, Amir M. Rahmani: Graph**-Augmented LLMs for Personalized Health Insights: A Case Study in Sleep Analysis.** BSN 2024: 1-4, October 15-17, 2024, Chicago, IL, USA

Ziyu Wang, Anil Kanduri, Seyed Amir Hossein Aqajari, Salar Jafarlou, Sanaz R. Mousavi, Pasi Liljeberg, Shaista Malik, Amir M. Rahmani: **ECG Unveiled: Analysis of Client Re-Identification Risks in Real-World ECG Datasets**. BSN 2024: 1-4, October 15-17, 2024, Chicago, IL, USA

Yuning Wang, Zhongqi Yang, Iman Azimi, Amir M. Rahmani, Pasi Liljeberg: **Attention-Based Explainable AI for Wearable Multivariate Data: A Case Study on Affect Status Prediction**. BSN 2024: 1-4, October 15-17, 2024, Chicago, IL, USA

Dylan Lee, Shaoyuan Xie, Shagoto Rahman, Kenneth Pat, David Lee, Qi Alfred Chen: "**Prompter Says": A Linguistic Approach to Understanding and Detecting Jailbreak Attacks Against Large-Language Models**. LAMPS@CCS 2024: 77-87, October 14-18, 2024, Salt Lake City, UT, USA

Hamidreza Alikhani, Anil Kanduri, Pasi Liljeberg, Amir M. Rahmani, Nikil D. Dutt: **Work-in-Progress: Context and Noise Aware Resilience for Autonomous Driving Applications**. CODES+ISSS 2024: 6, September 29 - October 4, 2024, Raleigh, NC, USA

Se-Min Lim, Esmerald Aliaj, Sang-Woo Jun: **Morbius: Platform-Adaptive Hardware Accelerator for Scalable Sequence Motif Discovery**. e-Science 2024: 1-10, September 16-20, 2024, Osaka, Japan

Yuxiang Liu, Osama Amin, Noha Alharthi, Jaafar M. H. Elmirghani, Ahmed M. Eltawil, Basem Shihada: **Empowering Cognitive City Wireless Communication Vision**. SM 2024: 73-80, September 16-18, 2024, Niagara Falls, ON, Canada

Chakshu Moar, Faraz Tahmasebi, Michael Pellauer, Hyoukjun Kwon: **Characterizing the Accuracy-Efficiency Trade-off of Low-rank Decomposition in Language Models.** IISWC 2024: 194-209, September 15-17, 2024, Vancouver, BC, Canada

Ahmet M. Elbir, Kumar Vijay Mishra, Abdulkadir Celik, Ahmed M. Eltawil: **Cell-Free Integrated Sensing and Communications with Hybrid Beamforming**. SPAWC 2024: 476-480, September 10-13, 2024, Lucca, Italy

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Author, Title, Publication **Conference Proceedings**

Harrison Espino, Jeffrey L. Krichmar: **Vector-Based Navigation Inspired by Directional Place Cells**. SAB 2024: 27-38, September 9-12, 2024, Irvine, CA, USA

Seyed A. Mohaddesi, Mary Hegarty, Elizabeth R. Chrastil, Jeffrey L. Krichmar**: Benefit of Varying Navigation Strategies in Robot Teams**. SAB 2024: 63-77, September 9-12, 2024, Irvine, CA, USA

Michael A. Pfeiffer, Sriskandha Kandimalla, Jiahe Liu, Katherine Hsu, Eleanore J. Kirshner, Alina Yuan, Hin Wai Lui, Jeffrey L. Krichmar: **CuttleBot: Emulating Cuttlefish Behavior and Intelligence in a Novel Robot Design**. SAB 2024: 93-105, September 9-12, 2024, Irvine, CA, USA

Hongju Pae, Jeffrey L. Krichmar: **Integrated Information in Genetically Evolved Braitenberg Vehicles**. SAB 2024: 236-247, September 9-12, 2024, Irvine, CA, USA

Esmerald Aliaj, Alberto Krone-Martins, Sang-Woo Jun: **BMoss: Reconfigurable Hardware Accelerator for Scalable Plagiarism Detection**. APSys 2024: 102-107, September 4-5, 2024, Kyoto, Japan

Dylan Zueck, Nathaniel Atallah, Ian Do, Zhihao Yao, Ardalan Amiri Sani: **Hora: High Assurance Periodic Availability Guarantee for Life-Critical Applications on Smartphones**. APSys 2024: 115-121, September 4-5, 2024, Kyoto, Japan

Shuo Wang, Hongsheng Hu, Jiamin Chang, Benjamin Zi Hao Zhao, Qi Alfred Chen, Minhui Xue: **DNN-GP: Diagnosing and Mitigating Model's Faults Using Latent Concepts**. USENIX Security Symposium 2024, August 14-16, 2024, Philadelphia, PA, USA

Qingzhao Zhang, Shuowei Jin, Ruiyang Zhu, Jiachen Sun, Xumiao Zhang, Qi Alfred Chen, Z. Morley Mao: **On Data Fabrication in Collaborative Vehicular Perception: Attacks and Countermeasures**. USENIX Security Symposium 2024, August 14-16, 2024, Philadelphia, PA, USA

Qifan Zhang, Xuesong Bai, Xiang Li, Haixin Duan, Qi Li, Zhou Li: **ResolverFuzz: Automated Discovery of DNS Resolver Vulnerabilities with Query-Response Fuzzing**. USENIX Security Symposium 2024, August 14-16, 2024, Philadelphia, PA, USA

Hamidreza Alikhani, Ziyu Wang, Anil Kanduri, Pasi Liljeberg, Amir M. Rahmani, Nikil D. Dutt: **EA^2: Energy Efficient Adaptive Active Learning for Smart Wearables**. ISLPED 2024: 1-6, August 5-7, 2024, Newport Beach, CA, USA

Jeffrey Chen, Sang-Woo Jun, Aditi Mundra, Jonathan Ta: **Xyloni: Very Low Power Neural Network Accelerator for Intermittent Remote Visual Detection of Wildfire and Beyond**. ISLPED 2024: 1-6, August 5-7, 2024, Newport Beach, CA, USA

Mark Amayag, Jennifer Auxier, Yuning Wang, Fatemeh Sarhaddi, Amir-Mohammad Rahmani, Anna Axelin: **Finnish Immigrants' Affective Attitude Towards the IMPMS for Loneliness Detection: A Descriptive Qualitative Study**. Nursing Informatics 2024: 211-215, July 28-31, 2024, Manchester, UK

Zahir A. Chaudhry, Ryan H. Baxter, Jonathan Lee Fu, Po T. Wang, Won Joon Sohn, An H. Do: **Feasibility of Immersive Virtual Reality Feedback for Enhancing Learning in Brain-Computer Interface Control of Ambulation**. EMBC 2024: 1-4, July 15-19, 2024, Orlando, FL, USA

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Author, Title, Publication **Conference Proceedings**

Shravan Thaploo, Derrick Lin, Gregory J. Brewer, An H. Do, Zoran Nenadic: **Pruning functional connections in human induced pluripotent stem cell derived neural networks**. EMBC 2024: 1-5, July 15-19, 2024, Orlando, FL, USA

Shravan Thaploo, Derrick Lin, Yongcheng Li, Michael Vu, Gregory J. Brewer, Zoran Nenadic, An H. Do: **A simplified method for long-term maintenance of human induced pluripotent stem-cell derived neural networks**. EMBC 2024: 1-4, July 15-19, 2024, Orlando, FL, USA

Abeer Alamoudi, Abdulkadir Celik, Ahmed M. Eltawil: **HBC Transmission Policies for Energy Harvesting Empowered ECG Nodes**. EMBC 2024: 1-6, July 15-19, 2024, Orlando, FL, USA

Mahyar Abbasian, Zhongqi Yang, Elahe Khatibi, Pengfei Zhang, Nitish Nagesh, Iman Azimi, Ramesh C. Jain, Amir M. Rahmani: **Knowledge-Infused LLM-Powered Conversational Health Agent: A Case Study for Diabetes Patients**. EMBC 2024: 1-4, July 15-19, 2024, Orlando, FL, USA

Yong Huang, Charles A. Downs, Amir M. Rahmani: **Optimizing Warfarin Dosing Using Contextual Bandit: An Offline Policy Learning and Evaluation Method**. EMBC 2024: 1-4, July 15-19, 2024, Orlando, FL, USA

Kianoosh Kazemi, Iina Ryhtä, Iman Azimi, Hannakaisa Niela-Vilén, Anna Axelin, Amir M. Rahmani, Pasi Liljeberg**: Impact of Physical Activity on Quality of Life During Pregnancy: A Causal ML Approach**. EMBC 2024: 1-6, July 15-19, 2024, Orlando, FL, USA

Ali Rostami, Ramesh C. Jain, Amir M. Rahmani: **Food Recommendation as Language Processing (F-RLP): A Personalized and Contextual Paradigm**. EMBC 2024: 1-4, July 15-19, 2024, Orlando, FL, USA

Ziyu Wang, Zhongqi Yang, Iman Azimi, Amir M. Rahmani: **Differential Private Federated Transfer Learning for Mental Health Monitoring in Everyday Settings: A Case Study on Stress Detection**. EMBC 2024: 1-5, July 15-19, 2024, Orlando, FL, USA

Ahmet M. Elbir, Asmaa Abdallah, Abdulkadir Celik, Ahmed M. Eltawil: **Sparse Array Design for ISAC in the Presence of Beam-Squint**. ICCSPA 2024: 1-6, July 8-11, 2024, Istanbul, Turkiye

Ahmet M. Elbir, Kumar Vijay Mishra, Abdulkadir Celik, Ahmed M. Eltawil: **Near-Field Automotive Joint Radar-Communications with Spatial Path Index Modulation**. SAM 2024: 1-5, July 8-11, 2024, Corvallis, OR, USA

Yenchia Yu, Marco Levorato, Carla-Fabiana Chiasserini: **Tensor Compression and Reconstruction in Split DNN for Real-time Object Detection at the Edge**. MeditCom 2024: 149-154, July 8-11, 2024, Madrid, Spain

Dongjoo Seo, Yongsoo Joo, Nikil D. Dutt: **Improving Virtualized I/O Performance by Expanding the Polled I/O Path of Linux**. HotStorage 2024, July 8-9, 2024, Santa Clara, CA, USA

Hao Liu, Mohammed E. Fouda, Ahmed M. Eltawil, Suhaib A. Fahmy: **Split DNN Inference for Exploiting Near-Edge Accelerators**. EDGE 2024: 84-91, July 7-13, 2024, Shenzhen, China

Mojtaba F. AlShams, Kamilya S. Smagulova, Suhaib A. Fahmy, Mohammed E. Fouda, Ahmed M. Eltawil: **DONNA: Distributed Optimized Neural Network Allocation on CIM-Based Heterogeneous Accelerators**. EDGE 2024: 149-156, July 7-13, 2024, Shenzhen, China

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Giuseppe Esposito, Juan-David Guerrero-Balaguera, Josie E. Rodriguez Condia, Marco Levorato, Matteo Sonza Reorda: **Enhancing the Reliability of Split Computing Deep Neural Networks**. IOLTS 2024: 1-7, July 3-5, 2024, Rennes, France

Francesco Pessia, Juan-David Guerrero-Balaguera, Robert Limas Sierra, Josie E. Rodriguez Condia, Marco Levorato, Matteo Sonza Reorda**: Effective Application-level Error Modeling of Permanent Faults on AI Accelerators**. IOLTS 2024: 1-7, July 3-5, 2024, Rennes, France

Mehrdad Morsali, Sepehr Tabrizchi, Ravi Teja Velpula, Mano Bala Sankar Muthu, Hieu Pham Trung Nguyen, Mohsen Imani, Arman Roohi, Shaahin Angizi: **Energy-Efficient Near-Sensor Event Detector Based on Multilevel Ga2O3 RRAM**. ISVLSI 2024: 331-336, July 1-3, 2024, Knoxville, TN, USA

Manuel E. Segura, Pere Vergés, Justin Tian Jin Chen, Ramesh Arangott, Angela Kristine Garcia, Laura Garcia Reynoso, Alexandru Nicolau, Tony Givargis, Sergio Gago Masagué**: Enhanced Detection of Transdermal Alcohol Levels Using Hyperdimensional Computing on Embedded Devices**. IJCNN 2024: 1-8, June 30 - July 5, 2024, Yokohama, Japan

Pere Vergés, Igor Nunes, Mike Heddes, Tony Givargis, Alexandru Nicolau: **Molecular Classification Using Hyperdimensional Graph Classification**. IJCNN 2024: 1-8, June 30 - July 5, 2024, Yokohama, Japan

Eugen Slapak, Matús Dopiriak, Mohammad Abdullah Al Faruque, Juraj Gazda, Marco Levorato: **Distributed Radiance Fields for Edge Video Compression and Metaverse Integration in Autonomous Driving**. SMARTCOMP 2024: 71-76, June 29 - July 2, 2024, Osaka Japan

Mattia Giovanni Campana, Nikil D. Dutt: **Message from the DM-SmartHealth 2024 Co-Chairs**; SMARTCOMP 2024. SMARTCOMP 2024: xx, June 29 - July 2, 2024, Osaka, Japan

Daniele Cacciabue, Jacopo Marino, Francesco Aglieco, Marco Levorato, Domenico Perroni, Fulvio Risso: **Benchmarking Different Strategies for Offloading ROS2 Computation to the Edge**. NetSoft 2024: 49-54, June 24-28, 2024, Saint Louis, MO, USA

Junyao Wang, Mohammad Abdullah Al Faruque: **SMORE: Similarity-Based Hyperdimensional Domain Adaptation for Multi-Sensor Time Series Classification**. DAC 2024: 1:1-1:6, June 23-27, 2024, San Francisco, CA, USA

Mehrdad Morsali, Brendan Reidy, Deniz Najafi, Sepehr Tabrizchi, Mohsen Imani, Mahdi Nikdast, Arman Roohi, Ramtin Zand, Shaahin Angizi: **Lightator: An Optical Near-Sensor Accelerator with Compressive Acquisition Enabling Versatile Image Processing**. DAC 2024: 115:1-115:6, June 23-27, 2024, San Francisco, CA, USA

Seongyoung Kang, Sang-Woo Jun: **Sting: Near-storage accelerator framework for scalable triangle counting and beyond**. DAC 2024: 171:1-171:6, June 23-27, 2024, San Francisco, CA, USA

Takami Sato, Justin Yue, Nanze Chen, Ningfei Wang, Qi Alfred Chen**: Intriguing Properties of Diffusion Models: An Empirical Study of the Natural Attack Capability in Text-to-Image Generative Models**. CVPR 2024: 24635-24644, June 16-22, 2024, Seattle, WA, USA

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Prathyush Poduval, Zhuowen Zou, Mohsen Imani: **HDQMF: Holographic Feature Decomposition using Quantum Algorithms**. CVPR 2024: 10978-10987, June 16-22, 2024, Seattle, WA, USA

Ping-Xiang Chen, Dongjoo Seo, Biswadip Maity, Nikil D. Dutt: **KDTree-SOM: Self-organizing Map based Anomaly Detection for Lightweight Autonomous Embedded Systems**. ACM Great Lakes Symposium on VLSI 2024: 700-705, June 12-14, 2024, Clearwater, FL, USA

Yang Ni, William Youngwoo Chung, Samuel Cho, Zhuowen Zou, Mohsen Imani: **Efficient Exploration in Edge-Friendly Hyperdimensional Reinforcement Learning**. ACM Great Lakes Symposium on VLSI 2024: 111-118, June 12 -14, 2024, Clearwater, FL, USA

Simone Angelucci, Roberto Valentini, Marco Levorato, Fortunato Santucci, Carla-Fabiana Chiasserini: **Edge Computing with Early Exiting for Adaptive Inference in Mobile Autonomous Systems**. ICC 2024: 2980-2985, June 9-13, 2024, Denver, CO, USA

Grace Pan, Thea Weiss, Seyed Amirhosein Mohaddesi, John W. Szura, Jeffrey L. Krichmar: **Navigation and Cognitive Load in Telepresence Robots**. ICDL 2024: 1-6, May 20-23, 2024, Austin, TX, USA

Chetna Singhal, Y. Wu, Francesco Malandrino, Marco Levorato, Carla-Fabiana Chiasserini: **Resource-aware Deployment of Dynamic DNNs over Multi-tiered Interconnected Systems**. INFOCOM 2024: 1621-1630, May 20-23, 2024, Vancouver, BC, Canada

Jiacen Xu, Xiaokui Shu, Zhou Li**: Understanding and Bridging the Gap Between Unsupervised Network Representation Learning and Security Analytics**. SP 2024: 3590-3608, May 19-23, 2024, San Francisco, CA, USA

Xiang Li, Wei Xu, Baojun Liu, Mingming Zhang, Zhou Li, Jia Zhang, Deliang Chang, Xiaofeng Zheng, Chuhan Wang, Jianjun Chen, Haixin Duan, Qi Li: **TuDoor Attack: Systematically Exploring and Exploiting Logic Vulnerabilities in DNS Response Pre-processing with Malformed Packets**. SP 2024: 4459-4477, May 19-23, 2024, San Francisco, CA, USA

Jinane Bazzi, Rachid Jamil, Dana El Hajj, Rouwaida Kanj, Mohammed E. Fouda, Ahmed M. Eltawil: **Reconfigurable Precision SRAM-based Analog In-memory-compute Macro Design**. ISCAS 2024: 1-5, May 19-22, 2024, Singapore, Singapore

Hyukjun Kwon, Kangwon Kim, Junyoung Lee, Hyunsei Lee, Jiseung Kim, Jinhyung Kim, Taehyung Kim, Yongnyeon Kim, Yang Ni, Mohsen Imani, Ilhong Suh, Yeseong Kim: **Brain-Inspired Hyperdimensional Computing in the Wild: Lightweight Symbolic Learning for Sensorimotor Controls of Wheeled Robots**. ICRA 2024: 5176-5182, May 13-17, 2024, Yokohama, Japan

Timothy K. Johnsen, Marco Levorato: **NaviSlim: Adaptive Context-Aware Navigation and Sensing via Dynamic Slimmable Networks**. IoTDI 2024: 110-121, May 13-16, 2024, Hong Kong, Hong Kong

Hanning Chen, Ali Zakeri, Yang Ni, Fei Wen, Behnam Khaleghi, Hugo Latapie, Mohsen Imani: **High-Performance Reconfigurable Accelerator for Knowledge Graph Reasoning**. FCCM 2024: 219, May 5-8, 2024, Orlando, FL, USA

Li Zhang, Ahmed M. Eltawil, Khaled N. Salama: **Hardware-Friendly Lightweight Convolutional Neural Network Derivation at The Edge**. AICAS 2024: 11-15, April 22-25, 2024, Abu Dhabi, United Arab Emirates

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DiDiego A. Silva, Ayan Shymyrbay, Kamilya Smagulova, Ahmed Elsheikh, Mohamed E. Fouda, Ahmed M. Eltawil**: End-to-End Edge Neuromorphic Object Detection System**. AICAS 2024: 194-198, April 22-25, 2024, Abu Dhabi, United Arab Emirates

Ayan Shymyrbay, Mohammed E. Fouda, Ahmed M. Eltawil: **Towards Automated FPGA Compilation of Spiking Neural Networks**. AICAS 2024: 223-22, April 22-25, 2024, Abu Dhabi, United Arab Emirates

Amr M. Abdelhady, Abdulkadir Çelik, Carles Diaz-Vilor, Hamid Jafarkhani, Ahmed M. Eltawil: **Operation Optimization of Laser-Powered Aerial Data Harvesting for Passive IoT Networks**. WCNC 2024: 1-6, April 21-24, 2024, Dubai, United Arab Emirates

Ahmet M. Elbir, Asmaa Abdallah, Abdulkadir Celik, Ahmed M. Eltawil: **Spatial Path Index Modulation to Combat Beam-Squint Effect in THz-ISAC Systems**. WCNC 2024: 1-6, April 21-24, 2024, Dubai, United Arab Emirates

Ahmed Hussain, Asmaa Abdallah, Ahmed M. Eltawil: **Near-Field Channel Estimation for Ultra-Massive MIMO Antenna Array with Hybrid Architecture**. WCNC 2024: 1-6, April 21-24, 2024, Dubai, United Arab Emirates

Optimization in Predictive Coding Networks. AAAI 2024: 10812-10820, February 20-27, 2024, Vancouver, Canada

Journal Articles

Ahmad Reza Danesh, Haoran Pu, Mahyar Safiallah, An H. Do, Zoran Nenadic, Payam Heydari: **A CMOS BD-BCI: Neural Recorder With Two-Step Time-Domain Quantizer and Multipolar Stimulator With Dual-Mode Charge Balancing**. IEEE Trans. Biomed. Circuits Syst. 18(6): 1354-1370, December, 2024

Rajat Bhattacharjya, Arnab Sarkar, Biswadip Maity, Nikil D. Dutt: **MUSIC-Lite: Efficient MUSIC Using Approximate Computing: An OFDM Radar Case Study**. IEEE Embed. Syst. Lett. 16(4): 329-332, December, 2024

Ping-Xiang Chen, Dongjoo Seo, Nikil D. **Dutt: FDPFS: Leveraging File System Abstraction for FDP SSD Data Placement**. IEEE Embed. Syst. Lett. 16(4): 349-352, December, 2024

Jinyao Xu, Danny Abraham, Ian G. Harris: **Run-Time ROP Attack Detection on Embedded Devices Using Side Channel Power Analysis**. IEEE Embed. Syst. Lett. 16(4): 377-380, December, 2024

Mariam Rakka, Mohammed E. Fouda, Pramod P. Khargonekar, Fadi J. Kurdahi: **A Review of State-of-the-art Mixed-Precision Neural Network Frameworks**. IEEE Trans. Pattern Anal. Mach. Intell. 46(12): 7793-7812, December, 2024

Walaa Amer, Mariam Rakka, Fadi J. Kurdahi: **FPonAP: Implementation of Floating Point Operations on Associative Processors**. IEEE Embed. Syst. Lett. 16(4): 389-392, December, 2024

Yang Ni, Ye Yang, Hanning Chen, Xianhui Wang, Nicholas Lesica, Fan-Gang Zeng, Mohsen Imani: **Hyperdimensional Brain-Inspired Learning for Phoneme Recognition With Large-Scale Inferior Colliculus Neural Activities**. IEEE Trans. Biomed. Eng. 71(11): 3098-3110, November, 2024

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Carles Diaz-Vilor, Amr M. Abdelhady, Ahmed M. Eltawil, Hamid Jafarkhani: **Multi-UAV Reinforcement Learning for Data Collection in Cellular MIMO Networks**. IEEE Trans. Wirel. Commun. 23(10): 15462-15476, October, 2024

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Mariam Rakka, Walaa Amer, Hanning Chen, Mohsen Imani, Fadi J. Kurdahi: **HDRLPIM: A Simulator for Hyper-Dimensional Reinforcement Learning Based on Processing In-Memory**. ACM J. Emerg. Technol. Comput. Syst. 20 (4): 15:1-15:17, October, 2024

Trier Mortlock, Mohammad Abdullah Al Faruque: **Adaptive Data Fusion for State Estimation and Control of Power Grids Under Attack**. IEEE Trans. Ind. Informatics 20(9): 11115-11126, September, 2024

Emad Malekzadeh Arasteh, Rainer Dömer: **Fast Loosely-Timed Deep Neural Network Models with Accurate Memory Contention**. ACM Trans. Embed. Comput. Syst. 23(5): 75:1-75:32, September, 2024

Ping-Xiang Chen, Dongjoo Seo, Changhoon Sung, Jongheum Park, Minchul Lee, Huaicheng Li, Matias Bjørling, Nikil D. Dutt: **ZoneTrace: Zone Monitoring Tool for F2FS on ZNS SSDs**. ACM Trans. Design Autom. Electr. Syst. 29(5): 1-15, September, 2024

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