NAECON 2026 - IEEE National Aerospace and Electronics Conference

Cincinnati, Ohio, USA
9-12 August 2026

IEEE Catalog Number: CFP26NAE-POD
ISBN: 979-8-3195-0668-9

IEEE
Advancing Technology for Humanity

Copyright © 2026, IEEE

All Rights Reserved

Copyright and Reprint Permissions:

Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP26NAE-POD
ISBN (Print-On-Demand):	979-8-3195-0668-9
ISBN (Online):	979-8-3195-0667-2
ISSN:	0547-3578

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA

Phone:	(845) 758-0400
Fax:	(845) 758-2633
E-mail:	curran@proceedings.com
Web:	www.proceedings.com

CURRAN ASSOCIATES INC. proceedings .com

TABLE OF CONTENTS

AI-Powered Interactive Platform for Application-Specific Image and Video Generation 1
Sebastian Irizarry-Villarrubia, Alejandro Mercado-Borrero, Venkataramani Kumar, Mario Rodriguez

Are Large Language Models Consistent Reasoners? 6
Valentina Dragos, Erik Blasch, Anne-Laure Jousselme, J. Pieter de Villiers, Paulo Costa, Kathryn Laskey

Comparing cognitive vulnerabilities of human pen-testers to an LLM 12
Hajime Inoue, Zachary P. Fry, Robert Forties, Deborah S. Katz, Kamilya Salibayeva, Alexander Thorpe Luke French, Ami Eidels, Scott Brown

AI-Assisted Digital Control Firmware for High-Reliability Battery Charging in Autonomous Electronic Systems 18
Abhishek Ekhare

Measurement Design and Leakage Evaluation of AES-128 on Modern Embedded Platforms Using Correlation Power Analysis 22
Yuanning Zuo, Saiyu Ren

RadioShift: A Framework Measuring the Robustness of Lightweight Neural Networks over RF Signals 28
Anagh Mishra, Phu Le, Ryan Evans, Nirnimesh Ghose, Boyang Wang

Bandwidth-Efficient Multi-View 3D Reconstruction via Fine-Grained Region Selection 34
Zhuobin Yuan, Rui Dai, Junjie Zhang

Hardware Design of the 5 Degree of Freedom TinyARM5 Robot: Towards Open-Source Torque-Controlled Desktop Manipulation 40
Nicolas Kosanovic, Andy Tran, Akshay Dave, Jean Chagas Vaz

Optimization and Flight Integration of an Ultralight Electroaerodynamic Ion Thruster for Fixed-Wing Aircraft 45
Alexa Q. Xiang, Aum Shah

On Cost-aware Optimal Information Falsification Strategies for Cyber Deception 51
Abhinav Kumar, Swastik Brahma, Charles A. Kamhoua

A Comparison of Deep Learning Architectures on Domain Generalization for RF Fingerprinting 57
Patrick Farr, Rashmi Jha

Simplified Classification of Human- and LLM-authored Tweets Using Text Features 63
Michael H. Dunn

LLM Agnostic Query Response Personalization via Temporal Knowledge Graph Database 69
Raef Taha, Emily Conway

Experimental Prompt Engineering Using Structured Language Refinement for Attack Path Analysis 75
Jarrod Villareal, Mark Reith, Richard Ott, Christine Schubert Kabban

Development and Experimental Validation of a Reconfigurable Free-Floating Space Manipulator Testbed for In-Space Servicing 81
Daegyun Choi, Diego Quevedo, Rajat Chadha, Donghoon Kim

OLEC: Online-Learning-Based Error Concealment for Robust Point Cloud Streaming 87
Erwin Vargas-Alfonso, Rui Dai, Junjie Zhang

A Computationally Efficient Real-Time Gaze-Based Human–Robot Interface (HRI) for Continuous Industrial Robot Control 93
W. A. H. A. A. E. Behbehani Yasmee, Temesguen Messay-Kebede, Amy Neidhard-Doll

Agentic AI for Material Vulnerabilities and Malware in Microelectronics Supply Chain 99
William S. Clay, William McQuay, Patrick C. Herbert, Francis Wolff, Chris Papachistou

Augmented Penetration Testing via ChatGPT: A Study on the Efficacy of ChatGPT Utilization During Penetration Testing 105
Douglas M Walters, Bin Wang

HAMMER-X: Cross-Generational RowHammer Simulation Asymmetry in Hammulator 111
Hussein Hussein, Yamini Swetha Nadella, Sarita Bista, Akshay "Ak" Raghavendra Kulkarni

2.5-D Decomposition for LLM-Based Spatial Construction 117
Paul Whitten, Li-Jen Chen, Sharath Baddam

From Bee to Basilisk: Cross-Domain Transfer of Learned Satellite Scheduling Policies via Orbital Mapping Functions 123
Matthew Akinmolayan, Hubert Kyerematen-Boateng, Abraham Tadesse-Ewnetu, Darsana Josyula

VigiTrace: Lightweight Multimodal Cross-Camera Identity Tracking for Surveillance Systems 129
Anurag Mallik, Sankarshan Dasgupta, Theus H. Aspiras, Tam V. Nguyen, Vijayan K. Asari

Generative AI-Driven Engineering Deliverables for Cross-Functional Engineering Workflows 135
Owen Colon-Perez, Adhel J Rivera-Rodriguez, Richardo Santiago, Venkataramani Kumar, Mario Rodriguez

Learning-Based Cooperative Maneuver Planning for Multi-Spacecraft Proximity Operations 139
Onur Aytekin, N. Ege Ergin, Kullen Waggoner

More Data Is Not Enough: Neural Network Robustness Under Data Degradation 145
Colton York, Trevor Bihl

LLM-Assisted Flight Intent Inference from Partial Trajectories: Joint Airport Classification and Trajectory Completion 151
Carlos Merlos, Joshua Maraj, Faraz Hussain

A Tiled Multi-Layer Systolic Array for FPGA-Based Neural Network Acceleration 157
Yizhen Liao, Chris Papachristou

Towards a Meta-Model for Integrating Knowledge Graph Extraction Into LLM-Enhanced Engineering Design 163
Scott Harned, Mark Reith, Brett Borghetti

BehaviorGraph: Semantic Bill-of-Behaviors Annotations for GNN-Based Firmware Vulnerability Detection 168
Aidan Dougherty, Mark Reith, Daniel Koranek, Anthony Rose

Utility-Optimized Neuromorphic Orchestration for Real-Time ISR and Multi-Sensor Fusion 174
Kevin D. Johnson, Steven D. Harbour

FlightForge: A Layered Framework and Scenario Specification Standard for Reproducible Synthetic Data Generation Using X-Plane 180
Ahmad Waseem Ghauri, Chad Mourning

Agentic AI for Electronic Design Automation for License Management 186
Patrick C. Herbert, William S. Clay, William McQuay, Francis Wolff, Chris Papachistou

Mixed Signal Cross Node Porting Using Digital Twinning with AI and Analog Time Encoding 192
Soumobrata Ghosh, Steven Bibyk

Learning to Stack: Cube-Stacking Imitation Learning from Virtual Reality Demonstrations 197
Gryffin Reizian, Jordan Dowdy, Jean Chagas Vaz

Python-based Quantum Circuit Testbed for Arithmetic and Logic Operations 202
Daniel C Colon-Rivera, Juan D Guadalupe-Rosado, Venkataramani Kumar, Sreelakshmi Sreeharan Vidya Manian, Vignesh Vimalesan

Rate-Based Optimal Control Augmentation for Small Unmanned Aerial Systems 207
Adam Baruth, Matthew Powers, Shawn Keshmiri

Neuromorphic Orchestration for Efficient LLM Infrastructure via Utility-Optimized Decision-Making 213
Kevin D. Johnson, Steven D. Harbour

A Comparative Study of MPC and Reinforcement Learning Control for Space Robotics Manipulators 218
Patrick Coulon, Charles East, Luke Busse, John Radey, Ou Ma

GridScope: Cross-Domain Root-Cause Interpretation for Mission-Critical Facility Power Incidents 224
Misbahuddin Mohammed, Ahteshamuddin Mohammed, Sameer Syed, Hassan Ahmed Mohammad

Predictive Modeling of G-Induced Loss of Consciousness (GLOC) Using Physiological Data and Machine Learning 230
Lucas R. Owen, Joshua B. Smith, Eunjun Shin, Sarah Bolton

Autonomous Vehicle Trajectory Tracking in the Presence of Malicious Packet Drops 236
Somtochukwu M. Oguchienti, Yousif H. Alhajji, David R. Nelson, Joey Sun, Stanislaw H. Żak

Physics-Structured Multi-Scale Feature Layer for Autonomous Rotorcraft Near-Ground Model Identification and Simulation 242
Le The Anh Pham, Thanh Tung Le, Phuoc Thanh Binh Tong, Vu Hop Tran, The Anh Nguyen

Machine Learning Framework for Neutron Reliability Assessment of 1200V and 1700V SiC Power Devices 248
Moinuddin Ahmed, Christopher Stankus, Stephen Arthur Wender, Kranti Gunthoti

Steatosis Segmentation Using Weakly Supervised Deep Learning 254
Shamima Nasrin, Md Zahangir Alom, M M Shaifur Rahman, Simon Khan, Tarek M. Taha

Understanding Fault Tolerance of Adversarially Robust Pruned Models 259
Manali Dangarikar, Cory Merkel

Sparse Residual Component Selection for Low-Complexity CSI Feedback in Massive MIMO 265
Prakash Heramil, Hongyu Wu, Jielun Zhang, Enoch Hwang, Fuhao Li

Performance Changes in Ni/Au and Ni/Pt/Au-Gated AlGaN/GaN HEMTs After High-Temperature Exposure 271
Branen Bussey, Nickolas Sepelak, Leonard Duncan, Biddut Sarker, Stefan Nikodemski, Kyle Liddy Ahsan Mian, Andrew Green, Ahmad E. Islam

Digital Twins for Spacecraft Launches: Trends and Future Directions 277
Nicole Motta, Lynn Vonderhaar, Omar Ochoa

Energy-Based Physics-Informed Form Finding for Clustered Tensegrity Structures 283
Jing Qin, Muhao Chen

Local Manifold Coverage Deficit for Novel Attack Discovery in Adaptive Intrusion Detection Systems 289
Daniel Perez Fiadzeawu, Ankit Tiwari, Hongyu Wu, Jielun Zhang, Fuhao Li

LLM-Constructed Cybersecurity Training Ranges 295
Bernard Dzogbenuku, Maj Anthony Rose, Mark Reith, Stephen Dunlap

Attacking an Infrared Target Segmentation Model 300
Katelyn Atkinson, Kenneth Hopkinson, Mark Reith, Bryan Steward, Michael Dexter

Detecting the Undetectable: Passive Electromagnetic Motor Signature Analysis for Counter-UAS 306
Jun-Seop Shin, Jae-Hyun Park, Kyung-Tae Kim

Resource-Aware Adaptive Radar Anti-Jamming via Reinforcement Learning over Heterogeneous Countermeasures 312
Yajie Bao, Sixiao Wei, Zijiao Tian, Zhengyang Fan, Erik Blasch, Khanh Pham, Simon Khan, Genshe Chen

Enhancing SAR ATR Distribution Shift Decomposition with Operating Conditions 318
Matthew Scherreik

20 MeV Proton Irradiation of 200µm n-type Gallium Oxide Schottky Diodes 324
Christopher Stankus, Moinuddin Ahmed, David Smith, Noah Kalicki, Spencer Borbas Daniel Santiago-Gonzalez, Claus MÜller-Gatermann, Jacob Leach

A Power-Efficient, Reconfigurable Cascaded-Beta Capacitively Coupled Chopper Amplifier for Precision Systems 329
Mohammed Zakariah, Emmanuel Amankrah, Patricia Tutuani, Randall Geiger

Real-Time Spacecraft Interfacing and Telemetry Integration in Basilisk-Based Satellite Constellation Simulation 334
Abraham Ewnetu, Trinity Bowling, Matthew Akinmolayan, Yao Houkpati, Kenneth Mbale, Darsana Josyula

Comparing Different Teleoperation Input Devices for Collecting and Evaluating Robotic Imitation Learning Policies 340
Andy Tran, Nicolas Kosanovic, Akshay Dave, Jean Chagas Vaz

Model-Based Control for Deploying a Servicing Deputy via a Space Manipulator 345
Sarah Hudson, Donghoon Kim

Rate Equation Model of an All-Optical Proteretic Bistable Device 351
Azeemuddin Syed, Ashish Bhatt, M.R. Sayeh

Can Foundation Models See From Above? A Zero-Shot Evaluation of SAM 3 on Aerial Drone Imagery 355
Akshita Vashisht

Evaluation of UAV Network Service Continuity Using a Hybrid Simulator Framework 360
Fadi T. Abumansour, Christos A. Papachristou

Finding Firmware Vulnerabilities for Tightly Coupled Microcontrollers Using LLMs 365
Chenge Zhang, Yang Li, Francis Wolff, Christos Papachristou

CRYPTIC: CRYptographic FPGA Targeting through Intelligent Corruption 371
Christopher Josiah Stance, Mani Rupak Gurram, Daniel Ifeoluwa Idowu
Akshay "Ak" Raghavendra Kulkarni

JADA: Joint Adaptive Data Acquisition for PUF Modeling 376
Josemaria Chukwuemeka Osuorah, Daniel Ifeoluwa Idowu, Oladapo Akintoye Ajike, Adeola Taife Aderinto
Akshay "Ak" Raghavendra Kulkarni, Mohamed Chouikha, Annamalai Annamalai

Polymorphic Logic Based Leakage Diversification for Power Side-Channel Resilience 382
Haimanti Chakraborty

Configurable Inter-Tier Connectivity for Secure 3D IC Design 388
Haimanti Chakraborty

HEART-Synth: A Synthetic Resident-Patient Dialogue Dataset for Medical Error Disclosure Assessment 394
Ashutosh Ghimire, Fathi Amsaad, Sherry Adkins

From Human Demonstrations to Robotic Actions: Real2Sim Verification of a Diffusion Policy for Autonomous Robotic Manipulation 400
Neal D'Andrea, Joshua Wachs, Abdou Wade, Ou Ma, Raj Bhatnagar

Reconfigurable Multi-Channel Graphene Microring Modulator for WDM Optical Interconnects 406
Ramaa Saket Suri, Mukesh Kumar, Maher E. Rizkalla, John J. Lee

Ferroelectric Behavior of Hafnium Oxide for Integrated Photonic Non-Volatile Memory Devices 412
Heidi Fox, Abdul Ndao, Asela Perera, Sheilah M. Njoka, Phone Min Thant, Swapnajit Chakravarty

From Compute Scaling to Decision Optimization: Neuromorphic Architectures for Sustainable AI Infrastructure 416
Steven D. Harbour, Kevin D. Johnson, Gnana Silaparasetti, Ehren M. Ehmann, Alexander Bermudez
Justin Scheitlin, Pritika Toutam, Amir Hossein Bagheri, Kegan Wilson

A Stateless Reusable Crossbar Accelerator for Neural Network Inference 422
Chris Papachristou, Jaber Aloufi

Subregion Electrical Impedance Tomography analysis for Damage Assessment 428
Erik Blasch, Ngoc Nam Pham, Jan Leuchter

PyDopplerSim: A Physical-Layer Simulator for Concurrent Transmitter-Receiver Doppler Motion 434
Kaiden Delsing, Kenneth Hopkinson

Modeling Humans and Agents in Cyber Security 440
Mark Reith

Optimizing Traffic Using Real-Time Information 446
Nikhil R. Hopkinson-Jain

Loco-Loco-RL: Low-Cost Terrain Mapping for Humanoid Locomotion with Reinforcement Learning 452
Jordan Dowdy, Gryffin Reizian, Jean Chagas Vaz

Analyzing Structural and Semantic Barriers to Automated Adversary Emulation in Active Directory 458
Anita Ding, Anthony Rose, Mark Reith

Reliability Characterization of Titanium-Doped Indium Oxide AOS FETs for AI-Enabled Autonomous System Electronics 464
David Weaver, Hao-Wen Kan, Ryan Whalen, Swapnajit Chakravarty

Temperature-Dependent Transport Characteristics of 2D MoS_2 Channel FETs Grown Using Salt-Based Precursors 470
Andrew Jones, Greg Muha, Vamshi Gogi, Sujoy Ghosh, Kyungnam Kang, Kai Xiao, Sumner Harris Rashmi Jha

Design and Analysis of a Capacitorless Full-Bridge DC–DC Converter Using a Solid-State Power Filter 476
Haitham Kanakri, Euzeli C. Dos Santos, Maher Rizkalla