30th Annual CASIS Workshop 2026

Day 1 - Wednesday, June 24

Time		Program
Start	End	
7:30	17:30	**Registration**
8:00	8:10	Welcome CASIS Director Ruben Glatt (LLNL)
		Non-Destructive Evaluation (Seemeen Karimi, Harry Martz)
8:10	8:30	Science and Technology on a Mission: An Overview of LLNL and The Nondestructive Characterization Institute **Featured Speaker: Harry Martz (LLNL)**
8:30	8:40	High-Energy Tomographic Scanner for Inspection of Contraband in Air Cargo **Joseph Bendahan (LLNL)**
8:40	8:50	Lab to Fab: High-Resolution 3D X-Ray at Production Speeds **Jeff Gelb (Applied Materials)**
8:50	9:00	Using resonant ultrasound spectroscopy to characterize defects in manufactured metal parts **Jordan Lum (LLNL)**
9:00	9:10	Distributed Stochastic Optimization of a Neural Representation Network for Time-Space Tomography Reconstruction **K. Aditya Mohan (LLNL)**
9:10	9:20	Critical Mineral Assay at 300 Tons per Day: An NDE Gap in Secondary Feedstocks **Jorge Osio-Norgaard (PHNX Materials, Inc)**
9:20	9:30	Compact Multi-GSa/s Waveform-Digitizing ASICs for Single-Shot Diagnostics and High-Channel-Count Detector Readout **Benjamin Rotter (Nalu Scientific)**
9:30	9:40	X-ray Computed Tomography and Machine Learning **John C. Miers (Sandia National Laboratories)**
9:40	10:00	Automating X-ray Microscopy for Self Driving Labs with Agentic Controllers **Featured Speaker: Nathan Johnson (CARL ZEISS RESEARCH MICROSCOPY SOLUTIONS)**
10:00	10:30	**Coffee Break + Poster Session**
		AI / Machine Learning (Phan Nguyen, Kowshik Thopalli)
10:30	10:50	AI at LLNL **Featured Speaker: Peer-Timo Bremer (LLNL)**
10:50	11:00	Learning Nuclear Cross Sections Across the Chart of Nuclides with Local-Context Transformers **Hongjun Choi (LLNL)**
11:00	11:10	Edge Machine Learning for Smart Detectors with Embedded FPGAs **Julia Gonski (SLAC)** Amar Saini (LLNL)
11:10	11:20	LanceDB for High-Performance Image Search: A Multimodal Vector Database Approach **Arunkumar Mathiyazhagan (Amazon)**
11:20	11:30	Protocol-Level Efficiency in Agent Communication: An Empirical Comparison of NLIP and A2A **Ranjan Sinha (IBM)**
11:30	11:40	TBD **Amar Saini (LLNL)**
11:40	11:50	Tensor Methods: A Unified and Interpretable Approach for Material Design **Shaan Pakala (University of California, Riverside)**
11:50	12:00	Machine Learning and Artificial Intelligence applications in the HPC4EI Program **Vic Castillo (LLNL)**
12:00	12:50	**Lunch Break sponsored by IEEE Signal Processing Society + Poster Session**
		Robotics & Automation (Aldair Gongora, Abhik Sarkar)
12:50	13:10	Robotics and Automation at LLNL **Featured Speaker: Aldair Ernesto Gongora (LLNL)**
13:10	13:20	Automated Photochemical Screening Using an Intelligent Robotic Platform **Sarah Finnegan (University of Wisconsin Madison)**
13:20	13:30	Robotic Automation for Polymer Innovation and Discovery (RAPID) **Michael Ford (LLNL)**
13:30	13:40	Lab Automation and Microfluidics for Machine Learning-Driven Biomanufacturing **Kshitiz Gupta (LLNL)**
13:40	13:50	Designing and Applying a Robotic Platform for Automated Polymer Aging (PolyAge) **Karly Knox (LLNL)**
13:50	14:00	Integrating Robotics and Automation into High-Throughput Polymer Science Workflows **Rob Learsch (LLNL)**
14:00	14:10	Studying-Polymers-On a-Chip: Automated, high-throughput screening of polymer membranes for diverse energy applications **Johanna Schwartz (LLNL)**
14:10	14:20	Automated Screening to Build Metalloprotein Datasets for Critical Metal Recovery **Patrick Diep (LLNL)**
14:20	14:30	Global Security Implications of Neuromorphic Imagers for Robotics and Automation **David Mascarenas (Los Alamos National Laboratory)**
14:30	15:00	**Coffee Break + Poster Session**
		Remote Sensing, Non-Invasive Imaging & Inverse Problems (Sean Lehman, Viacheslav Li)
15:00	15:20	Plenoptic Radiation Imager for Spectroscopic and Directional Mapping **Featured Speaker: Felicia Sutanto (LLNL)**
15:20	15:30	Localized Electrochemical Metal 3D Printing **Abraham Akinin (LLNL)**
15:30	15:40	Learning Forward and Inverse Operators for Complex Atmospheric Trace Gas Emission Source Localization **Derek Hollenbeck (University of California Merced)**
15:40	15:50	Superresolution Imaging of the Urban Subsurface Environment Using Telecommunications Fiber Optic Sensors **Eric Matzel (LLNL)**
15:50	16:00	Operational Characterization of LAPPD Gen 2: From Readout to Simulation **Shang-Wen Stradleigh (University of Rochester)**
16:00	16:10	Tomographic Volumetric AM with Coupled Differentiable Ray-Optical and Photochemical Optimization using Dr.TVAM **Felix Wechsler (EPFL)**
16:10	16:30	Obsessive Second Order System Study: A simple question's answer went rogue **Featured speaker: Sean K. Lehman (LLNL)**
		30 years CASIS workshop (Dave Chambers)
16:30	16:45	Leadership Address **Kim Budil, Anup Singh, Rob Sharpe**
16:45	17:30	CASIS through the years **Dave Chambers (LLNL)**
16:45	17:30	CASIS Panel (Noah Pfluegler) **Dave Chambers, Jim Candy, Randy Roberts, Steve Azevedo**
17:30	19:00	**Happy Hour**

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30th Annual CASIS Workshop 2026

Day 2 - Thursday, June 25

Time Start	Time End	Program
7:30	17:00	**Registration**
8:00	8:10	Welcome CASIS Director Ruben Glatt (LLNL)
		Robotics & Automation (Aldair Gongora, Abhik Sarkar)
8:10	8:30	TBD **Featured Speaker: Amit Roy Chowdhury (UC Riverside)**
8:30	8:40	From Language to Action: Orchestrating Robots and Instruments with Off-the-Shelf LLMs **Henry Williams (LLNL)**
8:40	8:50	Dual-Sensing Strategies for Pneumatic Soft Grippers in Delicate Manipulation Tasks **Teodoro Lima (UC Merced)**
8:50	9:00	Autonomous Defect Detection and Process Optimization in Binder Jet Printing **Brennan Birn (University of California Berkeley)**
9:00	9:10	Computer Vision-Guided Robotic Fill-Tube Alignment and Assembly for Fully 3D Printed NIF Capsules **Sydney Gothenquist (LLNL)**
9:10	9:20	Multimodal LLMs as Oversight Tools in Robotic Laboratories **Shahryar Mooraj (LLNL)**
9:20	9:30	Deployable and Formally Verified Robotic Mission Planning using Natural Language Driven Behavior Trees **Marcos Zuzuarregui (UC Merced)**
9:30	9:40	Physics-informed in-silico optimization for structural design and 3D printing of electromag. interference shielding materials **Christopher Spezzano (UC Berkeley)**
9:40	9:50	MatGym: A Framework for Human–AI Co-Design in Architected Materials Research **Rodrigo Telles (LLNL)**
9:50	10:00	Industrial Automation Enabled Self-Driving Workflow for Rapid Materials Exploration **Mason Sage (LLNL)**
10:00	10:30	**Coffee Break + Poster Session**
		National Ignition Facility (Eugene Kur, Christopher Miller)
10:30	10:50	Electromagnetic Interference Testing and Protection of Electronics for Z-pinch X-ray Diagnostics **Featured Speaker: Anne Garafalo (Pacific Fusion)**
10:50	11:00	Memory-Augmented Few-Shot Segmentation Mask Generation via SNAP: Smart Neural Annotation Pipeline **Md Khayrul Islam (LLNL)**
11:00	11:10	Toward ML-Driven ICF Experiment Design at NIF with Exascale Optimization on El Capitan **Bogdan Kustowski (LLNL)**
11:10	11:20	From Scripts To AI Agents, Scaling Scientific Campaigns **M. Giselle Fernandez-Godino (LLNL)**
11:20	11:30	Closed-Loop Autonomy and Workflow Integration in High-Repetition-Rate HED Experiments **Abhik Sarka (LLNL)**
11:30	11:40	Igniting the Future through High-Precision, High-Throughput Additive Manufacturing **Dongping Terrel-Perez (LLNL)**
11:40	12:00	Plasma probing and single-shot crossed-beam energy transfer measurements using a broadband probe **Featured Speaker: Andrew Longman (LLNL)**
12:00	13:00	**Lunch Break sponsored by IEEE Computer Society + Poster Session**
		Quantum Sensing & Quantum Computing (Kristi Beck)
13:00	13:20	Quantum at LLNL **Featured Speaker: Kristin Beck (LLNL)**
13:20	13:30	Space Ghost: Quantum Imaging from Orbit **John Cortes (LLNL)**
13:30	13:40	STEM Characterization of Alternating Bias Assisted Annealing Influences on the Structure of Amorphous Alumina in Superconducting Quantum Resonators **Nicholas Hagopian (University of Wisconsin Madison)**
13:40	13:50	Non-equilibrium Dynamics of Two-level Systems directly after Cryogenic Alternating Bias **Vito Iaia (LLNL)**
13:50	14:00	Developing and Characterizing the 3D Quantum Microscope **Audrey A. Eshun, Ted Laurence (LLNL)**
14:00	14:10	Non-equilibrium energy flow and correlated error mechanisms in quantum and cryogenic devices **Sergey Pereverzev (LLNL)**
14:10	14:20	Second quantization model of the Vlasov–Poisson system for quantum computation **Michael May (LLNL)**
14:20	14:30	Quantum Entanglement and Magic in Nuclear Processes **Saurabh V. Kadam (LLNL)**
14:30	14:40	Adding Gravity Gradiometry to Other Sensor Modalities **Sean Walston (LLNL)**
14:40	15:00	New developments in Quantum Sensing with Electron and Nuclear Spins **Featured Speaker: Ashok Ajoy (UC Berkeley)**
15:00	15:30	**Coffee Break + Poster Session**
		AI / Machine Learning (Phan Nguyen, Kowshik Thopalli)
15:30	15:50	Targeted Unlearning with Single Layer Unlearning Gradient **Featured Speaker: Salman Asif (University of California Riverside)**
15:50	16:00	From Missing Concepts to Weak Steering: Refining Sparse Autoencoders **Akshay Kulkarni (UCSD)**
16:00	16:10	Quality Gates for AI: A Unified MLOps Framework for Trustworthy, Cloud-Native ML Systems **Raja Rao Budaraju (Oracle America Inc)**
16:10	16:20	Scaling inverse folding with protein-protein interaction and predicted structures **Sudeep Sarma (LLNL)**
16:20	16:30	HLaSDI: Reduced order modeling for higher order dynamics **Robert Stephany (LLNL)**
16:30	16:40	Graph Grammar Learning for Automatic Circuit Generation **Qing Wang (HKU)**
16:40	16:50	Task-Aware Optimization of Reasoning Data Mixtures for Large Language Model Post-Training **Gautam Singh (LLNL)**
16:50	17:00	**Closing**

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