29th Annual CASIS Workshop 2025

Day 1 - Wednesday, May 21

Time Start	Time End	Program
7:30	8:15	**Registration**
8:15	8:30	Welcome CASIS Director Ruben Glatt (LLNL)
8:30	8:45	Leadership Address Anup Singh, Principal Associate Director Engineering
		Remote and Non-invasive Sensing [Sean K. Lehman, Kaden Foster]
8:45	9:15	A quick review of LLNL research in time-reversal signal processing **Featured Speaker: Dave Chambers (LLNL)**
9:15	9:30	Modal Analysis and Testing of a Cantilever Beam Kaden Foster (LLNL)
9:30	9:45	Fast Photosensors and Readouts, and their Applications in Neutrino Non-Invasive Sensing Viacheslav Li (LLNL)
9:45	10:00	ArcNet: Zero Power Sensor for Nuclear Safeguards Abhinav Parak (LLNL)
10:00	10:15	Surprising Possibilities for Cell Functional Imaging Sergey Pereverzev (LLNL)
10:15	10:45	**Coffee Break + Poster Session**
		Machine Learning / Artificial Intelligence [Brian Bartoldson, Shusen Liu]
10:45	11:00	Stochastic Optimal Control as Applied to Human Decision Making Alexx Perloff (LLNL)
11:00	11:15	Incremental Neural Controlled Differential Equations for Path-Dependent Material Behavior Shabnam Semnani (UC San Diego)
11:15	11:30	Non-Linear Signal Processing with Implicit Neural Representations Vishwanath Saragadam (UC Riverside)
11:30	11:45	Spectrogram Pattern Analysis and Detection Engine for Automated, Unsupervised Signal Discovery Garrett Stevenson (LLNL)
11:45	12:00	AI-Powered Support for Virtualization: Optimizing Resource Management Raja Budaraju (Oracle)
12:00	12:15	Data sketches to compute device reach Chandrashekar Muniyappa (Upgrade)
12:15	13:00	**Lunch Break sponsored by IEEE Signal Processing Society**
		Non-Destructive Evaluation [Seemeen Karimi]
13:00	13:30	How Third-Parties Advanced Explosives Detection **Featured Speaker: Harry Martz (LLNL / UC San Diego)**
13:30	13:45	Infrared Imaging for Non-Destructive Evaluation, Aging and Reliability Testing Mihail Bora (LLNL)
13:45	14:00	Small Angle X-Ray Scattering Capability at LLNL Tom Braun (LLNL)
14:00	14:15	Bias Estimation in Maximum Gradient Segmentations Nikola Draganic (LLNL)
14:15	14:30	Exploring X-Ray CT for Electronics Assurance Isaac Seetho (LLNL)
14:30	14:45	High-speed X-ray and Microwave Interferometry to Inform Explosive Safety Andrew Townsend (LLNL)
14:45	15:00	Exploring Density Gradients in NaCl Tubes via Dual-Energy CT Chen Yee (LLNL)
15:00	15:30	**Coffee Break + Poster Session**
		Quantum Sensing & Quantum Computing [Kristi Beck, Sayan Patra]
15:30	16:00	Advancing Quantum Science and Technology at LLNL **Featured Speaker: Kristin Beck**
16:00	16:15	Microwave Circulators Utilizing Coupled Quantum Anomalous Hall Insulators and Resonators Dongxia Qu (LLNL)
16:15	16:30	Superconducting Qubit Decay and Dephasing Correlated with Radiating Events Alessandro Castelli (LLNL)
16:30	16:45	Tensor train methods for pulse-level emulation of quantum computers N. Anders Petersson (LLNL)
16:45	17:00	Entangled-Photon Coincidences to Measure Fluorescence Lifetimes without Pulsed Laser Source Audrey Eshun (LLNL)
17:00	...	**Closing**
17:30	...	**No-host Happy Hour (???)**

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29th Annual CASIS Workshop 2025

Day 2 - Thursday, May 22

Time Start	Time End	Program
7:30	8:00	**Registration**
8:00	8:15	Welcome CASIS Director Ruben Glatt (LLNL)
		National Ignition Facility [Brad Funsten, M.A. Mort]
8:15	8:45	Combining imaging and nuclear diagnostic data using ML in ignition experiments at the NIF **Featured Speaker: Daniel Casey (LLNL)**
8:45	9:00	Lights, cameras, digital image correlation at the National Ignition Facility—The Sequel! Charles Brown (LLNL)
9:00	9:15	VISAR Target Qualification System Toby Miller (General Atomics)
9:15	9:30	Surprising Possibilities for Cell Functional Imaging Sergei Mistyuk (LLNL)
9:30	9:45	Deployment and Qualification of Time Resolved Opacity Spectrometer for Iron Opacity Campaign Kathy Opachich (LLNL)
9:45	10:00	A multi-modal diffusion model for optimizing ICF design Michael Jones (LLNL)
10:00	10:30	**Coffee Break + Poster Session**
		Machine Learning / Artificial Intelligence [Brian Bartoldson, Shusen Liu]
10:30	10:45	From Perception to Planning Through Robust Scene Understanding Amit Roy-Chowdhury (UC Riverside)
10:45	11:00	An Evaluation of Vision Language Models for High-Resolution Satellite Images Arthur Williams (LLNL)
11:00	11:15	Analytic Image Analysis George Chapline (LLNL)
11:15	11:30	Robust multimodal learning Md Kaykobad Reza (UC Riverside)
11:30	11:45	Deep Learning for Real-Time Signal Processing: Emphasis on Audio and Assistive Applications Shrishail Baligar (UC Merced)
11:45	12:00	Breaking Dimensional Barriers: Discovering Differential Equations in Complex Systems Siyuan Xing (California Polytechnic State University)
12:00	12:45	**Lunch Break sponsored by IEEE Computer Society**
		Multiphysics Systems and Advanced Manufacturing [Yeping Hu, Shahryar Mooraj]
12:45	13:15	HPC4EI: Bringing National Lab Scale Modeling and Simulation US Industry **Featured Speaker: Aaron Fisher (LLNL)**
13:15	13:30	SciML Surrogates for Real-Time Prediction and Control in Complex Manufacturing Systems Vic Castillo (LLNL)
13:30	13:45	Virtual Volumetric Additive Manufacturing Martin de Beer (LLNL)
13:45	14:00	Accelerating modeling of laser energy deposition, microstructure evolution and part distortion Saad A. Khairallah (LLNL)
14:00	14:15	M4GN: Micro–Meso–Macro Mesh-based Graph Network for Dynamic Simulations Bo Lei (LLNL)
14:15	14:30	Robotic Monitoring: Automated Multi-Modal Virtual Inspection Haichao Miao (LLNL)
14:30	14:45	Real-Time Hybrid Physical-Numerical Simulation for Multi-Physic Systems Yun Ni (Stanford University)
14:45	15:00	Toward adaptive manufacturing Liliana Dongping Terrel-Perez (LLNL)
15:00	15:30	**Coffee Break + Poster Session**
		Machine Learning / Artificial Intelligence [Brian Bartoldson, Shusen Liu]
15:30	16:00	Hiding secrets in AI-generated content **Featured Speaker: Christian Schroeder (University of Oxford)**
16:00	16:15	Design and Deployment of Marketing Performance Advisor using Agentic AI Ranjan Sinha (IBM)
16:15	16:30	Agent Path Optimizations with PADL on 2D Grids Maria Demireva (LLNL)
16:30	16:45	Giving Agents the World: Building Environments with GISKARD Matthew Durbin (LLNL)
16:45	17:00	Paraview-MCP: Autonomous Visualization Agents with Direct Tool Use Shusen Liu (LLNL)
17:00	...	**Closing**

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