ModSim 2025– Day One, August 13, 2025	
7:30-8:00 am	**Registration and Welcome to ModSim**
Introductions and Keynote Speaker	
8:00-8:30 am	Introduction to the 2025 ModSim Workshop – **Adolfy Hoisie**
8:30-9:15 am	**Keynote Speaker; Norm Jouppi - Architectures for the AI Era, from a TPU to the Extreme Scale**
Session: **Novel ModSim Techniques** – *Session Lead:* **Jason Lowe-Power**	
9:15-9:45 am	**Tushar Krishna** - *Chakra + ASTRA-sim: An open ecosystem for advancing benchmarking and co-design for diverse AI supercomputers*
9:45-10:15 am	**Pradip Bose** - *ModSim Challenges in Secure and Resilient AI System Design*
10:15-10:45 am	*Break*
10:45-11:15 am	**Shashank Subramanian:** *Performance Modeling and System Design Insights for AI Foundation Models*
11:15-11:45 am	**Lingda Li:** *PerfVec: Generalizable Representation Learning for Performance and Energy Modeling of Computer Systems*
11:45am-12:15 pm	**Andreas Gerstlauer:** *Hierarchical Modeling and Exploration of Large-Scale Superconducting Supercomputer Architectures*
Lunch Pickup: **12:15 – 1:15 p.m.**	
1:15-2:30 p.m.	*Panel Topic:* **Metrics for the AI Era**: *Moderator*: **Rob Hoekstra and Ian Karlin** *Panel Participants*: **Jens Domke, Al Geist, Jose Moreira, Richard Vuduc,**
2:30-3:00 p.m.	*Break*
Session: **Revolutionary Technologies** – *Session Lead:* **Jason Lowe-Power**	
3:00-3:30 p.m.	**Xulong Tang** - *Towards High-Fidelity, Scalable, and Accessible Quantum Computing Systems*
3:30-4:00 p.m.	**Brad Aimone** - *Is Neuromorphic Computing Ready for Prime Time?*
4:00-4:30 p.m.	**Michael James** – *Scaling Physics Simulations on AI Hardware: ModSim on the Cerebras Wafer-Scale Engine*
4:30–5:00 p.m.	**Marco Scrbak** - *Power-Aware Performance: Modeling for the Physical Limits of Extreme Computing*
5:00-5:10 p.m.	*Closing Remarks*
	End Day One

ModSim 2025 – Day Two, August 14, 2025	
8:20-8:30am	**Opening Remarks – Adolfy Hoisie**
Session: **Workloads and Workflows in the AI Era** – *Session Lead:* **Adolfy Hoisie**	
8:30-9:00am	**Timo Bremer -** *A National Security AI Platform: driving accelerated science with AI*
9:00-9:30am	**Dan Ernst -** *How Should We Measure Supercomputers Targeting Modern Complex Science?*
9:30-10:00am	**Arvind Ramanathan -** *Integrating generative AI, multi-scale modeling and simulations with experiments-in-the-loop for biotherapeutic design*
10:00-10:30am	*Break (30 minutes)*
10:30-11:45am	*Ad-Hoc Panel*: **To be Announced –** *Moderator*: **Bruce Childers**
Lunch Pickup: **11:45 am - 12:45 pm**	
Contributed Presentations Session: – RAPID-FIRE: Session Leaders: **Martin Schulz**	
12:45-12:55pm	*SimAI-Bench: A Benchmarking Suite for AI-coupled HPC Workflows: Harikrishna Tummalapalli*
12:55-1:05 pm	*Concorde: Fast and Accurate CPU Performance Modeling with Compositional Analytical-ML Fusion: Arash Nasr-Esfahany*
1:05-1:15 pm	*Virtual Benchmarking for HPC Systems Using ExaDigiT and Calculon: Srishti Kalepu*
1:15-1:25 pm	*Simulation of Bit-Serial Digital Processing-In-Memory Systems: Siyuan Ma*
1:25 -1:35 pm	*Leveraging Deep Learning for Architectural Cache Simulation: Pranjali Jain*
1:35-1:55 pm	*Break (20 minutes)*
1:55-2:05 pm	*GenZ: Simulating AI Platform Architectures for Distributed Inference of LLM - Ritik Raj*
2:05-2:15 pm	*Agile Design Space Exploration Framework via Representation-based Performance Modeling: Kuan-Chieh Hsu*
2:15-2:25 pm	*Q-DREAMER: A Quantum-aware Dynamic Runtime and Execution Adaptive Middleware Emulator for Quantum–HPC Workflows – Shantenu Jha*
2:25-2:35 pm	*NoX: Technology-Aware Hierarchical Interconnect Modeling for Scalable 2.5D/3D Heterogeneous Chiplet Architectures: Jiho Kim*
2:35-2:45 pm	*Twins in Action: Symbiotic Simulation for Intelligent HPC Scheduling: Zhiling Lan*
2:45-3:05 pm	*Break (20 minutes)*
3:05-3:15 pm	*Simulation-Driven Recommendation Framework for Scalable Distributed AI Training: Adrian Perez Dieguez*
3:15-3:25 pm	*AI Data Center Power Curtailment - Potential, Challenges, and Implementation: Max Hawkins*
3:25-3:35 pm	*SCALE-SIM v3: A modular cycle-accurate systolic accelerator simulator for end-to-end system analysis: Ritik Raj*
3:35-3:45 pm	*A Gradient Descent based Design Space Exploration Framework for Multi-Level Hierarchical AI Accelerator Systems: Sairam Sri Vatsavai*
3:45-3:55 pm	*Fluid Modeling for HPC Networks: Jason Liu*
4:00-5:00 pm	**Poster Q&A Session**
4:00–6:00 pm	**Reception with Refreshments**

ModSim 2025– Day Three, August 15, 2025	
8:15-8:30 a.m.	*Dr. Sudhakar Yalamanchili – White Paper AWARD Presented by Hyesoon Kim*
Session: **Extreme Computing beyond Exascale** *– Session Lead:* **Hyesoon Kim**	
8:30-9:00 a.m.	**Keren Bergman -** *Sub-pJ/bit Optical Connectivity for AI Clusters*
9:00-9:30 a.m.	**Satoshi Matsuoka** *- From Divergence to Deep Convergence: Charting a Shared Future for Modeling, Simulation, and AI*
9:30-10:00 a.m.	**Heidi Poxon** *- Post Exascale: Workloads and Emerging Trends*
10:00-10:30 a.m.	**Larry Kaplan -** *Zetta-what and Zetta-how: What comes next after Exascale?*
10:30-11:00 a.m.	***Break***
11:00am - 12:15pm	*Panel Topic:* **Future of System Architecture;** *Moderator:* **Shekhar Borkar and Lizy John;** *Panel Participants*: **James Ang, Srilatha (Bobbie) Manne, Rajit Manohar, John Shalf, Jeff Vetter**
12:15-12:30p.m.	**Workshop Wrap-up**