3rd Annual
Ultrascale Systems Research Center (USRC) Symposium
August 6, 2018
JR Oppenheimer Study Center ("LANL Library") – 03-0207
Jemez & Cochiti Rooms, 2nd floor

Introduction

9:00 – 9:05	Welcome	Lissa Baseman LANL Staff
9:05 – 9:15	USRC Overview	Nathan DeBardeleben USRC Co-Executive Director, LANL Staff

Student Research Talks I

9:15 – 9:37	Modeling High Performance Computing System Log Messages for Early Prediction of Job Outcome	Alexandra DeLucia Post-baccalaureate, LANL Mentor: Lissa Baseman
9:37 – 10:00	Using Neural GPUs for Algorithm Learning	Vanessa Job PhD Student, Univ. of New Mexico Mentor: Laura Monroe

Break

10:00 – 10:30 Refreshments Provided by New Mexico Consortium (NMC)

Student Research Talks II

10:30 – 10:52	Generalizable Job Scheduling Predictions	Michael Kuchnik PhD Student, Carnegie Mellon Univ. Mentor: Lissa Baseman
10:52 – 11:15	Scalable In-Situ Indexing with a DeltaFS Indexed Massive Directory	Qing Zheng PhD Student, Carnegie Mellon Univ. Mentor: Brad Settlemyer

Keynote

11:15 – 12:00	Pulse-gating for Information Transfer in Neural Systems	Andrew Sornborger CCS-3, LANL Staff

Lunch

12:00 – 13:00 Lunch Provided by New Mexico Consortium (NMC)

Student Research Posters

13:00 – 14:00 Odd-Numbered Posters

14:00 – 15:00 Even-Numbered Posters

An Equal Opportunity Employer / Operated by Los Alamos National Security, LLC for the U.S. Department of Energy's NNSA
LA-UR-18-27178

Break

15:00 – 15:30 Refreshments Provided by New Mexico Consortium (NMC)

Student and Visitor Research Talks

15:30 – 15:52	Optimization of Collective Communication in OpenSHMEM	Srđan Milaković PhD Student, Rice University Mentor: Howard Pritchard
15:52 – 16:14	UNITY: A Foundation for Automated Placement of Data	Doug Otstott PhD Student, Arizona State University Mentors: Michael Lang, Latchesar Ionkov
16:14 – 16:36	Parallel Simulation of Mosquito-Borne Diseases	Wenbin Lu PhD Student, Stony Brook University Mentor: Howard Pritchard
16:36 – 17:00	PPT-GPU: Scalable and Accurate Performance Prediction of Graphics Processing Units	Hameed Badawy Assistant Professor, Klipsch School of Electrical and Computer Engineering, New Mexico State University Affiliate Faculty, NMC/LANL

Wrap-up

17:00 – 17:05 Closing Remarks — Lissa Baseman, LANL Staff

Dinner

18:15 Meet for dinner at La Cocina (not provided, RSVP to Lissa greatly appreciated)

Acknowledgements

Thank you to NMC for providing refreshments!

Helpful Information

- **Parking:** in the research lot, off to the right before the LANL gate, or on the LANL campus either adjacent to the Research Park building or across the street in the parking structure.
- **Jemez & Cochiti Rooms :** Inside the Research Library, 2nd floor. LANL badges are required. This is the brown building across the street from the main Research Park Building, near the parking structure.
- **Dinner at La Cocina:** 415 W Santa Clara Bridge Road, Espanola, about a 30 minute drive

USRC Student Posters

Number	Title	Presenter
1	A Data-Driven Approach to Resiliency	Neil Agarwal Undergraduate, UC Berkeley Mentor: Nathan DeBardeleben
2	Accelerators for Fast Storage Endpoints	Brian Atkinson & Kolton Hebbring Post-Masters/Post-baccalaureate, NMC Mentors: Brad Settlemyer, Dominic Manno, Wendy Poole

An Equal Opportunity Employer / Operated by Los Alamos National Security, LLC for the U.S. Department of Energy's NNSA
LA-UR-18-27178

3	BEE Workflow System Container Integration	Paul Bryant Masters Student, Kent State University Mentor: David Montoya
4	Link-State Routing for Compute Nodes within a Cluster	Colette Caskie Undergraduate, New Mexico State Univ. Mentor: Lowell Wofford
5	Using Bitscope and AWS EC2 for Open MPI Runtime/PMIx Scalability Testing	Dylan Christopherson Undergraduate, UW-Stout Mentor: Howard Pritchard
6	Modernization of Existing HPC System Tools	Evan Donato Undergraduate, UMass Boston Mentor: Paul Peltz
7	DECAF-FSEFI	Dakota Fulp Post-baccalaureate, NMC Mentor: Nathan DeBardeleben
8	Budget-Aware Computation: Affordable Precision on Mini-Apps	Abida Haque PhD Student, N. Carolina State Univ. Mentor: Laura Monroe
9	Enhancing HPC System Log Analysis by Identifying Message Origin in Source Code	Megan Hickman Undergraduate, Coastal Carolina Univ. Mentor: Nathan DeBardeleben
10	Telemetry Studies	David Huff Post-baccalaureate, New Mexico Tech. Mentor: Lissa Baseman
11	Using HPDA and Reasoning to Determine Data Provenance and Data Value	O. Tate Kernell PhD Student, NMC Mentor: Wendy Poole
12	DASH: Detecting Anomalies in Storage Hardware	Nathaniel Morris PhD Student, Ohio State University Mentors: Dave Bonnie, Dominic Manno
13	Data Analytics for Neutron Detection	Spencer Ortega Undergraduate, Univ. of S. California Mentors: Nathan DeBardeleben, Sean Blanchard
14	Compiler-Based Intelligent Data Placement for Heterogeneous Memory	Onkar Patil PhD Student, North Carolina State Univ. Mentor: Latchesar Ionkov
15	Using CI/CD Tools to Automate Cluster Initialization	Kevin Pelzel Post-baccalaureate, NMC Mentor: Paul Peltz
16	Comparing Automatically Generated Explanations of Random Forest Predictions	Emily Porter SULI Undergraduate, UT Austin Mentor: Lissa Baseman
17	Improving Storage Performance using Declustered RAID in ZFS	George Qiao PhD Student, Univ. of North Texas Mentor: HB Chen
18	Power Management for Raspberry Pi Clusters	Bryce Renck Undergraduate, New Mexico State Univ. Mentor: Sean Blanchard
19	Active Messages in OpenSHMEM	John Snyder Post-baccalaureate, Duke University Mentor: Howard Pritchard

20	Designing a Versatile Software Build Cluster	Eli Snyder Post-baccalaureate, NMC Mentor: Paul Peltz
21	Using ECC for Contextual Correction	Dylan Wallace Undergraduate, Coastal Carolina Univ. Mentor: Nathan DeBardeleben
22	Neutron Scattering in Computer Hardware using MCNP	Scott (Mason) Walls Undergraduate, New Mexico State Univ. Mentor: Sean Blanchard
23	Logan: System Log Analysis for Clusters	Randall Woodall Undergraduate, New Mexico State Univ. Mentor: Lissa Baseman

Keynote: "Pulse-gating for Information Transfer in Neural Systems"

Speaker: Andrew Sornborger

Abstract:

For this talk, I'll give an introduction to neural and neuromorphic systems. Then, I'll talk about an information processing framework based on pulse-gating that I have developed with Louis Tao. I'll describe the basic mechanism, then go on to talk about some of the extensions that we have made to it and applications that we have put together. Finally, I'll discuss some future research directions.