

A3D3 Kick-off meeting

Report of Contributions

Contribution ID: 1

Type: **not specified**

Introduction

Monday 8 November 2021 11:00 (7 minutes)

Presenter: HSU, Shih-Chieh (University of Washington Seattle (US))

Contribution ID: 9

Type: **not specified**

HAC

Wednesday 10 November 2021 11:00 (10 minutes)

Presenter: LI, Pan (Purdue University)

Session Classification: Summary

Contribution ID: **10**

Type: **not specified**

HEP

Wednesday 10 November 2021 11:10 (10 minutes)

Presenter: LIU, Miaoyuan (Purdue University (US))

Session Classification: Summary

Contribution ID: **11**

Type: **not specified**

MMA

Wednesday 10 November 2021 11:20 (10 minutes)

Presenter: COUGHLIN, Michael (University of Minnesota)

Session Classification: Summary

Contribution ID: 12

Type: **not specified**

Neuroscience

Wednesday 10 November 2021 11:30 (10 minutes)

Presenter: ORSBORN, Amy

Session Classification: Summary

Contribution ID: 14

Type: **not specified**

Targeted & Heterogeneous systems

Wednesday 10 November 2021 11:40 (20 minutes)

Presenters: SHLIZERMAN, Eli; DUARTE, Javier Mauricio (Univ. of California San Diego (US))

Session Classification: Summary

Contribution ID: 15

Type: **not specified**

Engagement

Wednesday 10 November 2021 12:20 (10 minutes)

Presenters: NEUBAUER, Mark (Univ. Illinois at Urbana Champaign (US)); NEUBAUER, Mark Stephen (Univ. Illinois at Urbana-Champaign)

Session Classification: Summary

Contribution ID: **16**

Type: **not specified**

Education

Wednesday 10 November 2021 12:10 (10 minutes)

Presenters: GRAHAM, Matthew (California Institute of Technology); GRAHAM, Matthew

Session Classification: Summary

Contribution ID: 17

Type: **not specified**

Diversity, Equality and Inclusive

Wednesday 10 November 2021 12:00 (10 minutes)

Presenters: DUARTE, Javier Mauricio (Univ. of California San Diego (US)); LIU, Miaoyuan (Purdue University (US))

Session Classification: Summary

Contribution ID: **18**

Type: **not specified**

Final Remarks

Wednesday 10 November 2021 12:30 (10 minutes)

Presenter: HSU, Shih-Chieh (University of Washington Seattle (US))

Session Classification: Summary

Contribution ID: **19**

Type: **not specified**

HEP

Monday 8 November 2021 11:25 (5 minutes)

Presenter: LIU, Miaoyuan (Purdue University (US))

Session Classification: Lightning talks

Contribution ID: 20

Type: **not specified**

MMA

Monday 8 November 2021 11:30 (5 minutes)

Presenter: COUGHLIN, Michael (University of Minnesota)

Session Classification: Lightning talks

Contribution ID: 21

Type: **not specified**

Neuros

Monday 8 November 2021 11:35 (5 minutes)

Presenter: ORSBORN, Amy

Session Classification: Lightning talks

Contribution ID: 22

Type: **not specified**

HAC

Monday 8 November 2021 11:40 (5 minutes)

Presenters: LI, Pan; LI, Pan

Session Classification: Lightning talks

Contribution ID: 24

Type: **not specified**

Targeted & Heterogenous Systems

Monday 8 November 2021 11:45 (5 minutes)

Presenters: SHLIZERMAN, Eli; DUARTE, Javier Mauricio (Univ. of California San Diego (US))

Session Classification: Lightning talks

Contribution ID: 25

Type: **not specified**

Engagement

Monday 8 November 2021 11:50 (5 minutes)

Presenters: NEUBAUER, Mark (Univ. Illinois at Urbana Champaign (US)); NEUBAUER, Mark Stephen (Univ. Illinois at Urbana-Champaign)

Session Classification: Lightning talks

Contribution ID: 26

Type: **not specified**

Education

Monday 8 November 2021 11:55 (5 minutes)

Presenters: GRAHAM, Matthew (California Institute of Technology); GRAHAM, Matthew

Session Classification: Lightning talks

Contribution ID: 27

Type: **not specified**

Equity and Career

Monday 8 November 2021 12:00 (5 minutes)

Presenters: DUARTE, Javier Mauricio (Univ. of California San Diego (US)); LIU, Miaoyuan (Purdue University (US))

Session Classification: Lightning talks

Contribution ID: **28**

Type: **not specified**

Logo and Website

Monday 8 November 2021 11:10 (7 minutes)

Presenters: LIU, Miaoyuan (Purdue University (US)); HARRIS, Philip Coleman (Massachusetts Inst. of Technology (US))

Contribution ID: 29

Type: **not specified**

Point cloud methods for science

Monday 8 November 2021 13:12 (12 minutes)

Presenter: LIU, Zhijian (MIT)

Session Classification: HAC

Contribution ID: **30**

Type: **not specified**

GNN-for-Science

Monday 8 November 2021 13:24 (12 minutes)

Presenter: MIAO, Siqu (Purdue)

Session Classification: HAC

Contribution ID: 32

Type: **not specified**

ScaleHLS

Monday 8 November 2021 13:36 (12 minutes)

Presenter: YE, Hanchen (UIUC)

Session Classification: HAC

Contribution ID: 33

Type: **not specified**

HLS4ML

Monday 8 November 2021 13:48 (12 minutes)

Presenter: RANKIN, Dylan (MIT)

Session Classification: HAC

Contribution ID: 35

Type: **not specified**

HEP: Level-1 trigger (FPGA) + On-detector readout (ASIC)

Tuesday 9 November 2021 11:05 (15 minutes)

Presenter: DIAZ, Daniel (Univ. of California San Diego (US))

Session Classification: Targeted and heterogeneous systems

Contribution ID: 36

Type: **not specified**

Neuroscience: Sleep Spindles as a Driver of Low Latency, Low Power ML

Tuesday 9 November 2021 12:05 (15 minutes)

Presenter: LIU, Xiaohan

Session Classification: Targeted and heterogeneous systems

Contribution ID: 37

Type: **not specified**

MMA: Gravitational Wave Inference as a Service

Tuesday 9 November 2021 11:45 (15 minutes)

Presenters: GUNNY, Alec; GUNNY, Alec (Massachusetts Institute of Technology)

Session Classification: Targeted and heterogeneous systems

Contribution ID: **38**Type: **not specified**

Intro

Tuesday 9 November 2021 11:00 (5 minutes)

Targeted systems: hardware-based, edge devices, on-sensor, including FPGA, ASIC, or other technology used for monitoring, instrument control, data selection, or data processing often in real-time or with very low latency.

Heterogenous systems: CPUs + coprocessors, high-throughput data processing, may include HPCs, cloud resources, asynchronous communication, as-a-service.

This section will give a brief overview of the different systems we target in HEP, neuroscience, and MMA with a look toward how we can develop common tools and techniques. Each talk will address:

1. What the targeted/heterogeneous systems look like (hardware specifications, constraints, etc.)
2. How we currently “program” these targeted systems (including the use of AI algorithms and tool flows like hls4ml)
3. Thoughts for improving workflows, infrastructure, which can be developed in common

Presenters: SHLIZERMAN, Eli; DUARTE, Javier Mauricio (Univ. of California San Diego (US))

Session Classification: Targeted and heterogeneous systems

Contribution ID: 39

Type: **not specified**

HEP: Services for Optimized Network Inference on Coprocessors (SONIC)

Tuesday 9 November 2021 11:25 (15 minutes)

Presenter: KRUPA, Jeffrey (Massachusetts Institute of Technology)

Session Classification: Targeted and heterogeneous systems

Contribution ID: 40

Type: **not specified**

Intro

Monday 8 November 2021 13:10 (2 minutes)

HAC (Hardware and Algorithm co-development) is one main research direction of A3D3, where the goal is to study the state-of-the-art AI hardware and algorithms for scientific applications. In this session, we have four talks that include AI algorithm/hardware design for physical applications, and efficient compilation tools for AI hardware automatic design.

Presenter: LI, Pan (Purdue)

Session Classification: HAC

Contribution ID: 41

Type: **not specified**

intro to neuro data

Monday 8 November 2021 12:20 (12 minutes)

overview of signal types, properties

Presenter: Prof. DADARLAT, Maria (Purdue)

Session Classification: Neuroscience

Contribution ID: 42

Type: **not specified**

auto-encoders for neural signal prediction

Monday 8 November 2021 12:32 (12 minutes)

Presenter: NOLAN, MICHAEL

Session Classification: Neuroscience

Contribution ID: 43

Type: **not specified**

approaches to analyze behavior

Monday 8 November 2021 12:44 (12 minutes)

Presenter: LI, JINGYUAN

Session Classification: Neuroscience

Contribution ID: 44

Type: **not specified**

discussion time

Monday 8 November 2021 12:56 (14 minutes)

Session Classification: Neuroscience

Contribution ID: 45

Type: **not specified**

Graph neural networks in HEP

Monday 8 November 2021 12:20 (15 minutes)

10 mins talk + 5 mins discussion

Presenter: FENG, Yongbin (Fermi National Accelerator Lab. (US))

Session Classification: HEP

Contribution ID: 46

Type: **not specified**

Anomaly detection in HEP

Monday 8 November 2021 12:35 (15 minutes)

10 mins talk + 5 mins discussion

Presenter: PARK, Sang Eon (Massachusetts Inst. of Technology (US))

Session Classification: HEP

Contribution ID: 47

Type: **not specified**

SPVCNN applications in HEP

Monday 8 November 2021 12:50 (15 minutes)

10 mins talk + 5 mins discussion

Presenter: SCHUY, Alexander Joseph (University of Washington (US))

Session Classification: HEP

Contribution ID: 49

Type: **not specified**

Engagement with other Communities/Projects and CEL Discussion

Tuesday 9 November 2021 14:25 (15 minutes)

Presenter: NEUBAUER, Mark (Univ. Illinois at Urbana Champaign (US))

Session Classification: Engagement

Contribution ID: 51

Type: **not specified**

Resources: HAL at NCSA's Innovative Systems Laboratory

Tuesday 9 November 2021 14:40 (10 minutes)

Presenter: KINDRATENKO, Volodymyr (University of Illinois at Urbana-Champaign)

Session Classification: Engagement

Contribution ID: 52

Type: **not specified**

Resources: XACC Cluster at Illinois Coordinated Sciences Laboratory

Tuesday 9 November 2021 14:50 (10 minutes)

Presenter: CHEN, Deming (University of Illinois at Urbana-Champaign)

Session Classification: Engagement

Contribution ID: 53

Type: **not specified**

Resources: Cloud

Tuesday 9 November 2021 15:00 (15 minutes)

Presenter: HARRIS, Philip Coleman (Massachusetts Inst. of Technology (US))

Session Classification: Engagement

Contribution ID: 54

Type: **not specified**

Post-bacc Rubric Discussion

Tuesday 9 November 2021 12:40 (10 minutes)

Presenter: DUARTE, Javier Mauricio (Univ. of California San Diego (US))

Session Classification: Diversity, Equity, Inclusion, & Career

Contribution ID: 55

Type: **not specified**

Post-bacc Ad

Tuesday 9 November 2021 12:50 (15 minutes)

Session Classification: Diversity, Equity, Inclusion, & Career

Contribution ID: 56

Type: **not specified**

Code of Conduct

Tuesday 9 November 2021 13:05 (15 minutes)

Session Classification: Diversity, Equity, Inclusion, & Career

Contribution ID: 57

Type: **not specified**

Postdoc Mentoring

Tuesday 9 November 2021 13:20 (10 minutes)

Session Classification: Diversity, Equity, Inclusion, & Career