IXPUG

INTEL EXTREME PERFORMANCE USERS GROUP

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IXPUG Workshop HPC Asia 2020 Welcome Note

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Workshop Organizing Chair

HPC Asia 2020

University of Tsukuba
Center for Computational Sciences

About IXPUG

IXPUG
INTEL EXTREME PERFORMANCE USERS GROUP

IXPUG = Intel eXtreme Performance Users Group

- Independent users group
- Provide a forum for the free exchange of information
- Enhancing the usability and efficiency of HPC & AI/DL workloads
- Computing systems using Intel® architecture

- Fosters technical **collaboration**...
  - System architecture beyond the processor (memory, interconnect)
  - Software tools and programming models
  - New workloads (HPC, data analytics, AI, visualization, etc.)
- Freely exchanging **best practices**, experiences worldwide (open to the public)
- Strong technical support from **Intel experts**

IXPUG Event Momentum

Jul'13: 1st IXPUG Conf (Texas)

Nov'14 IXPUG Bird of Feather

Apr'14: IXPUG Workshop (Texas)

Jul'14 IXPUG Annual Conf (Texas)

Sep'15: IXPUG Annual Conf (US)

IXPUG Bird of Feather Nov'15

Jul'15: ISC IXPUG Workshop & BoF

Jun'16: IXPUG KNL Launch Tutorial

Jun'16: IXPUG Workshop (Russia)

Jul'16 IXPUG Workshop & BoF

Nov'16 Intel HPC Dev Con

Nov'16 IXPUG Bird of Feather

Mar'16: IXPUG Annual Conf (Europe)

Sep'16: IXPUG Annual Conf (US)

Apr'17: IXPUG Annual Conf (UK)

Sep'17: IXPUG Annual Conf (US)

Jul'17: IXPUG Workshop & BoF

May'17: IXPUG Visualization Workshop (US)

Jun'17: IXPUG Workshop (Russia)

Nov'17: SC'17 Bird of Feather

Mar'18 IXPUG Annual Conf (Italy)

IXPUG Working Groups

Jan-Oct '18 Working Groups (8 total)

Jan'18: IXPUG Workshop

Apr'18: IXPUG Workshop (Saudi Arabia)

Sep'18 IXPUG Annual Conf (Oregon)

Nov'18: SC'18 Birds of Feather

Jul'18: IXPUG Workshop

July'18: IXPUG Visualization Workshop (US)

HPC Asia 2020

40+ events; **380+** publications; **600+** members

All technical presentations and recordings are posted on www.ixpug.org

How to Get Involved

Join, Engage and Share:

- Connect with us on Twitter **@IXPUG1**
- Become a member and encourage others to join, by registering at www.ixpug.org
- Contribute by sharing your learnings and experiences in using Intel technology in the regular **IXPUG Webinar** series
- Attend an IXPUG Conferences, Workshops, Birds-of-Feather, Webinar, etc.
- Post a question, share a technique, best practices, etc. on the "Discussion" board at https://www.ixpug.org/discussion

Additional Opportunities:

- **Join the IXPUG Steering Committee**
- Questions: → info@ixpug.org

IXPUG Steering Committee

Leadership Board

President
Thomas Steinke
Zuse Institute Berlin

Vice-President
R. Glenn Brook
University of Tennessee Knoxville

Secretary
Melyssa Fratkin
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IXPUG Steering Committee

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Alberto Di Meglio
CERN openlab

Vladimir Mironov
Lomonosov Moscow State University

Sergi Siso
UK Science & Technology Facilities Council

Estela Suarez
Jülich Supercomputing Center

How to Achieve Performance on Current and Future Large Intel-based Systems?

IXPUG community has…

- in-depth knowledge and experience preparing codes for Intel Xeon Phi and Xeon Scalable family of processors and coprocessors

Now and the future:

- FPGA with large LE and high speed interconnect
- In 2021, exascale system with Intel GPUs will be installed
- IXPUG's optimization targets will be expanding: CPU, GPU, FPGA

Challenges on Heterogeneous Architectures

- Technology development and power demands
  → heterogeneity with a larger technology zoo:
  - Processing data: CPU, GPU, FPGA, AI
  - Storing data: …, HBM, … , NVRAM (DCPMM), SSDs, …
- Programmability / Productivity
  - Programming models, languages, …, standards
- Performance vs. Portability
  - Expectations for performance portability, if any?
- Software maintenance

Workshop Program

- Two invited talks
  - Evaluation of Intel Optane DCPMM for memory and I/O intensive HPC applications
    Michele Weiland (EPCC, University of Edinburgh)
  - Experiences with a Lightweight Multi-kernel Operating System for Extreme Scale Computing
    Balazs Gerofi (R-CCS, RIKEN)
- Five contributed papers (papers available on ACM digital library)
  - 1 Full Paper
  - 4 Short Papers
- All presentation slides will be on IXPUG website
- Coffee Break supported by IXPUG (14:20-14:50)