Get ready for the CODES@OEHI #2 Virtual Hackathon

The current unfortunate circumstances won’t stop us!

The CODES@OEHI #2 Hackathon is moving to a full virtual event and is spread on 3 self-paced days

- **When:** November 3rd – 5th, 2020
- **Where:** Virtual, via MS Teams
- **Objectives:**
  - put application developers together with experts in programming and performance
  - enable developers, scientists, researchers and engineers to accelerate and optimize their applications on Nvidia GPUs.
  - share experiences in a highly collaborative environment
- **Participants:** developers interested in porting applications to Arm-based systems with or without the acceleration provided by GPU (Nvidia Tesla V100-PCIe), and/or in improving the performances of an already ported application
- **Context:** Arm-based architectures only
- **Scope:** learning how to maximize the performance of codes, algorithms, applications and libraries on Arm-based systems

Following the successful CODES@OEHI Hackathon in October 2019, CODES@OEHI #2 will be 3 self-paced days of fun, intensive coding, debugging and performance analysis: a real challenge for coders on known or unknown problems and applications. Participants will also have the opportunity to exploit the release of the ARM latest version of CUDA by Nvidia and will have access to P100-accelerated nodes.

Be prepared for an event in which computer programmers, software developers, interface designers, domain-matter-experts, and computer architects collaborate intensively on scientific applications and projects. The hackathoners may decide to focus on known problems or novel applications areas or to any ideas with no constraints.

Don’t worry (yet...), you will not be required to stay online overnight, and while we strongly encourage the participants to get a good night’s sleep, if the challenge catches you, feel free to spend the night in coding.

The hackathon is jointly organized by CINECA, ARM, NVIDIA, E4 Computer Engineering and the Jülich Supercomputing Centre
Access will be provided to

- ARMIDA (ARM Infrastructure for the Development of Applications) cluster, located at E4 Computer Engineering’s premises, with 8 Marvell TX2 compute nodes (per node: 64 cores Marvell TX2@2.2/2.5 GHz, 256 GB RAM, Mellanox IB 100Gb EDR, Nvidia Tesla V100-PCIE 32GB). Cluster is based on RedHat Enterprise Linux 8.0 (kernel 4.18), GNU 8.3.1. Software includes: ARM Allinea Studio (Compiler + Forge), GCC 10, Nvidia HPC SDK, CUDA 11

- JUWEI Cluster located at Jülich Supercomputing Centre with multiple Taishan servers (per node: 2 Kunpeng 920 processors with 64 cores each, 256 GByte RAM, Mellanox IB 100 Gb EDR)

These systems will be available to the hackathoners for 2 weeks after the event.

“The Hackathon is a great way to restart the normal way of learning. Participants will access the updated version of ARMIDA, powered by GPU and will test out new techniques and frameworks and algorithms that don’t enjoy popular use yet but might be the base for the future successes of an application,” Dr. Mirko Cestari, HPC Technical Lead of CINECA - SuperComputing Applications and Innovation Department - SCAI, said. “A clear plus of the hackathon is that helps the participants to focus on the project at hand, working directly with experts of the field, and stay away from the distractions of email, meetings and (chat) interruptions that really engenders the necessary level of concentration. Finally, there’s also a freewheeling nature of trying new things and attacking things from multiple angles.”

“E4 Computer Engineering is supporting hackathons because they are inspirational activities and the newly released support for GPUs opens exciting new area for improving the performances of applications”, added Cosimo Gianfreda, CTO of E4. “Such events foster innovation by improving networking and collaboration among smart and creative people. In fact, we get more benefit and value from feedback from people attending the event, than from in-house testing activities. Also, the hackathon is a very good opportunity to recruit the brightest talents.”

For more information and for registering: www.e4company.com/e4lab

AGENDA

November 3rd, 2020
13:00 13:45 Introduction & logistics Fabrizio Magugliani/E4 Computer Engineering

The hosting site:
13:45 14:00 CINECA Mirko Cestari/CINECA

The building blocks:
14:00 14:30 ARM Overview Phil Ridley/ARM
14:30 15:00 Computing on GPU-accelerated Arm HPC platforms Filippo Spiga/NVIDIA

15:00 15:15 break

The testbed systems:
15:15 15:30 ARMIDA Fabrizio Magugliani/E4 Computer Engineering
15:30 15:45 JUAWEI Dirk Pleiter/Jülich Supercomputing Centre

ARM, NVIDIA, CINECA, E4 Computer Engineering and Julich will be available for the 3 days on virtual room to reply to questions, providing advice and address issues.

15:45 onwards Hackathoners at work (self-paced activities)

17:00 17:30 Hackathoners speak out!
Short presentations of the hackathoner/teams about the selected applications, the intended goals, the roadblocks (if any) met so far, any questions about the testbed systems and the system software

November 4th, 2020
All day&night Hackathoners at work (self-paced activities)

November 5th, 2020
Hackathoners at work (self-paced activities)

14:00 15:00 Hackathoners’ presentations

Short presentations of the hackathoners/teams about the results, the good, the bad, the ugly of these days, and the follow-ons.

15:00 Wrap up and adjourn