

Math Special Interest Group

October 02, 2024

Agenda

- Discussion on Discrete Fourier Transform APIs – Raphael Egan (Intel)
- Updates from last meeting - Sarah Knepper
 - oneMKL Specification
 - oneMKL Interfaces Open Source Project
 - oneAPI Dev Summit

oneMKL Specification

Recent updates:

- New distributions added for RNG, plus other extensions/bug fixes
- Improvements to sparse BLAS
- Programmatic versions enabled (RFC #[561](#))
 - E.g., `#define ONEMKL_BLAS_SPEC_VERSION 103 //for oneAPI 1.3 rev 1`

Open PRs:

- #[583](#): [spblas] Add sorted_by_rows property
- #[593](#): [DFT] Type-safety-motivated changes, other corrections

oneMKL Interfaces Open Source Project

- Completed all Q3/Q4 tasks in the [open source checklist work package](#)
 - Introduced RFC process
 - Added “help wanted” label to open issues
 - Documented project maintainer roles and how to become one
- [RFC] oneMKL Interface Renaming ([#564](#))
- [sparse] Update oneMKL backends to match new sparse API ([#500](#))
- [BLAS] Add generic device and initial support in portBLAS ([#566](#))
- [WIP][DFT] Add generic device support in portFFT ([#570](#))
- oneMKL Interfaces successfully built/ran on [Bede](#) Grace Hopper machine with Arm host CPU and Nvidia GPU
 - Compiled with version of DPC++ that was built with Arm host CPU support and offloading computations to Nvidia GPU

The poster features a dark blue background with a subtle pattern of binary code (0s and 1s) and glowing circuit-like lines. At the top left is the UXL logo, which consists of a stylized circuit icon and the text 'UXL Unified Acceleration Foundation'. The main title 'oneAPI DevSummit' is centered in large, bold, white sans-serif font. Below it, 'HOSTED BY UXL FOUNDATION' is written in a smaller, light blue font. A white rectangular box with a blue border on the right side contains the dates 'October 9-10'. At the bottom, the text 'REGISTER NOW!' is in bold purple. Below this, a row of logos for partner companies is displayed: GE HealthCare, SAMSUNG, Qualcomm, and Imagination in the top row; and arm, FUJITSU, Google, intel, and vmware in the bottom row.

UXL
Unified Acceleration Foundation

oneAPI DevSummit

HOSTED BY UXL FOUNDATION

REGISTER NOW!

October 9-10

GE HealthCare SAMSUNG Qualcomm Imagination

arm FUJITSU Google intel. vmware

A friendly reminder, if you haven't yet done so, [to register](#) for the [oneAPI Dev Summit, hosted by the UXL Foundation](#) to be held on October 9 & 10.

Talks on topics including:

- Codeplay's Rafal Bielski will explain how you can use oneMKL to run highly optimized math routines on a range of GPUs, from AMD, Nvidia and Intel. The GROMACS science project is already benefiting from this ability.
- Yu-Hsiang Tsai has been working to integrate Ginkgo, a linear algebra library used by research groups around the world, with SYCL and oneAPI to accelerate on multiple GPUs.

Resources

- Unified Acceleration Foundation: <https://uxlfoundation.org/>
- GitHub for UXL Foundation: <https://github.com/uxlfoundation/foundation>
- Latest release of oneMKL Spec (currently 1.3): <https://oneapi-spec.uxlfoundation.org/specifications/oneapi/latest/elements/onemkl/source/>
- GitHub for oneAPI Spec: <https://github.com/uxlfoundation/oneAPI-spec>
- GitHub for open source oneMKL interfaces (currently BLAS, RNG, LAPACK, DFT, and sparse BLAS domains): <https://github.com/oneapi-src/oneMKL>
- [UXL Foundation Slack](#) [#sig-math](#) [#onemkl](#) channels