

Khronos Releases OpenVX 1.3 Open Standard for Cross-Platform Vision and Machine Intelligence Acceleration

Royalty-free for end users, OpenVX spec defines new feature sets; open source Raspberry Pi implementation available.

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/EINPresswire.com/ -- Today The Khronos® Group, an open consortium of leading hardware and software companies creating advanced acceleration standards, announces the

ratification and public release of the [OpenVX™ 1.3 specification](#), along with code samples and a prototype conformance test suite. OpenVX is a royalty-free open standard for portable, optimized, and power-efficient vision and machine learning inferencing acceleration, vital to embedded and real-time use cases, such as face-, body-, and gesture-tracking, smart video surveillance, advanced driver assistance systems, object and scene reconstruction, augmented reality, visual inspection, robotics, and more. Also available today is an open source implementation of OpenVX 1.3 for Raspberry Pi to make OpenVX widely accessible to developers. The new specification can be found on the OpenVX registry.



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“Over the years, OpenVX has evolved an extensive range of functionality to meet the diverse needs of developers using accelerated vision and inferencing. The next step in OpenVX’s evolution is to enable implementations that deliver a focused subset of features that are targeted at specific key use cases,” said Kiriti Nagesh Gowda, OpenVX working group chair, and MTS software development engineer at AMD. “OpenVX 1.3 feature sets provide implementers with the deployment flexibility to implement and optimize just the functionality that their customers need, while still being conformant to the standard and providing cross-vendor interoperability.”

To enable deployment flexibility while avoiding fragmentation, OpenVX 1.3 defines a number of feature sets that are targeted at common embedded use cases. Hardware vendors can include one or more complete feature sets in their implementations to meet the needs of their customers and be fully conformant. The flexibility of OpenVX enables deployment on a diverse range of accelerator architectures, and feature sets are expected to dramatically increase the breadth and diversity of available OpenVX implementations. The defined OpenVX 1.3 feature sets include:

- Graph Infrastructure (baseline for other feature sets),
- Default Vision,
- Enhanced Vision (functions introduced in OpenVX 1.2),
- Neural Network Inferencing (including tensor objects),
- NNEF Kernel import (including tensor objects),
- Binary Images,
- Safety Critical (reduced features to enable easier safety certification).

MulticoreWare has worked with Khronos to provide an [OpenVX 1.3 implementation for the Raspberry Pi 3 Model B](#) using the Raspbian operating system. This implementation takes advantage of OpenVX's flexible architecture to include: automatic optimization of memory access patterns via tiling and chaining; the ability to use highly optimized kernels leveraging multimedia instruction sets; automatic parallelization to utilize multiple compute resources such as multicore CPUs and GPUs; automatic merging of common sequences of processing kernels into single, higher-performance kernels.

"We are excited to have worked with Khronos to develop the OpenVX 1.3 Raspberry Pi implementation, conformance test suite, and samples," said AGK Karunakaran, CEO of MulticoreWare. "Raspberry Pi is an easily accessible platform for any developer to try out the power of OpenVX to rapidly develop a wide range of applications with optimized memory usage and enhanced performance. This is an exciting next step in the march towards more capable computer vision and machine learning systems, and MulticoreWare is proud to be a leader in this ecosystem."

"ICURO has been collaborating with AMD in proliferating computer vision and machine learning models. ICURO welcomes and supports the adoption of OpenVX 1.3 for innovative business use cases across multiple industries. Our artificial intelligence (AI) lab in Silicon Valley has accelerated the development and deployment of full-stack robotic vision applications powered by AMD edge processors and an OpenVX stack. We are delighted to be a strategic partner of AMD in delivering high-value, high-return AI solutions for retail, industry 4.0, warehouse, logistics, healthcare, and several other industries," said Bipin Thomas, President of ICURO.

The Conformance Test Suite for OpenVX 1.3 is in development and is expected to be released before the end of 2019. Sample implementations of OpenVX 1.3 are available on [GitHub](#) for any developer to build upon. The OpenVX 1.3 specification and more information is available on the Khronos website or through the OpenVX registry, which contains specifications of the core API, headers, extensions, and related documentation.

Neil Trevett, President of the Khronos Group and Vice President Developer Ecosystems at NVIDIA, will discuss the launch of OpenVX 1.3 and APIs for vision and inferencing at Embedded Vision on Thursday, October 24 in Stuttgart, Germany in his presentation, "APIs for Accelerating Vision and Inferencing: an Industry Overview of Options and Trade-offs." The presentation will take place from 15:45 to 16:15.

Industry Support for OpenVX:

"AMD has always supported open, royalty-free standards for HPC and Machine Learning; we believe this will benefit the research community and the industry as a whole. AMD was the first to open source highly optimized implementation of OpenVX in MIVisionX Toolkit as part of the ROCm Ecosystem which is being used by many in the industry and academia. OpenVX 1.3 with extensive support to computer vision and machine learning will help keep up the momentum in the industry," said Ajit Mathews Corp. VP of Machine Learning and Compute Software Engineering, AMD.

"Texas Instruments reinforces our support of OpenVX and its benefits to customers developing ADAS-to-autonomous applications for the automotive market," said Sonia Ghelani, Product Line Manager of ADAS Processors at Texas Instruments. "The OpenVX standard helps us to offer an easy-to-use SDK platform for customers developing embedded applications on multi-core, heterogeneous architectures, such as TI's Driver Assist (TDAx) SOCs."

About the Khronos Group

The Khronos Group is an open industry consortium of over 140 leading hardware and software

companies creating advanced, royalty-free, acceleration standards for 3D graphics, Augmented and Virtual Reality, vision and machine learning. Khronos standards include Vulkan[®], OpenGL[®], OpenGL[®] ES, OpenGL[®] SC, WebGL[™], SPIR-V[™], OpenCL[™], SYCL[™], OpenVX[™], NNEF[™], COLLADA[™], OpenXR[™], 3D Commerce[™], and glTF[™]. Khronos members are enabled to contribute to the development of Khronos specifications, are empowered to vote at various stages before public deployment and are able to accelerate the delivery of their cutting-edge accelerated platforms and applications through early access to specification drafts and conformance tests.

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