Graphics SIG Meeting
Sept 30, 2021
10:05am PDT

https://github.com/riscv-admin/graphics


@risc_v

Antitrust Policy Notice

RISC-V International meetings involve participation by industry competitors, and it is the intention of RISC-V International to conduct all its activities in accordance with applicable antitrust and competition laws. It is therefore extremely important that attendees adhere to meeting agendas, and be aware of, and not participate in, any activities that are prohibited under applicable US state, federal or foreign antitrust and competition laws.

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Collaborative & Welcoming Community

RISC-V is a free and open ISA enabling a new era of processor innovation through open standard collaboration. Born in academia and research, RISC-V ISA delivers a new level of free, extensible software and hardware freedom on architecture, paving the way for the next 50 years of computing design and innovation.

We are a transparent, collaborative community where all are welcomed, and all members are encouraged to participate. We are a continuous improvement organization. If you see something that can be improved, please tell us. help@riscv.org

We as members, contributors, and leaders pledge to make participation in our community a **harassment-free experience for everyone**.

https://riscv.org/risc-v-international-community-code-of-conduct/

Conventions

- Unless it is a scheduled agenda topic, we don’t solve problems or detailed topics in most meetings unless specified in the agenda because we don’t often have enough time to do so and it is more efficient to do so offline and/or in email. We identify items and send folks off to do the work and come back with solutions or proposals.
- If some policy, org, extension, etc. can be doing things in a better way, help us make it better. Do not change or not abide by the item unillaterly. Instead let's work together to make it better.
- Please conduct meetings that accommodates the virtual and broad geographical nature of our teams. This includes meeting times, repeating questions before you answer, at appropriate times polling attendees, guide people to interact in a way that has attendees taking turns speaking, …
- Where appropriate and possible, meeting minutes will be added as speaker notes within the slides for the Agenda

Agenda

- Reminders (5 minutes)
- Is Skia alive and interesting? (5 min)
- Gap analysis tasks (15 min)
- Challenges beyond the RISC-V scope (10 min)

Reminders

Forms:

- **Charter approval vote**
- **Areas of interest**
- **Meeting times and frequency**

Gap analysis tasks

Help the chairs to complete the SPIR-V to RVV mapping

https://drive.google.com/drive/u/1/folders/1Z_ZlEmzL7a7mgUwaGiUnhGxbV0t3sriE

Provide us market research figures:

What is the number of OpenGL ES 2.0 capable GPUs shipped every year?
What is the number of GPUs shipped per power range every year?

Functional gap with RVV

Texture sampling:
- OpTypeImage
- OpTypeSampler
- OpTypeSampledImage
- OpSampledImage
- OpImageSampleImplicitLod
- OpImageSampleExplicitLod
- OpImageSampleProjImplicitLod
- OpImageSampleProjExplicitLod

New "vfclass" bit:
- OpIsNormal

Partial derivatives:
- OpDPdxCoarse
- OpDPdyCoarse

Data layout:
- OpVectorShuffle
- OpTranspose

Float rounding
- GLSLstd450Floor
- GLSLstd450Ceil

Basic matrix multiply:
- OpVectorTimesMatrix
- OpMatrixTimesVector
- OpMatrixTimesMatrix

Transcendental functions:
- GLSLstd450Sin
- GLSLstd450Cos
- GLSLstd450Tan
- GLSLstd450Asin
- GLSLstd450Acos
- GLSLstd450Atan
- GLSLstd450Sinh
- GLSLstd450Cosh
- GLSLstd450Tanh
- GLSLstd450Asinh
- GLSLstd450Acosh
- GLSLstd450Atanh
- GLSLstd450Atan2
- GLSLstd450Pow
- GLSLstd450Exp
- GLSLstd450Log
- GLSLstd450Exp2
- GLSLstd450Log2

Challenges beyond the RISC-V scope

Khronos conformance test suites (CTS) not testing shading cores in isolation

Lack of microbenchmarks for shading cores

Compile SPIR-V (GLSL flavoured) to LLVM IR

Backup Slides