Call for Participation

At a Glance

- **Virtual conference:** July 11-14
- **In-person keynote and reception:** Sunday, August 7, Vancouver, CA (co-located with SIGGRAPH 2022)
- **Paper/Poster deadlines:**
  - ~~**Paper Abstracts:** Wednesday, April 27~~
  - ~~**Paper Submissions:** Monday, May 2~~
  - ~~**Poster Submissions:** Monday, May 30~~
- **All papers** will be published in the **PACMCGIT** journal and will be **open access**!
- **Awards** for best paper, best poster, student competition
- **Free premium registration** for the virtual conference to all contributors (i.e. all paper/poster authors, presenters, etc.)

Introduction

We are pleased to announce High-Performance Graphics 2022. High-Performance Graphics is the leading international forum for performance-oriented graphics and imaging systems research including innovative algorithms, efficient implementations, languages, compilers, parallelism, and hardware architectures for high-performance graphics. The conference brings together researchers, engineers, and architects to discuss the complex interactions of parallel hardware, novel programming models, and efficient algorithms in the design of systems for current and future graphics and visual computing applications.

Conference Info

High-Performance Graphics is co-sponsored by ACM SIGGRAPH and Eurographics. The program features a week of paper and industry presentations.

The conference will be online this year and will take place the week of July 11, 2022. All presentations will be streamed online. The conference will also provide an online video conferencing option for live interactions with speakers and other attendees. In the case that SIGGRAPH decides to meet in person, there will also be an in person keynote and reception Sunday, August 7, the day before SIGGRAPH in Vancouver, Canada.

Papers Track

We invite original and innovative performance-oriented contributions to the design of algorithms, programming systems, and hardware architectures, for all areas of graphics in the broadest sense, including rendering, virtual and augmented reality, ray tracing, physics, and animation. We also invite contributions to the emerging areas in visual computing such as high-performance computer vision, perceptual graphics, and machine learning as well as topics on compiler and language technology. Topics include (but are not limited to)

- **Hardware and systems for high-performance graphics**
  - Graphics hardware simulation, optimization, and performance measurement
  - Shading architectures
  - Novel fixed-function hardware design

- Hardware design for mobile, embedded, integrated, and low-power devices
- Cloud-accelerated graphics systems

- **Real-time and interactive ray tracing hardware or software**
  - Spatial acceleration data structures
  - Ray traversal, sorting, and intersection techniques
  - Scheduling and shading for ray tracing
  - Hybrid rendering with rasterization and ray tracing
  - Hardware-acceleration for ray tracing
  - other applications of ray tracing (e.g. audio)
- **Rendering algorithms**
  - Surface representations and tessellation algorithms
  - Texturing and compression/decompression algorithms
  - Interactive rendering algorithms (hardware or software)
  - Visibility and illumination algorithms (shadows, rasterization, global illumination, …)
  - Physically-based rendering algorithms and data structures
  - Image sampling, reconstruction, and filtering techniques
  - Neural rendering
  - Denoising for rendering
- **High-performance machine learning techniques**
  - High-performance machine learning systems for graphics
  - Deep Learning approaches with a focus on real-time graphics and image generation
  - Acceleration of training and inference approaches
  - Hardware-acceleration for machine learning
- **High-performance and real-time computer vision**
  - Real-time computer vision techniques; e.g., image and video processing
  - Visual data analysis and scene understanding
  - Large-scale computer vision systems (efficient data management/processing)
- **Programming models, languages, and compilation techniques**
  - Programming models and languages for graphics, vision, and image processing
  - Compilation techniques for specialized architectures and parallel computing
  - Shading language design and implementation
  - Programming abstractions for interactive rendering pipelines
- **Hardware and software systems for emerging display technologies**
  - Novel display technologies
  - Virtual and augmented reality systems
  - Low-latency rendering and high-performance processing of sensor input
  - High-resolution and high-dynamic range displays
- **Parallel computing for graphics and visual computing applications**
  - Physics, sound processing, and animation
  - Large data visualization
  - Novel applications of GPU computing
- **Perception-based high-performance graphics and interaction**
  - Rendering optimizations based on human perception

- Human-centered interaction and visualization
- Perceptually motivated image and video quality metrics
- Advances in human visual understanding

Paper Submission Information

HPG has a single track for paper submission. All accepted papers will be published in a special issue of the Proceedings of the ACM in Computer Graphics and Interactive Techniques (PACMCGIT) journal.

Authors are invited to upload papers electronically in Adobe PDF format by using the EG SRM system. Submissions must be anonymous (in which the paper contains no identifying information). Video sequences in standard formats may be submitted using the electronic submission system. Dual submission to other peer-reviewed conferences or journals is not allowed; any paper submitted to another peer-reviewed venue and under consideration during the HPG review cycle will be rejected.

Submitted papers will be evaluated by the International Program Committee and external reviewers using double-blind peer review. There is no rebuttal process. All submissions will either be conditionally accepted with a list of mandatory changes, or rejected. Conditionally accepted papers will receive a talk slot at the conference upon confirmation of author intent to complete the mandatory changes.

Conditionally accepted papers will require a second round of peer review to verify that the mandatory changes have been implemented. This second round will be single-blind. We will offer a fast track option for the second round with a shortened timeline for authors to implement the mandatory changes. Papers that receive final acceptance within the fast track timeline will be provided to the attendees as preprints.

This year, HPG is excited to announce that all accepted papers will be published in open access. The conference has secured the funding required to ensure authors will not have to pay any open access fees.

For further information please contact: papers@highperformancegraphics.org.

Paper Length and Format

Papers should be formatted according to the ACM SIGGRAPH publication guidelines and use the “acmsmall” style for the PACMCGIT journal.

There is no fixed maximum length for a paper. However, the magnitude of the contribution must be proportional to the length of the paper.

Writing plays an important role in the assessment. Omitting important details or tampering with formatting rules may cause a paper to be graded lower than a longer paper that is clearly written, without being repetitive or verbose.

Submission Guidelines

We try to be as permissive as possible while still taking all reasonable steps to preserve anonymity during the review process. Please do not make public statements on the submission status of your paper until acceptance has been confirmed. Before your paper is accepted:

- You may upload a version of your submission, for example as a technical report or to arXiv (or similar services), but please do not mention HPG.
- You may give presentations about your work, without saying it is submitted to HPG.

If you have any questions, please do not hesitate to reach out to us.

Hot 3D Systems Track

We invite vendors in the graphics industry to submit presentations of their latest and greatest graphics chips, high-performance software, and system designs. Presentations should be 20 minutes long, with a focus on technical aspects of real products (marketing-oriented talks will not be accepted). Hot 3D presentations are not considered archival publications for the purposes of future submission to peer-reviewed venues.

For further information please contact: hot3d@highperformancegraphics.org.

Posters

We also invite the submission of posters describing ongoing or late-breaking work. We will dedicate a poster presentation session during the virtual event. In addition, this year we will provide poster authors with the opportunity to optionally present their work during the in-person reception & keynote in Vancouver on August 6 (co-located with SIGGRAPH 2022). Please note that posters are not considered archival publications and thus should not prevent submitting the work therein to other publication venues.

Poster submissions should be sent directly to the following email address: posters@highperformancegraphics.org.

Wolfgang Straßer Best Paper Award

An award of $1000 will be given to the authors of the most outstanding paper presented at the event. The award is based on the accuracy, originality, and importance of the technical concept, the quality and readability of the manuscript, as well as the content and delivery of the verbal presentation. The winner will be chosen by the organizing committee based on audience feedback and will be announced at the end of the conference.

Student Competition

High-Performance Graphics 2022 will feature a research competition for students interested in the above topics. There will be a $750 cash award for the best entry to the competition. Details about the competition and award will be announced at a later date and will be updated on the student competition page.

Organization

General Chairs

- Cem Yuksel, University of Utah

Papers Chairs

- Josef Spjut, NVIDIA

- Marc Stamminger, Friedrich-Alexander Universität

Program Chairs

- Anjul Patney, NVIDIA
- Tamy Boubekeur, Adobe Research and École Polytechnique

Posters Chair

- Jonathan Dupuy, Unity Technologies

Online Chairs

- Nikolaus Binder, NVIDIA
- Francois Demoullin, Qualcomm

Registrar

- Konstantin Shkurko, NVIDIA

Treasurers

- Steve Molnar, NVIDIA
- David Luebke, NVIDIA

Sponsorship Chair

- David Luebke, NVIDIA

Publicity Chairs

- Andrew Garrard, Imagination Technologies
- Noshaba Cheema, Max-Planck Institute for Informatics

Diversity Chairs

- Esteban Walter Gonzalez Clua, Fluminense Federal University
- Noshaba Cheema, Max-Planck Institute for Informatics

Student Competition Chair

- Christoph Schied, NVIDIA

Important Dates

All deadlines are at 22:00 UTC/GMT

Papers	

~~Wednesday, April 27~~	Abstract deadline
~~Monday, May 2~~	Paper deadline
~~Friday, May 20~~	Notification of conditional acceptance
Friday, May 27	Author commitment to complete mandatory changes
Friday, June 3	Fast track revised papers due
Friday, June 10	Fast track notifications of acceptance
Friday, June 17	Regular track revised papers due
Monday, June 27	Regular track notification of acceptance
Wednesday, July 6	Camera-ready deadline
Posters	
Monday May 30	Deadline for poster submissions
Friday June 3	Notification of poster acceptance
Hot3D	
Monday, May 30	Deadline for Hot3D proposals
Monday, June 6	Notification of acceptance
Conference	
Monday-Thursday, July 11-14	Virtual Conference
Sunday, August 7	In-person reception & keynote in Vancouver, CA (co-located with SIGGRAPH 2022)