Call for Participation

Introduction

We are pleased to announce High-Performance Graphics 2020. 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 on July 13-16, 2020. All presentations, including invited talks, paper talks, posters, and Hot3D talks will be streamed online as videos. The conference will also provide an online video conferencing option for live interactions with speakers.

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 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
- **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

Paper Submission Information

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

Authors are invited to upload papers electronically in Adobe PDF format by visiting the submission area. 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.

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.

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.

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 no 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. In addition to traditional posters, this session will be enhanced to provide opportunities for paper authors to present implementation details or hands-on demonstrations.

Poster Submission Info

1. Prepare an extended abstract (two page maximum) that summarizes the work using the acmart sigconf paper format.
2. Prepare a high-quality version of the final poster.
3. Send both items (in PDF format) to posters@highperformancegraphics.org.

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

Important Dates

All deadlines are at 22:00 UTC/GMT

Papers	
Friday, May 1	Deadline for paper registration/abstract
Thursday, May 7 ~~April 16~~	Deadline for paper submissions

Monday, June 8 ~~May 18~~	Notification of conditional acceptance
Monday, June 22 ~~June 21~~	Revised papers due (Fast Track)
Friday, June 26 ~~June 25~~	Notification of final acceptance (Fast Track)
Friday, July 3 ~~June 8~~	Camera-ready deadline (Fast Track)
Friday, July 10	Revised papers due (Regular Track)
Friday, July 31	Notification of final acceptance (Regular Track)
Friday, August 7	Camera-ready deadline (Regular Track)
Posters	
Monday, June 15	Deadline for poster submissions
Monday, June 22	Notification of poster acceptance
Hot3D	
Monday, June 15	Deadline for Hot3D proposals
Monday, June 22	Notification of acceptance
Conference	
Monday-Friday, July 13-16 ~~July 16-17~~	Virtual Conference

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.

Demonstrations

Presenters and participants are invited to bring prototypes and products for demonstration at the event. Demonstrations will be held during breaks, during the poster session, and before and after the sessions. We highly encourage paper authors and industry presenters to demonstrate their systems. Please contact the organizing committee by email at general@highperformancegraphics.org to arrange for space or electrical connections that may be required for your demonstration.

Student Competition

Please refer to the student competition page.

Diversity Scholarship

HPG now extends a diversity scholarship program for funding travel and expenses to attend the conference. The scholarship application will be open to individuals in underrepresented groups working in graphics and related research areas. Our program provides both travel and registration scholarships to HPG. For information on the program and how to apply see Diversity Scholarship page.

Organization

General Chairs

- Warren Hunt, Facebook Reality Labs
- Markus Steinberger, TU Graz

Papers Chairs

- Cem Yuksel, University of Utah
- Richard Membarth, DFKI

Program Chairs

- Kayvon Fatahalian, Stanford University
- Aaron Lefohn, NVIDIA

Treasurers

- Steve Molnar, NVIDIA
- Josh Steinhurst, Intel

Registrar

- Pierre Moreau, Lund University

Publicity Chair

- Christoph Schied, Facebook Reality Labs
- Elena Vasiou, University of Utah

Posters Chair

- Bernhard Kerbl, TU Wien

Diversity Chair

- Apollo Ellis, University of Illinois at Urbana-Champaign
- Noshaba Cheema, Max-Planck Institute for Informatics