

Report on Geometric Modeling and Processing (GMP 2024)

The 18th International Conference on Geometric Modeling and Processing (GMP 2024)



Group photo of participants of GMP 2024

The 18th International Conference on Geometric Modeling and Processing (GMP 2024) was successfully held in Qingdao during June 5 to 8, 2024. Hosted by the Asian Association for Computer Graphics and Interactive Technology (Asiagraphics), this conference was co-organized by Shandong University, Qingdao University of Science and Technology, and Shandong University of Finance and Economics. The theme of the conference is “Intelligent Geometric Modeling and Processing”.

● Opening ceremony

The opening ceremony of GMP 2024 was chaired by Prof. Changhe Tu from Shandong University, who is the co-chairs of the conference. First, Prof. Shengying Li, the Vice President of Shandong University's Qingdao campus, expressed his warm welcome and gratitude to all participants, on behalf of the organizers. Then, Prof. Shi-Min Hu from Tsinghua University, who is the chair of Asiagraphics and the Academician of the Chinese Academy of Sciences, briefly introduced the series of GMP conferences and expressed his desire of promoting more researches and technologies in the community of geometric modeling and processing, on behalf of Asiagraphics.



Prof. Shengying Li and Prof. Shi-Min Hu in the opening ceremony

Finally, Prof. Ligang Liu from University of Science and Technology of China, introduced the paper submission and review process, on behalf of the program co-chairs of GMP 2024. This year, GMP 2024 had received a record-breaking 140 valid submissions. After a thorough peer review process in which each submission had at least 3 peer independent reviews, 40 papers were eventually accepted for regular presentations. In total, 97 IPC members and 147 non-IPC members were

invited to review the papers. He then introduced the program of the conference, including 3 keynote talks, 8 invited talks, 39 paper presentations, 4 poster presentations, and 1 industrial panel, etc. There were over 280 registered participants, from 77 universities and research institutions across 12 countries.

- Keynote talks

There are 3 keynote talks. Professor Xin Li from Texas A&M University, recipient of the Young Researcher Award from the International Society for Shape Modeling, discussed the application of generative AI and diffusion models in 3D geometric modeling tools. Professor Leif Kobbelt, a member of the European Academy of Sciences and a professor at RWTH Aachen University, provided an in-depth explanation of the problem of cross-model mapping correspondence and its optimization methods from the perspectives of topology and homeomorphism. Professor Takeo Igarashi from the University of Tokyo, chair of the ACM SIGGRAPH ASIA 2024 conference, showcased his research on generating virtual clothing in the digital world and supporting clothing design in the physical world.



Keynote speakers: Xin Li, Leif Kobbelt, Takeo Igarashi

- Invited talks

There are 8 invited talks. Professor Denis Zorin, an ACM Fellow from New York University, detailed the technical challenges and solutions in parameterizing complex 3D geometries. Professor Kai Hormann, chair of the GMP Conference Steering Committee from the University of Applied Sciences and Arts of Southern Switzerland, introduced a geodesic algorithm that utilizes compression processing and a tree-structured segmentation method. Professor Niloy J. Mitra, a member of the ACM SIGGRAPH Hall of Fame from University College London, discussed methods for reconstructing, generating, and editing 3D content using generative diffusion models. Professor Kevin Xu from the National University of Defense Technology in China presented innovative theories and methods for point cloud registration in industrial vision.

Professor Baining Guo, a fellow of the Canadian Academy of Engineering and a researcher at Microsoft Research Asia, proposed an extensible, efficient, and general 3D pre-trained backbone network called Swin3D. Professor Justin Solomon from MIT introduced the use of convex relaxation methods to solve complex geometric processing problems. Professor Eitan Grinspun from the University of Toronto proposed a flexible and efficient linear continuous reduction modeling method. Professor Lin Lu from Shandong University proposed a series of geometric microstructure

design and optimization methods driven by multiphysical performance.



8 invited speakers: (upper row) Denis Zorin, Kai Hormann, Niloy Mitra, Kai Xu, (lower row) Baining Guo, Justin Solomon, Eitan Grinspun, and Linda Lin Lv.

- Paper and poster presentations

There are 39 regular paper and 4 poster presentations at GMP 2024. These were organized into 11 paper sessions. Topics covered included Neural Feature Descriptors, Generation, Shape Synthesis, Interpolation, Fitting, Meshing, Wrapping & Collision, Reconstruction, and Geometric Computation. The award committee of GMP 2024 selected four papers as the best, based on their novelty and presentation quality.

- Summary

Starting from 2000, the series of GMP conferences have grown over the past two decades into one of the most influential global conferences on geometric computing. Successfully hosted in diverse locations all around the world, the conference attracts experts and scholars from over 400 universities across more than 60 countries and regions. It has served as a pivotal platform for the exchange of new theories, methods, and applications in geometric modeling and processing, significantly contributing to global advancements and talent development in the community of geometric modeling and processing.