HYPERSEEING
Special Issue on SMI-SCULPT 2023

Shape Modeling International 2023
Shape Creation Using Layouts, Programs, & Technology (SCULPT) Event

Twenty second Interdisciplinary Conference of the International Society of the Arts, Mathematics, and Architecture

Online Event
July 7, 2023

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History of Shape Creation Using Layouts, Programs, & Technology (SCULPT) Event

The SCULPT started as an experiment in expanding the scope of shape modeling international (SMI) conference in 2012. It was originally called Fabrication and Sculpting Event (FASE). We also had another FASE event in SMI'2013. There were very positive responses to the FASE papers and presentations in both 2012 and 2013. Although we skipped FASE in SMI'2014, based on the success of earlier events, we continued the FASE event from 2015 to 2021 as a part of SMI conference.

In 2013, Nat Friedman, the chair of the International Society of the Arts, Mathematics, and Architecture (ISAMA), asked me if we could organize the event as an annual ISAMA conference. I presented the idea to the SMI steering committee. The Committee unanimously agreed with the suggestion. As a result, this event can now be considered also as the Twentieth Interdisciplinary Conference of ISAMA.

The ISAMA conference has a rich history. The first Art and Mathematics Conference (AM 92) was organized by Nat Friedman at SUNY-Albany in June, 1992. This conference was followed by annual conferences AM93-AM97 at Albany and AM 98 at the University of California, Berkeley, co-organized with Carlo Séquin. ISAMA was founded by Nat Friedman in 1998 along with the ISAMA publication Hyperseeing co-founded with me in 2006. In addition, the Art/Math movement has taken off with the formation of many additional conferences and organizations. In particular, we mention the very successful Bridges conference organized by Reza Sarhangi in 1998 and the excellent Bridges Proceedings. The significance of the art/math movement is now recognized internationally and in particular by the extensive art/math exhibit at the annual Joint Mathematics Meeting of the American Mathematical Society and the Mathematical Association of America organized by Robert Fathauer.

In 2022, we decided to name the event as SCULPT to communicate the concept better. It is a short form of Shape Creation Using Layouts, Programs, & Technology (SCULPT). The main difference with other math/art conferences is that SCULPT focuses solely on physical realization of 3D shapes. We invite submissions mainly from practitioners such as sculptors and architects to describe their methods. We expect that such papers and the following discussions can provide new problems, issues, and questions for theoretical shape modeling research.

Ergun Akleman

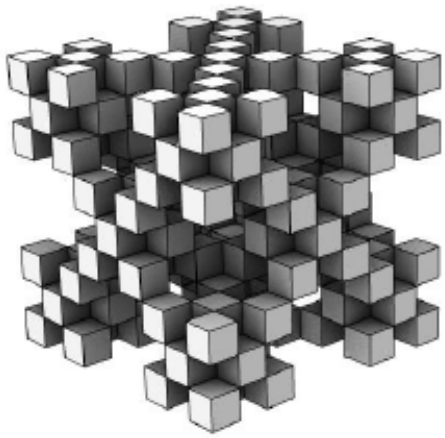
Editor, Hyperseeing

Preface

Shape Creation Using Layouts, Programs, & Technology (SCULPT) 2023

There are at least two aspects to shape modeling: theoretical and practical. The mathematical and theoretical aspects of shape modeling have traditionally been supported by the SMI conference. With the Fabrication and Sculpting Event (FASE) our goal is to include more hands-on, application-oriented ways by designers and sculptors who construct sophisticated real-world objects.

FASE has its own program committee, and the accepted papers are published in Hyperseeing. With FASE, we hope to attract practitioners who might usually be less inclined to write papers containing formal algorithms or mathematical proofs, but who nevertheless have important things to say that are of interest to the shape modeling community and who also might provide visually stimulating material.



For this year's Fabrication and Sculpting Event, we solicited papers that pose new questions and motivate further research in designing, fabrication and sculpting. Topics should be useful, for example, in the following areas: Fabrication of digital models, Advanced manufacturing techniques such as additive manufacturing, laser cutting or CNC milling, Interactive or procedural design of manufacturable shapes, Interconnections of complex modeling and fabrication processes, visually stimulating fabrication techniques or printed structures.

Thus, the scope of FASE is the intersection of shape modeling and fabrication methods/algorithms, and papers may focus on both the digital/theoretical and the physical domain or just one of these domains – as long as the connection to the other domain is clear. It is not a requirement that the techniques presented in the paper involve computation as such, but they need to have a clear algorithmic or mathematical element.

We received nine submissions this year and five of them were accepted as regular papers. The five accepted papers span a wide range of topics and views on the fabrication process of various artistically interesting artifacts. We wish to thank the authors and the reviewers for their participation in the SMI/ISAMA 2023 SCULPT Event. We hope that new ideas and partnerships will emerge from the FASE papers that can offer a glimpse into a much larger territory and the event can enrich interdisciplinary research in Shape Modeling. We hope that the attendees of SMI 2023 will enjoy this event of the conference.

Oleg Fryazinov, Negar Kalantar, and Carlo Séquin

SCULPT Papers chairs