

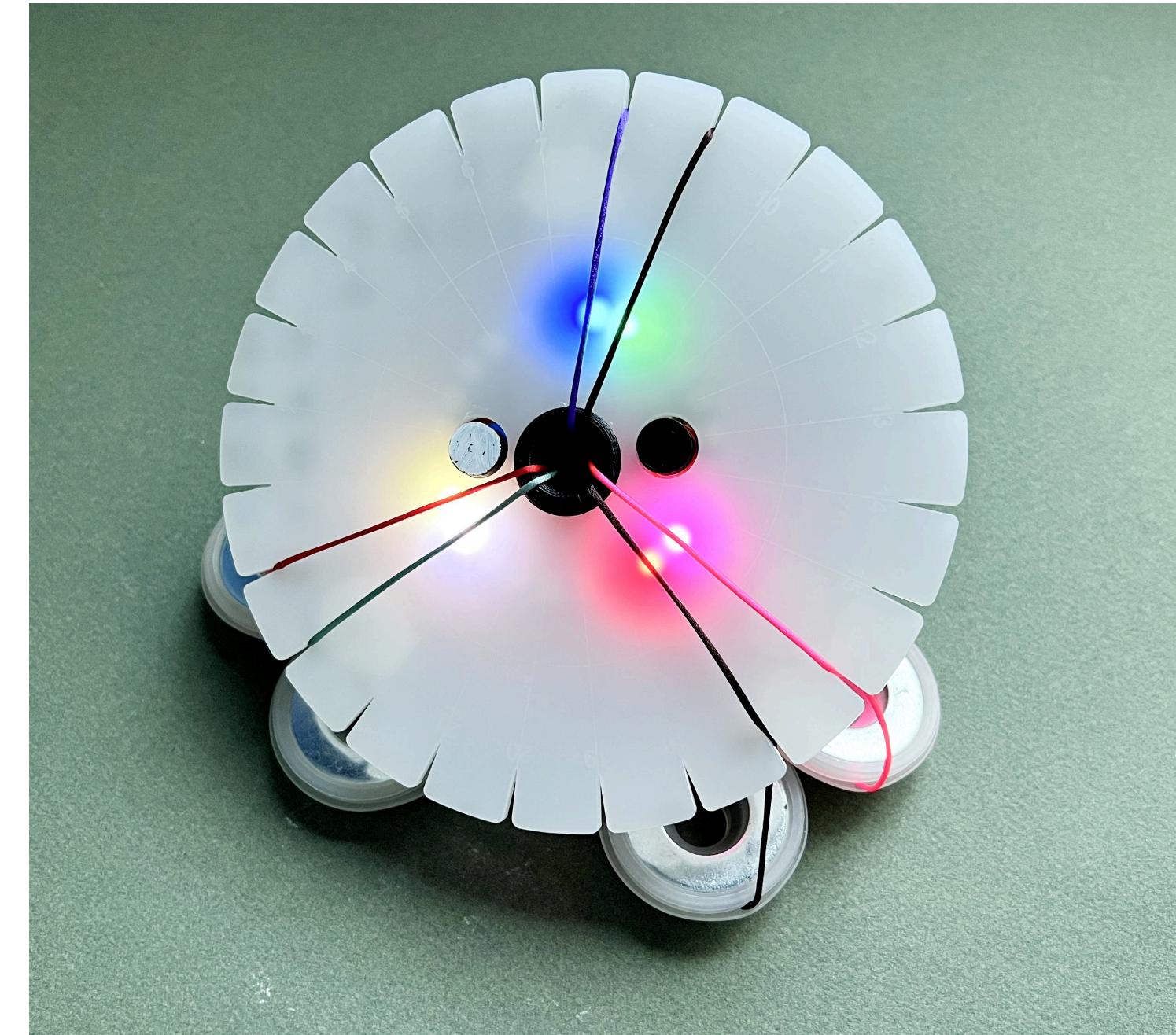
Interactive Braiding

Manual Kumihimo braiding tool required skilled users but what about interactive tool?



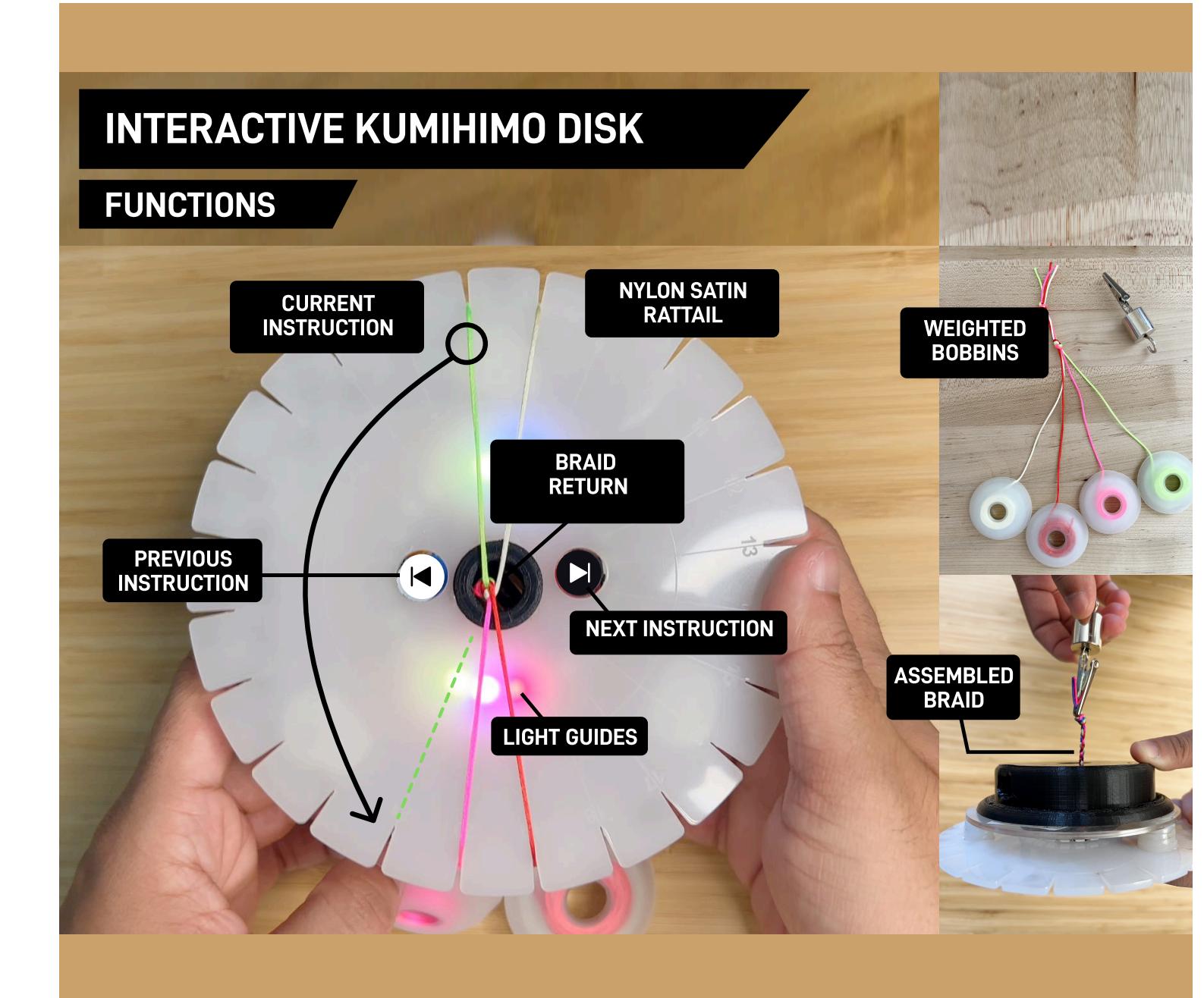
TYPES OF BRAIDED FABRIC

A wide range of braided fabrics are available and can not be produced with a single tool



TOOL THAT INTERACT

We developed a tool that can provide visual feedbacks on how to move strands based on the unique design of the fabrics.



FEATURES AND CONSTRUCTION

The tools can detect and differentiate how beginners braid and how skilled makers braid by analyzing the movement of the strings and disk during braiding.

[**A dataset paper was published based on collecting human body responses. Click here for details.](#)

Thermoplastic Kilnforms

Can an ontology of materials help us better understand and use materials?



GLASS ONTOLOGIES

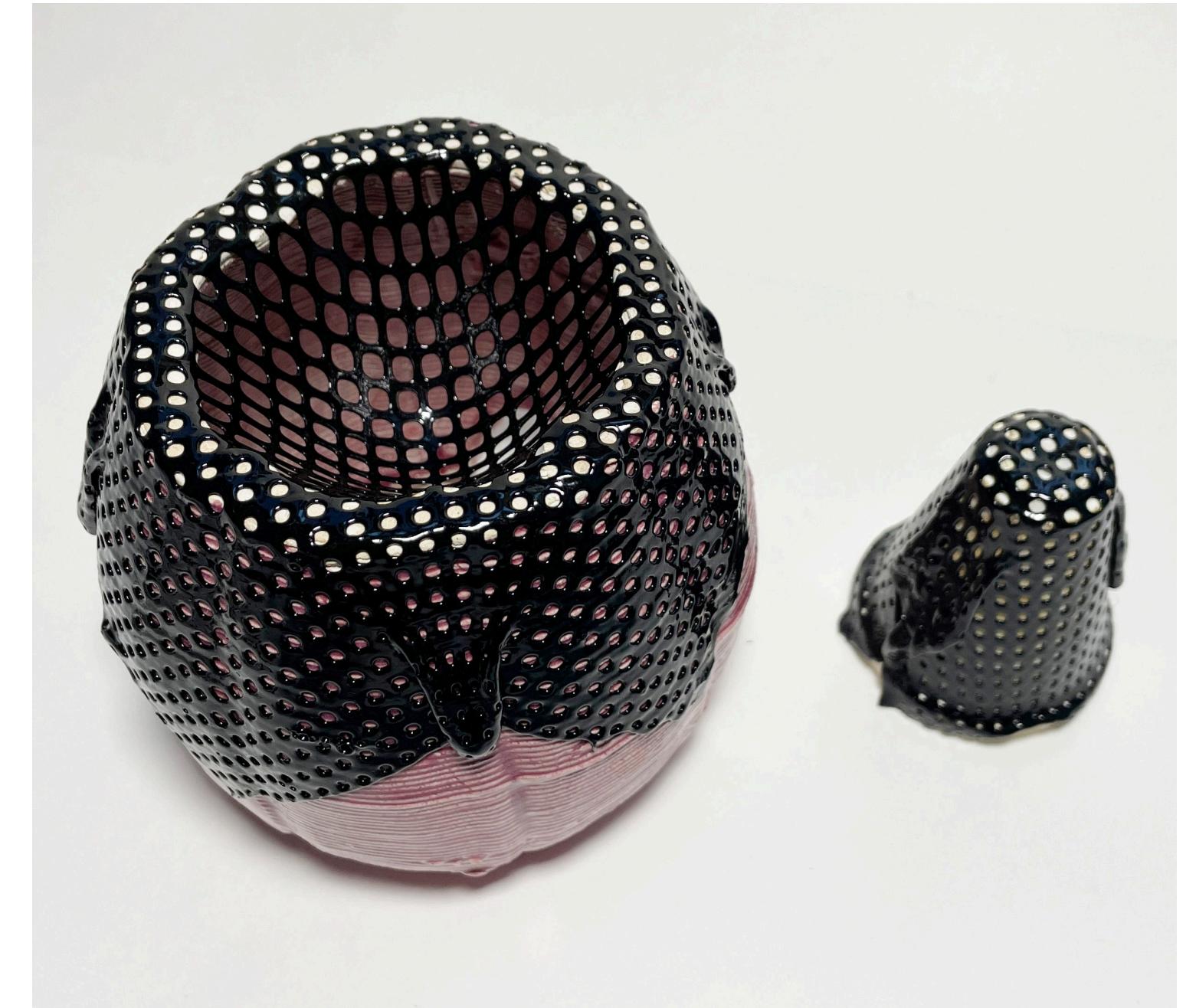
Various terms and techniques exclusive to the glassmaking community often go unnoticed in other fields. Can these techniques be adapted and applied to materials with similar properties, such as those that become flexible when heated?

[**A ontology-based paper was published in DIS2023. Click here for details.](#)



CROSS-COMMUNITY ONTOLOGY DEVELOPMENT

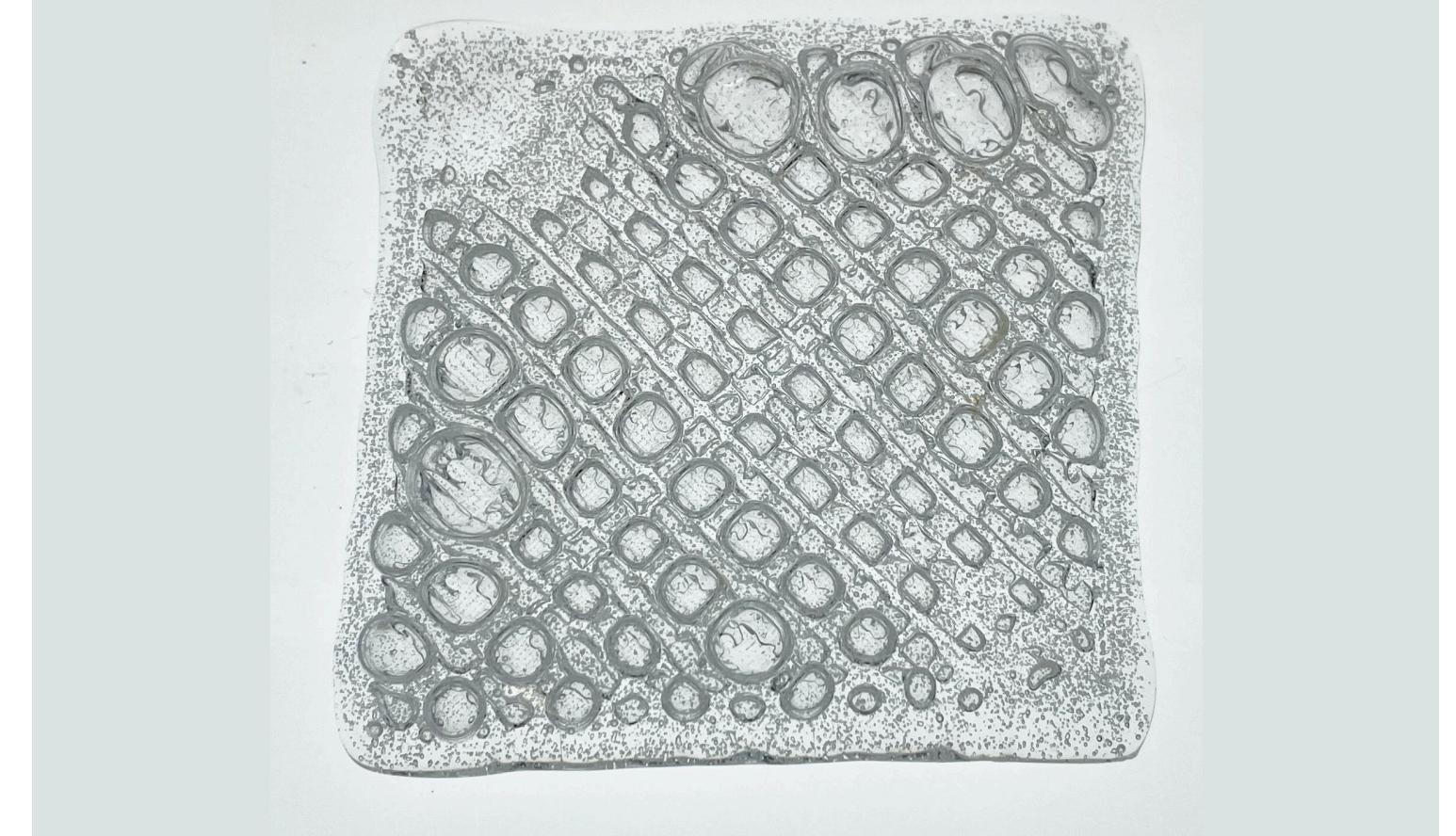
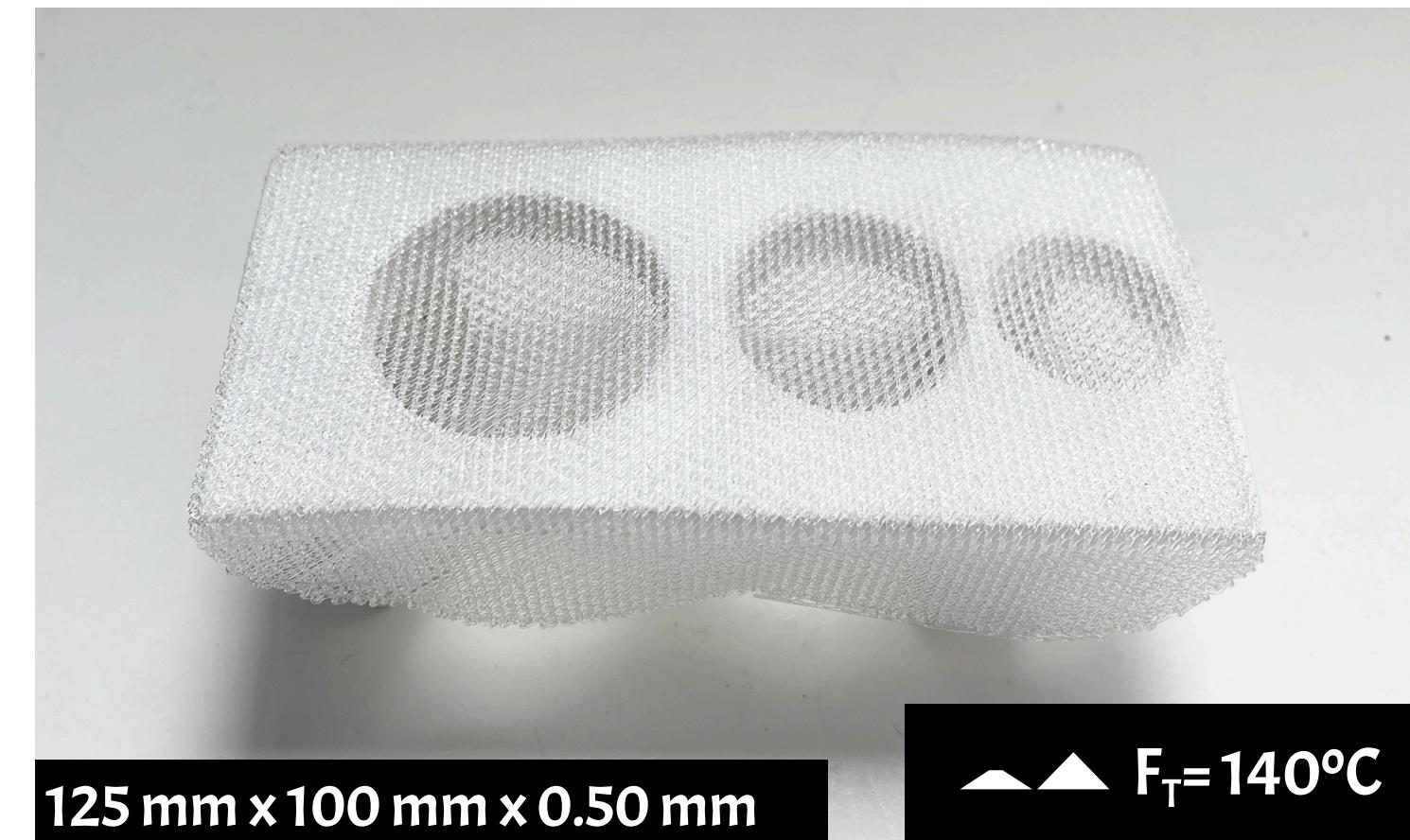
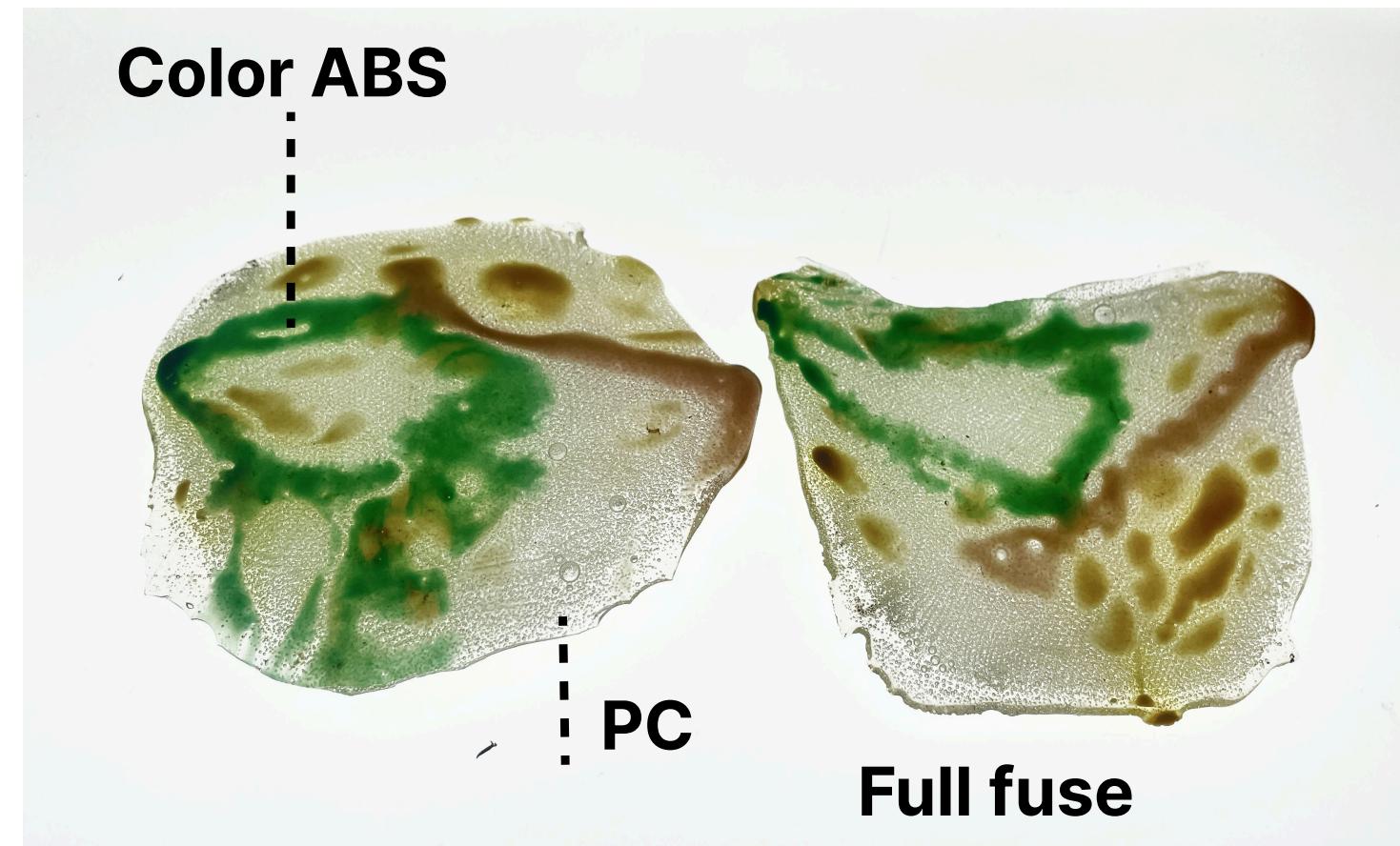
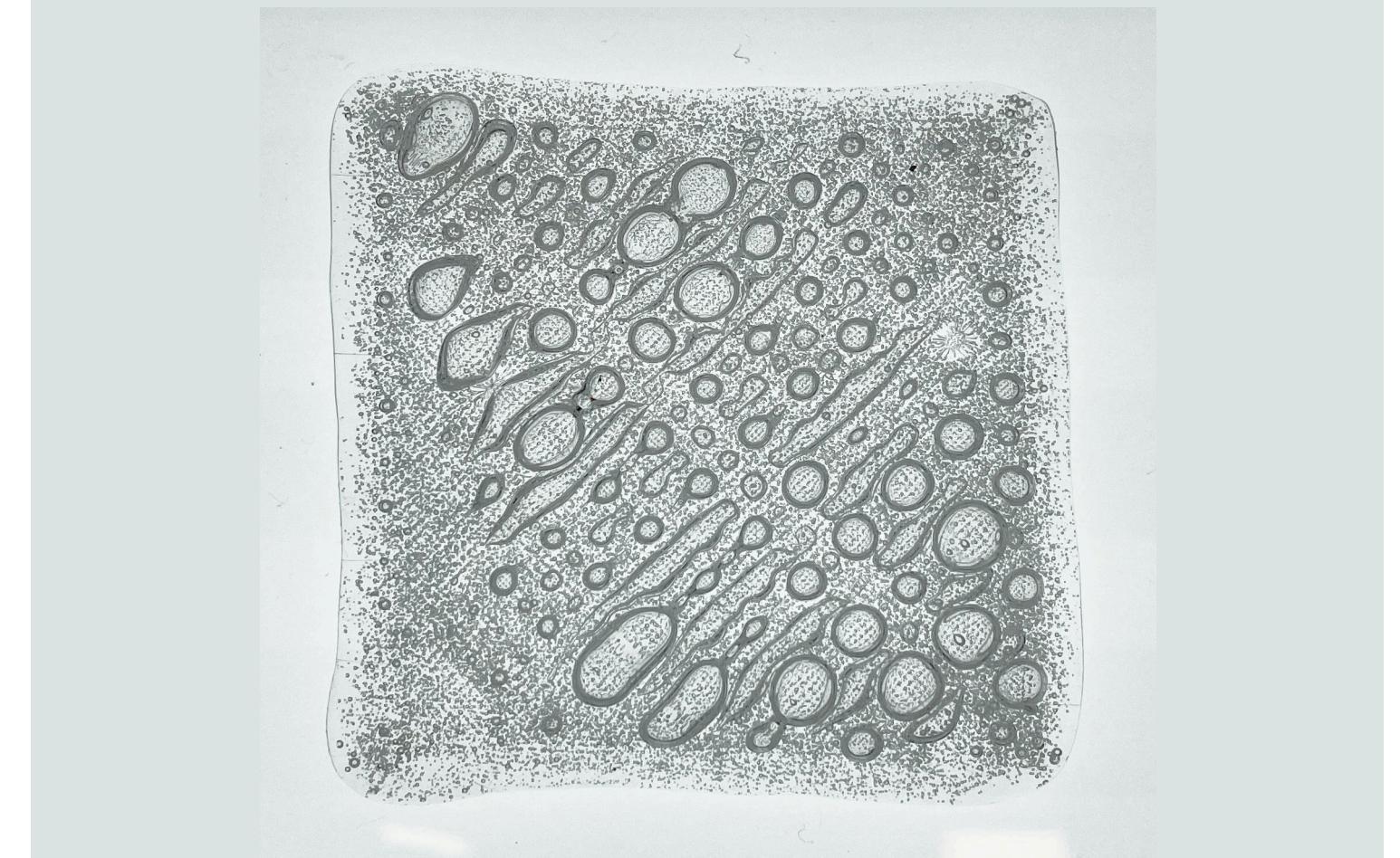
We developed an ontology based on glassmaking and cross-referenced it with thermoplastics manufacturing. Subsequently, we applied unique techniques to create artefacts resembling glass, using thermoplastic materials.



SHAPE FORMATION

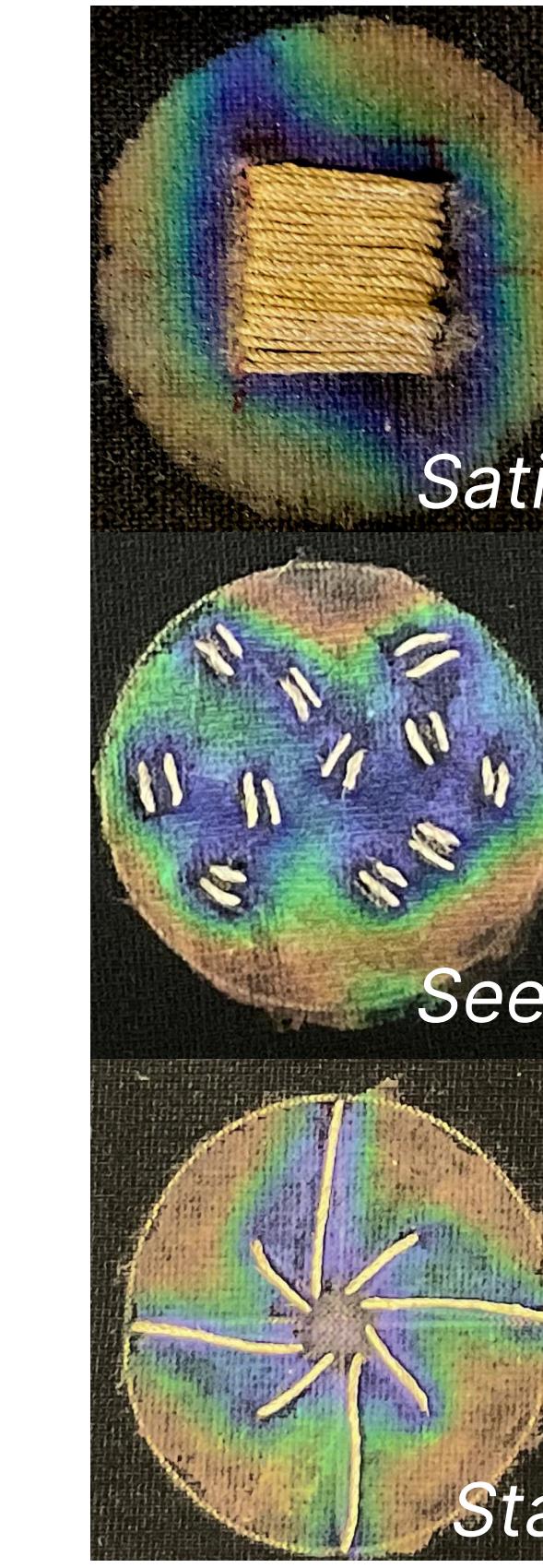
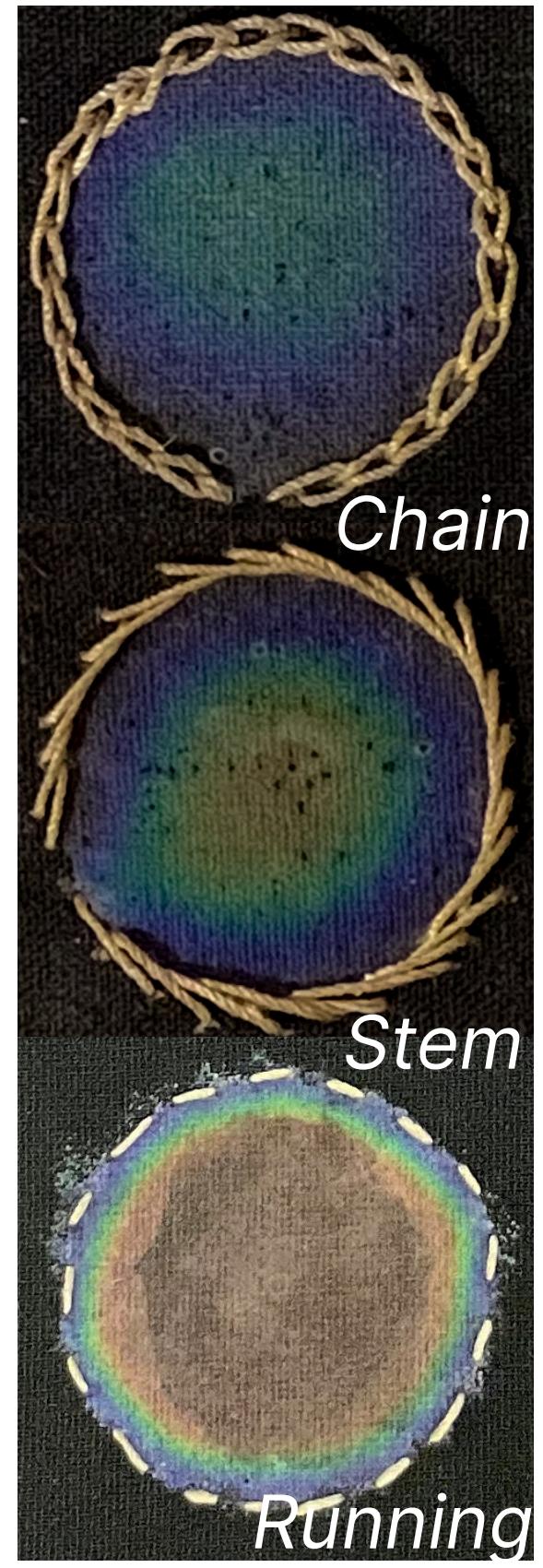
Ontology-guided design enables the creation of unique shapes and innovative designs.

What other glass artwork-making techniques can we apply in thermoplastic area from the developed ontology?



Embr-Hand Embroidered Liquid Crystal Textile Displays

I assisted in the development of flexible textile displays using black-colored or printed fabric, conductive thread, and liquid crystal solution.



Material Tuning

Could it be useful to develop a tool that can assist with different types of tuning in HCI communities?

A Tune Candidates

Mortise and Tenon Fit Test

What is the diameter of the inside hole of a bead like mortise to fit it on tenon (peg)?

Candidates Evaluated: 7/7

Inside hole diameter	Total diameter
2.0 mm	4.6 mm
1.8 mm	4.6 mm
1.7 mm	4.6 mm
1.5 mm	4.6 mm
1.3 mm	4.6 mm
1.2 mm	4.6 mm
1.0 mm	4.6 mm

Total diameter

B Evaluation Criteria

Rate your agreement with the following statements:

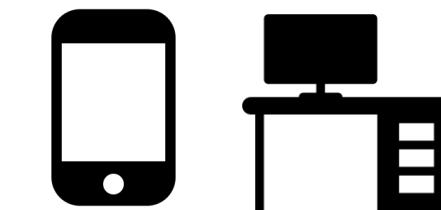
Hold: The peg can effectively hold the bead

Removal: The bead can be easily removed from the peg

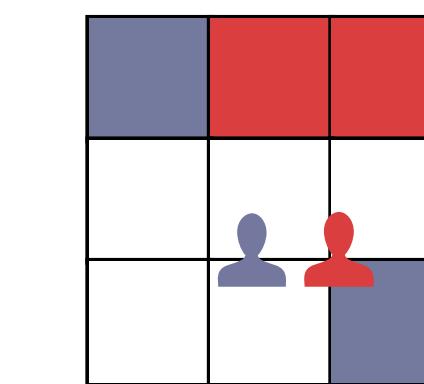
Force: Removing beads from the pegboard does not require significant force

NOTES: A bit too cakelike.

C Flexibility



Likert
Statements



Numerical
Data

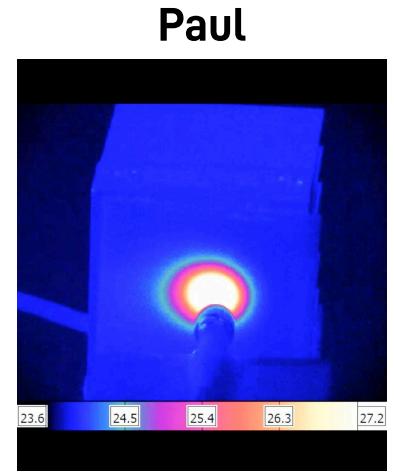
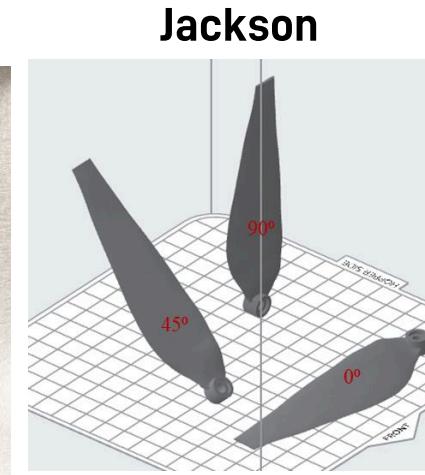
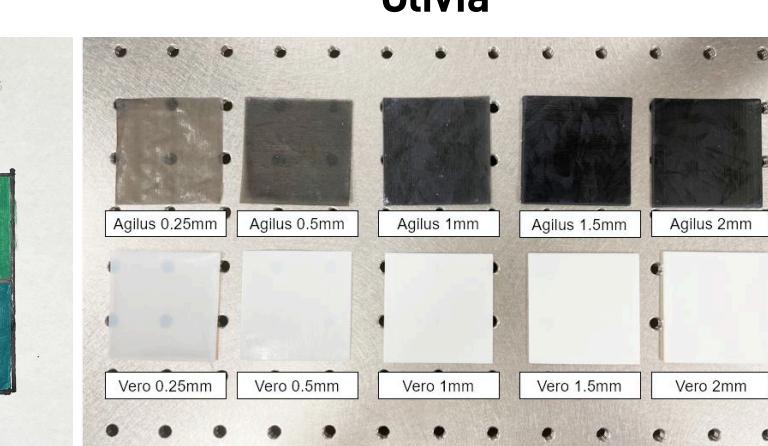
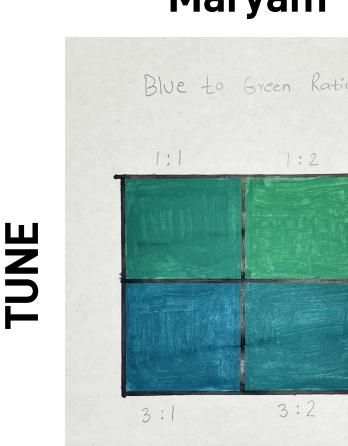


Open Ended

Mobile
Desktop

Collaborative

TUNE



CATALOG



Material Thickness

CRITERIA

Blue

Green

Material Name

40% 51% 66% 74% 78%

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Weaving in e-textiles (on going)

E-textile development requires a deep understanding of fabrication processes and yarn preparation. Despite attaining a certain level of expertise, makers often struggle to produce complex designs.

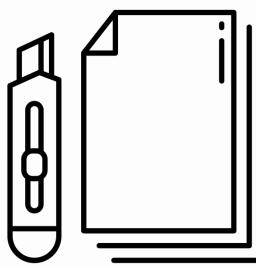
Can this challenge be addressed? If so, how?



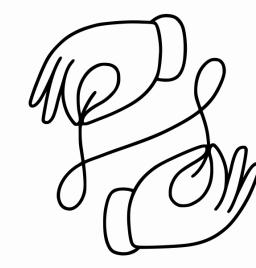
****This is a work in progress. Please send me an email if you are interested in collaborating.**

What types of tangible user interfaces can be developed using fuse beads as a craft material?

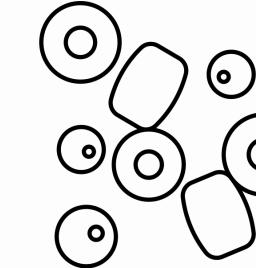
Craft Materials



Paper



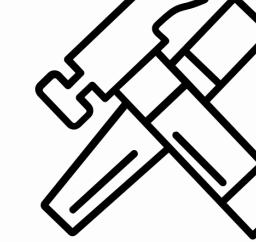
Yarn



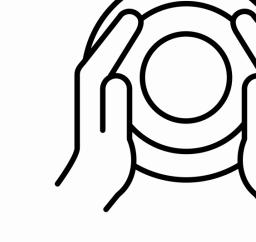
Beads



Fabrics



Wood

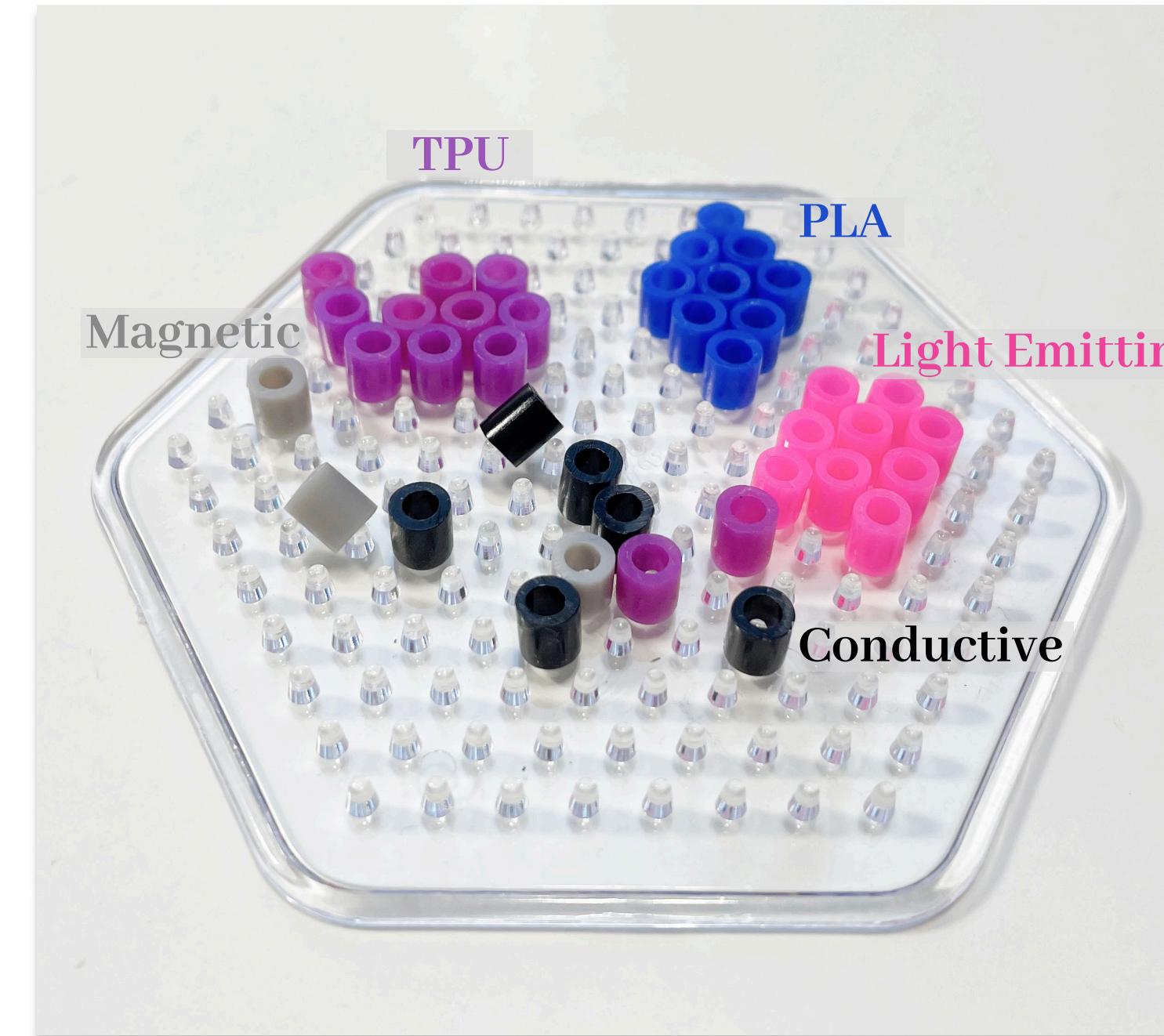


Clay



CRAFT MATERIALS IN TANGIBLE COMPUTING

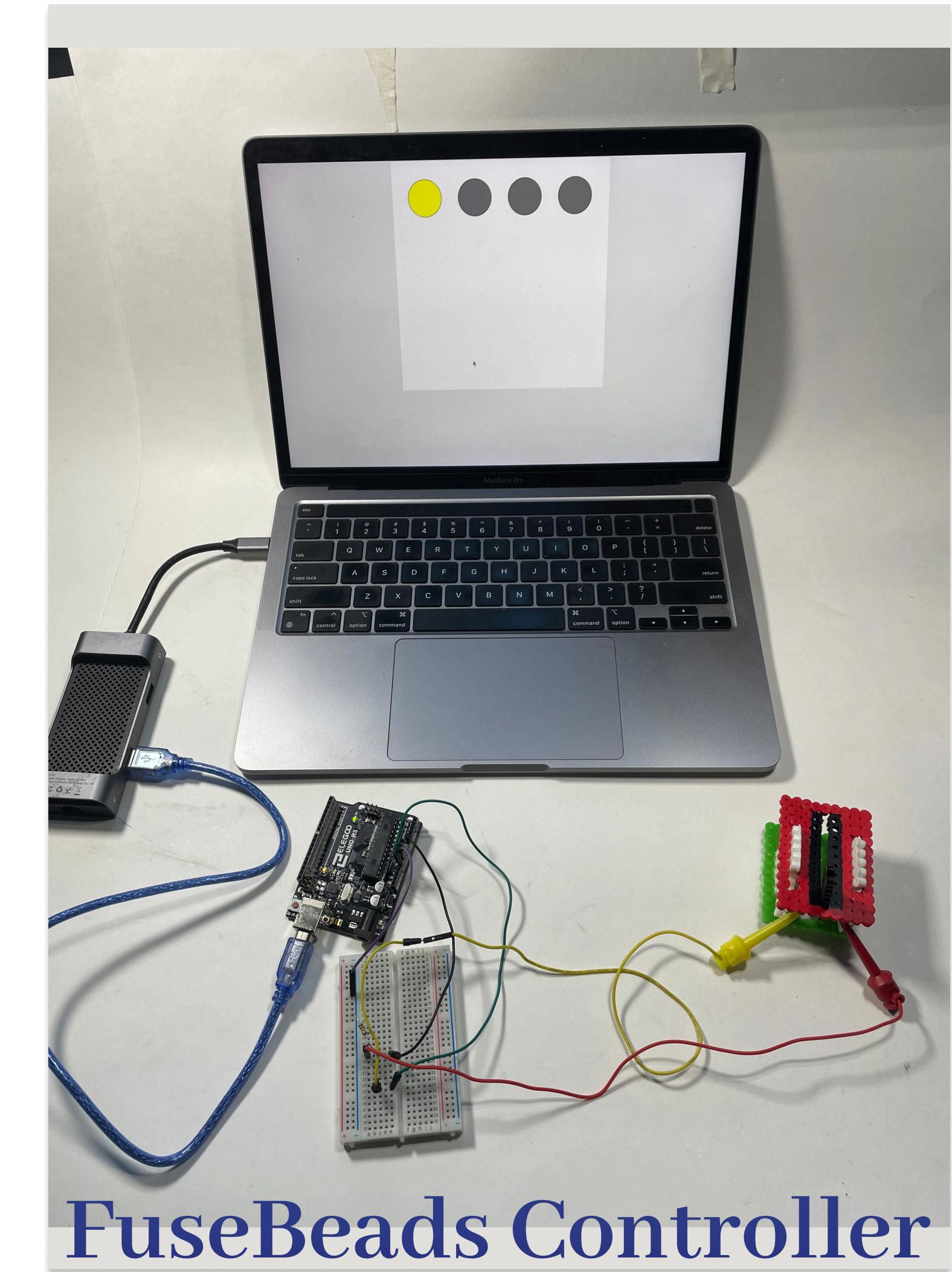
A wide variety of craft materials have been used in tangible computing. I explored crafting techniques to develop different tangible interfaces using multi-material fuse beads.



MULTI-MATERIAL FUSE BEADS

While traditional fuse beads are made from standard plastic materials, we explored the use of fuse beads created from various functional filaments, including water-soluble, conductive, flexible, and light-emitting materials. These were applied to the development of diverse tangible interfaces.

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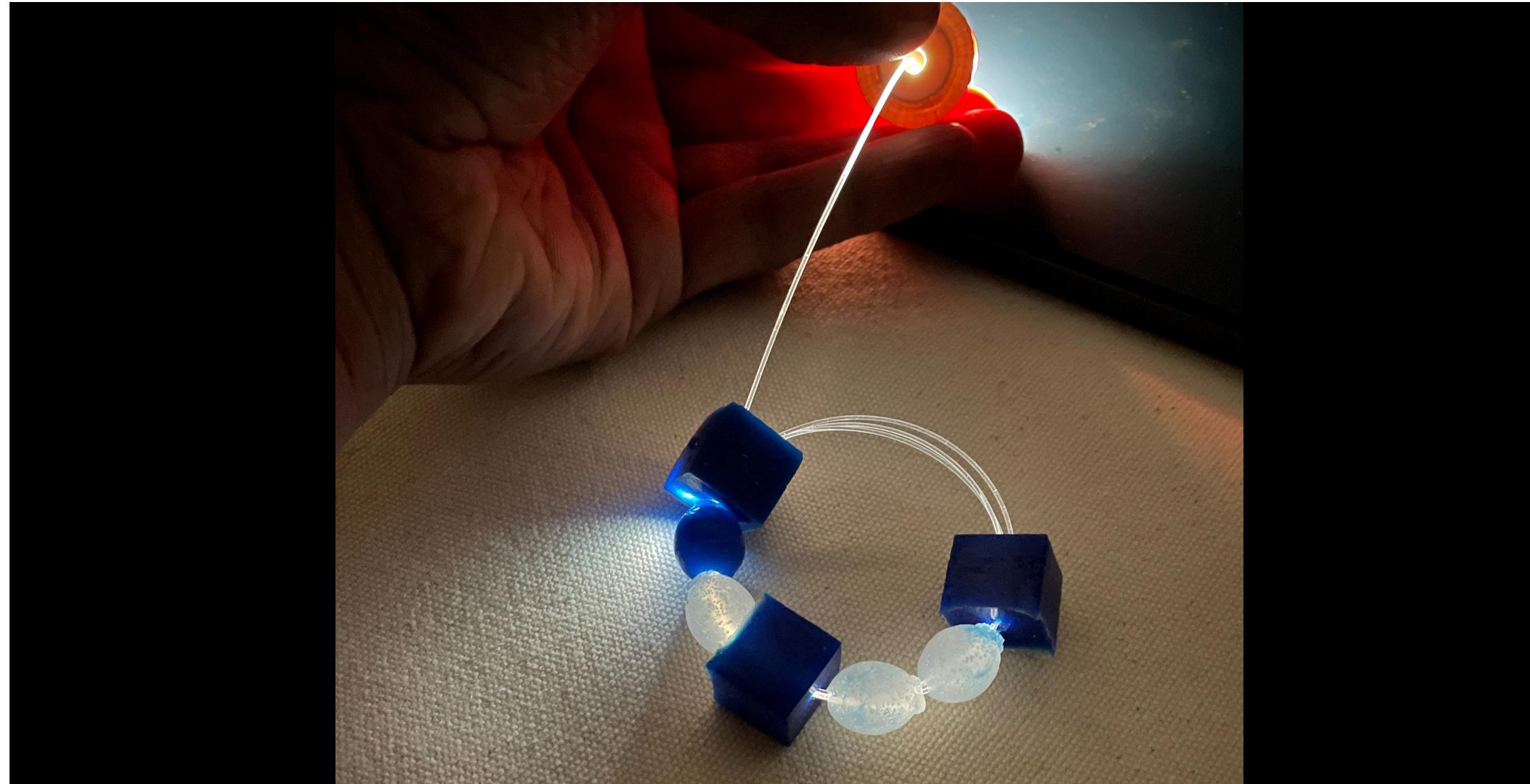


FuseBeads Controller

Exploration of Bead Materials and Their Functionalities

What types of materials can be used to create fuse beads? Can these materials enable interactive features?

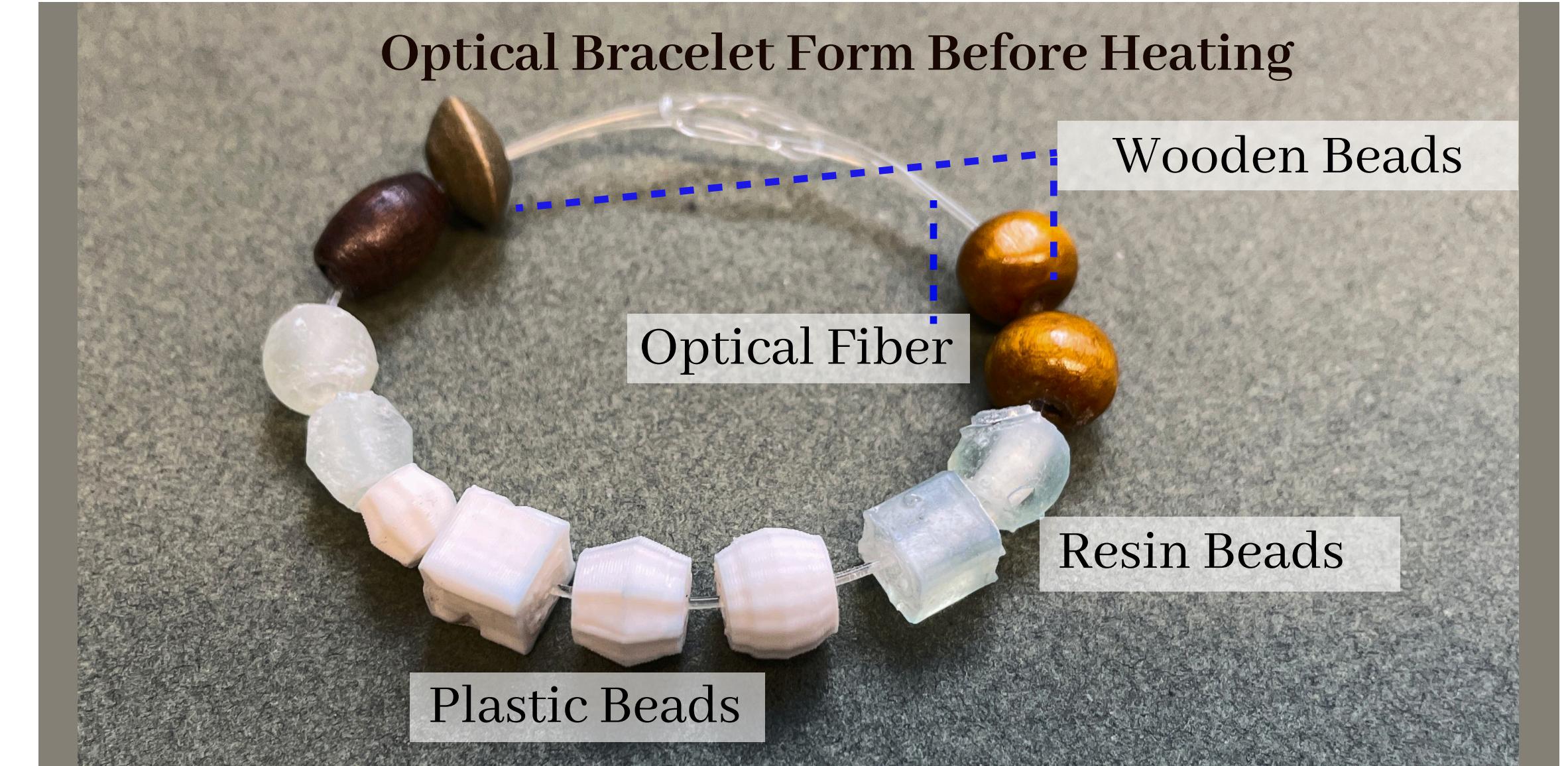
Beyond ornamentation, in what other areas can fuse beads be effectively employed?



BEADS FROM SILICONE

Silicone beads are soft, provide excellent insulation, and possess remarkable optical properties. Could they be integrated into wearable composites by combining them with various textile fabrics?

****This is a work in progress. Please send me an email if you are interested in collaborating.**



EXPLORING TEXTURES AND FORMS

I investigated how various material combinations, such as flexible, conductive, water-soluble, and optical filaments, can create beads with diverse textures, shapes, and functionalities.