

Tabby

Explorable Design for 3D Printing Textures

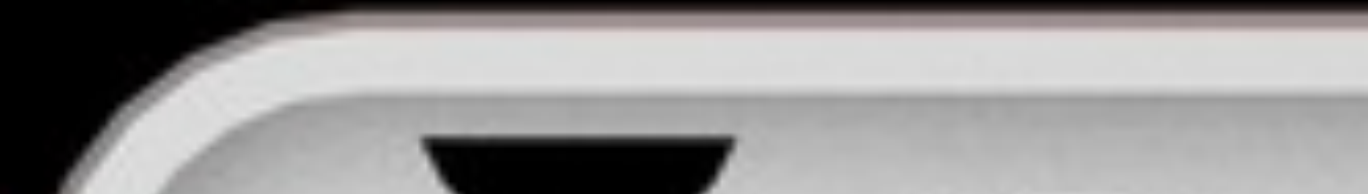
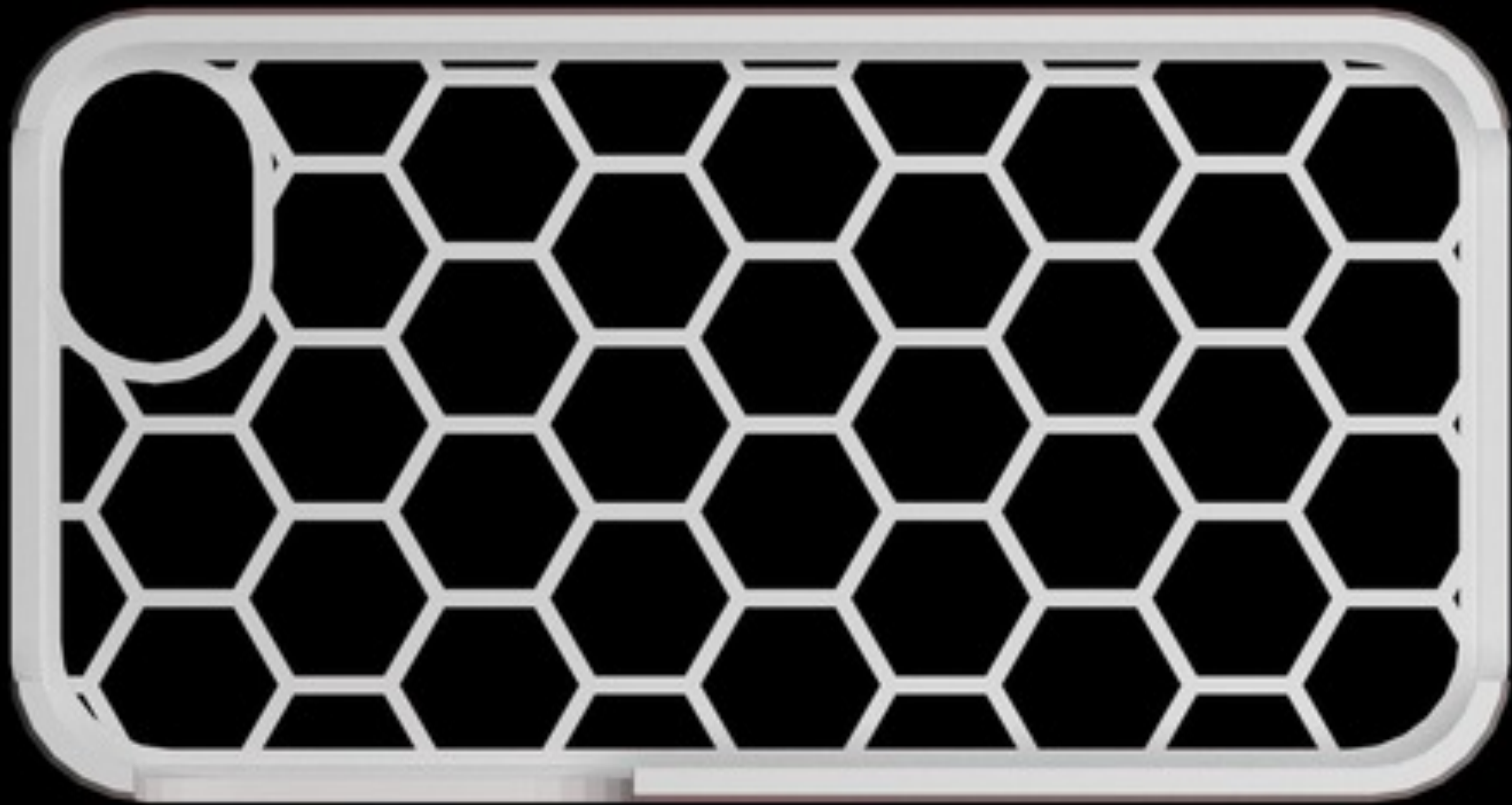
Ryo Suzuki (University of Colorado Boulder)

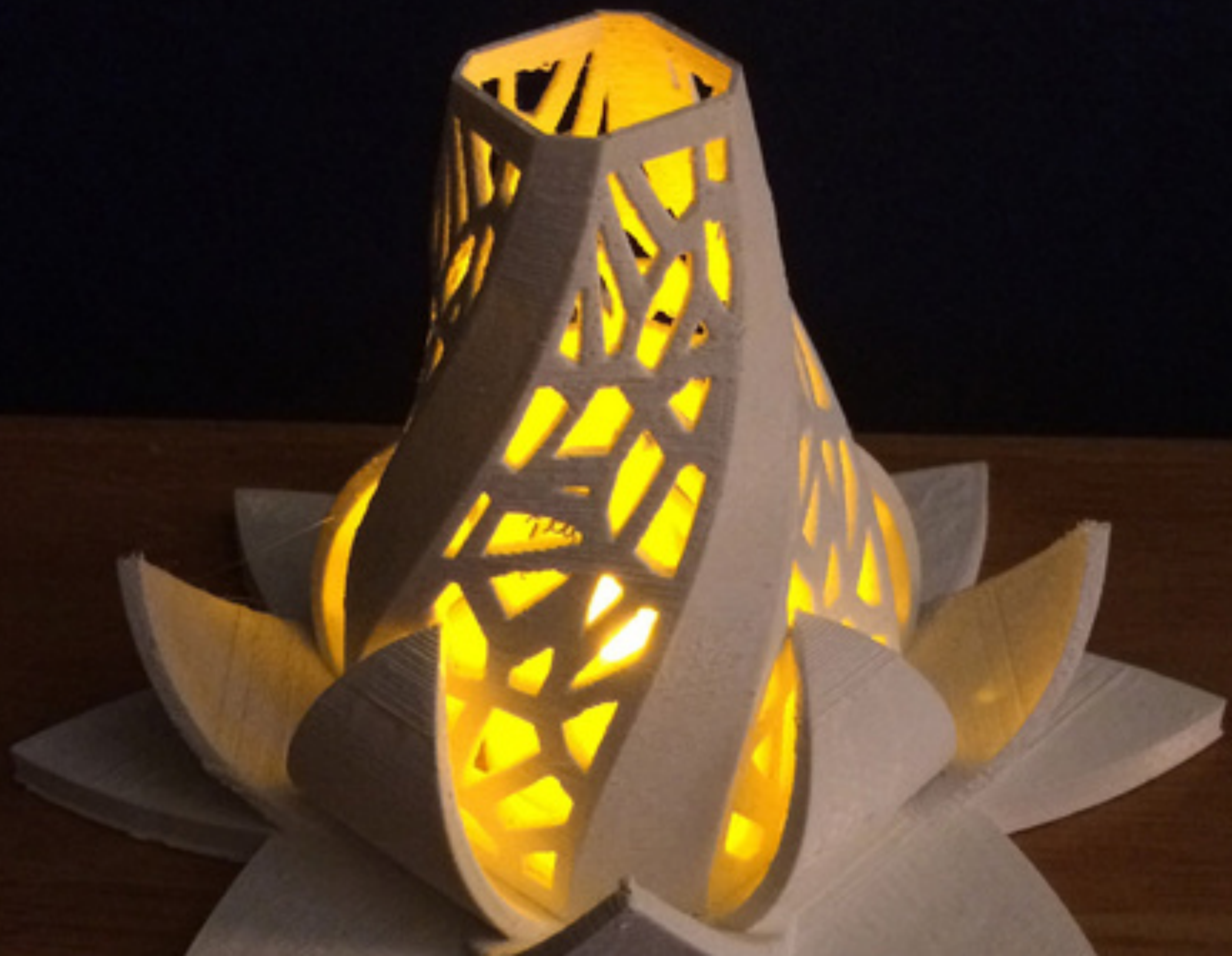
Koji Yatani (The University of Tokyo)

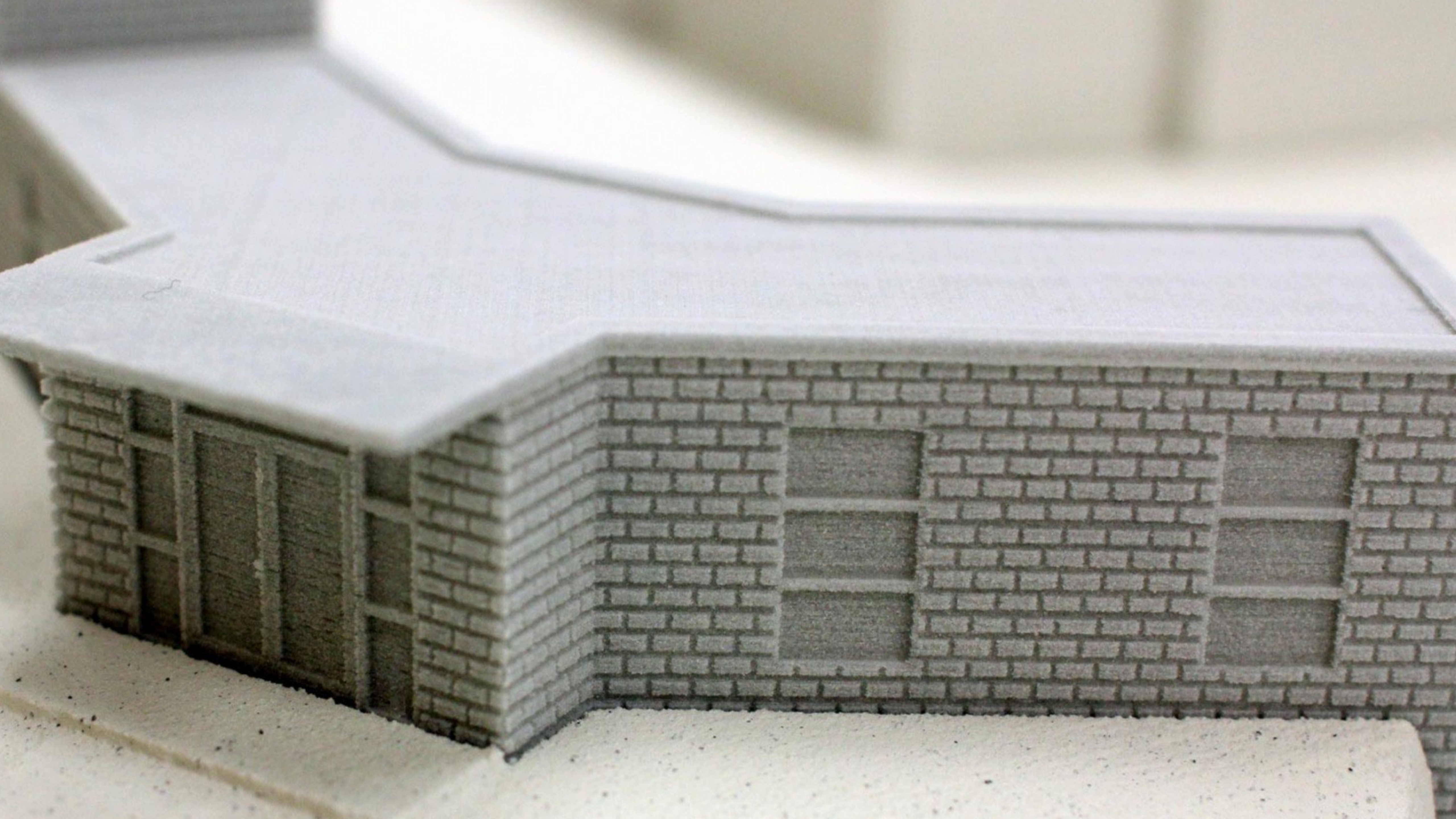
Mark D. Gross (University of Colorado Boulder)

Tom Yeh (University of Colorado Boulder)





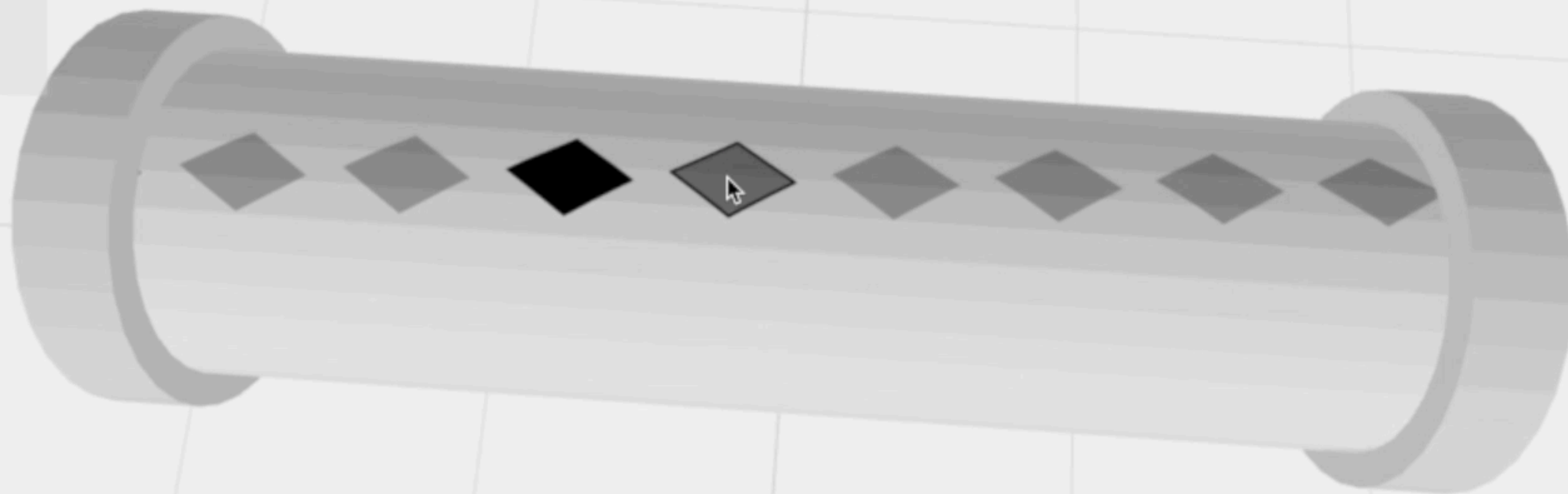


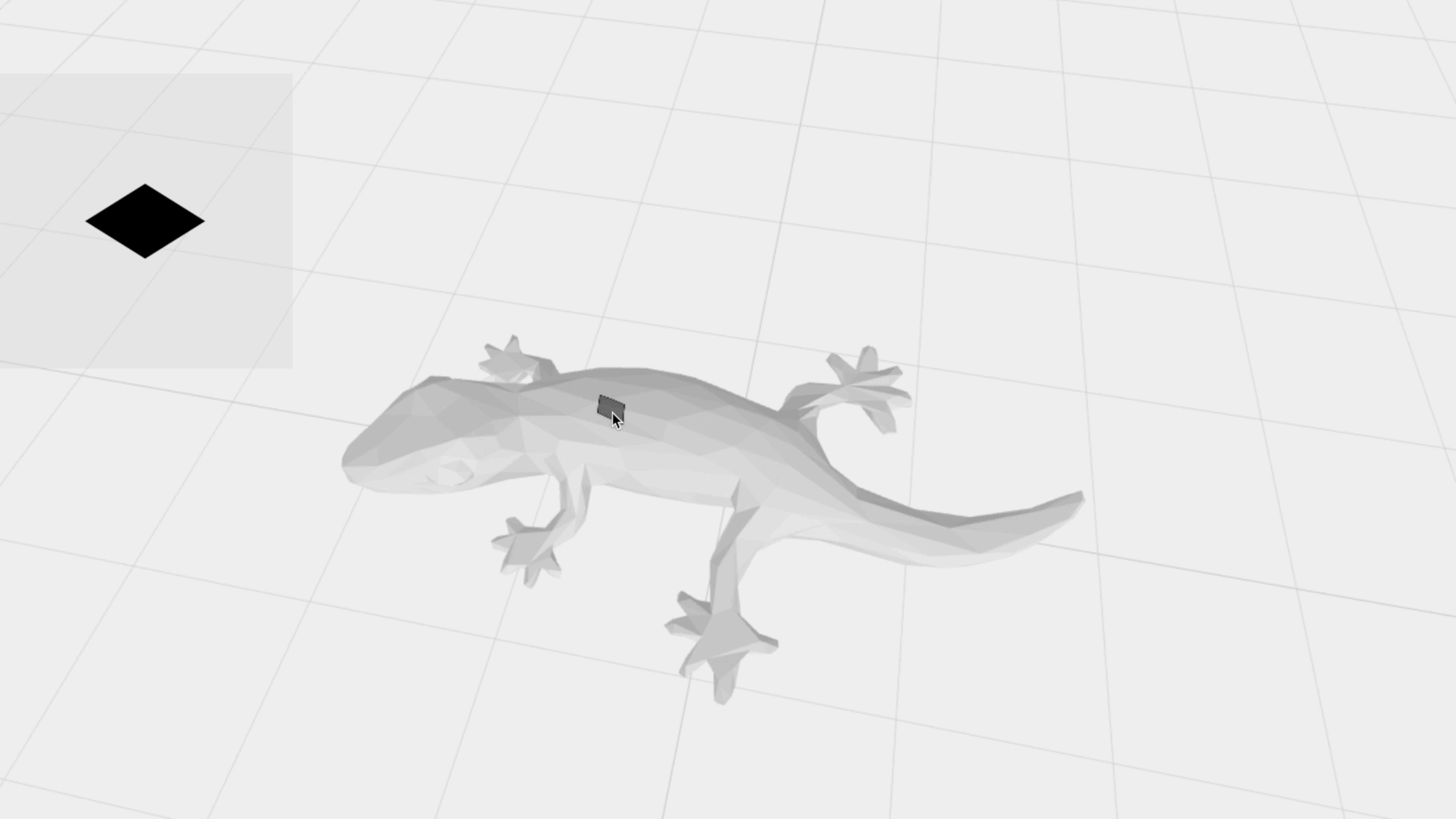




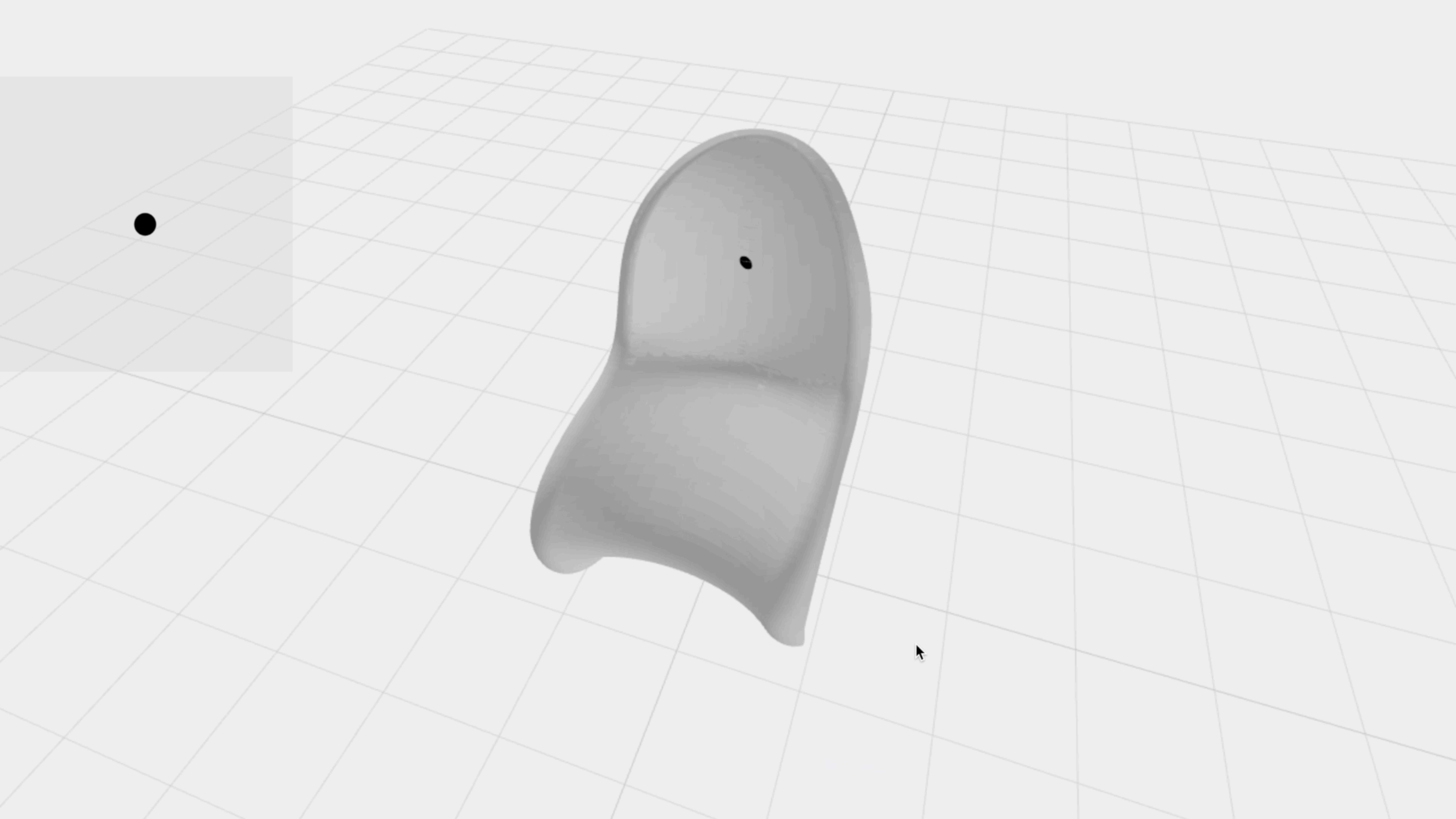


**However,
texture pattern creation
is difficult**

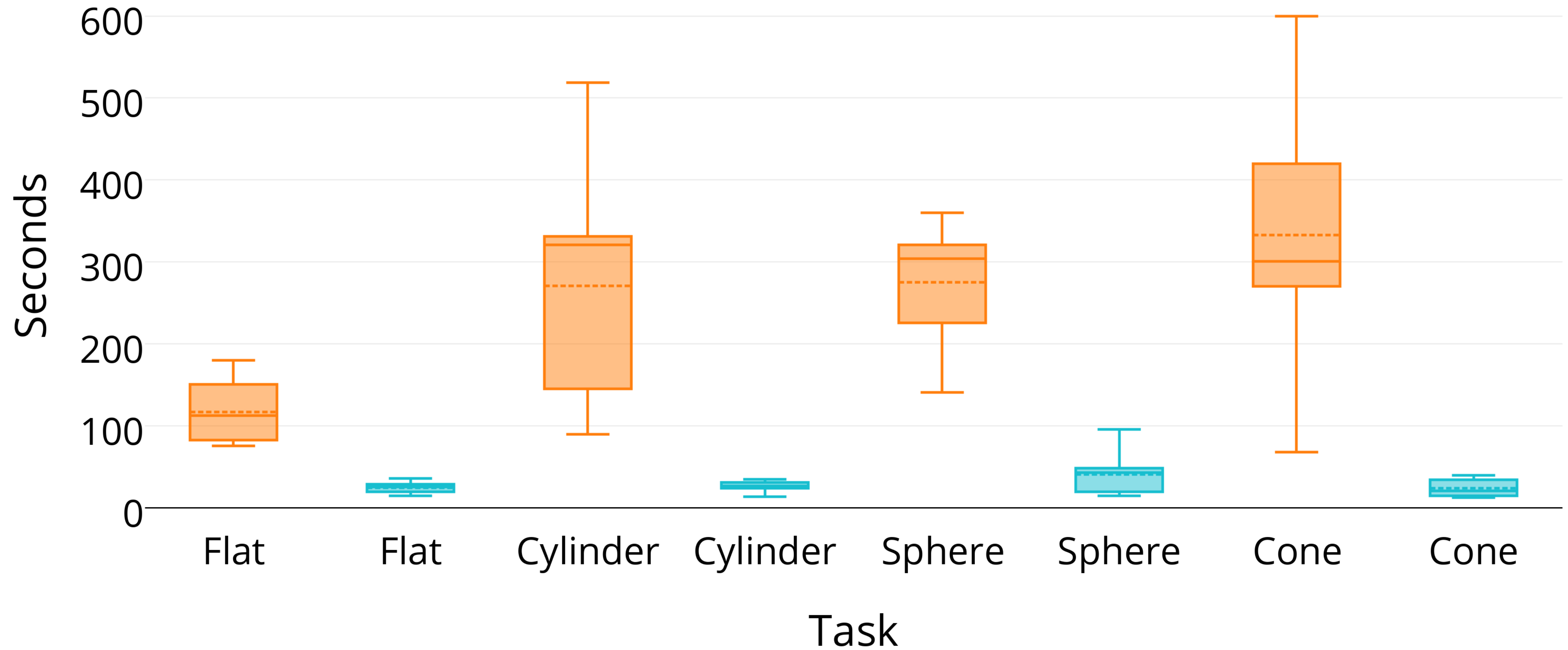








Texture Creation Task



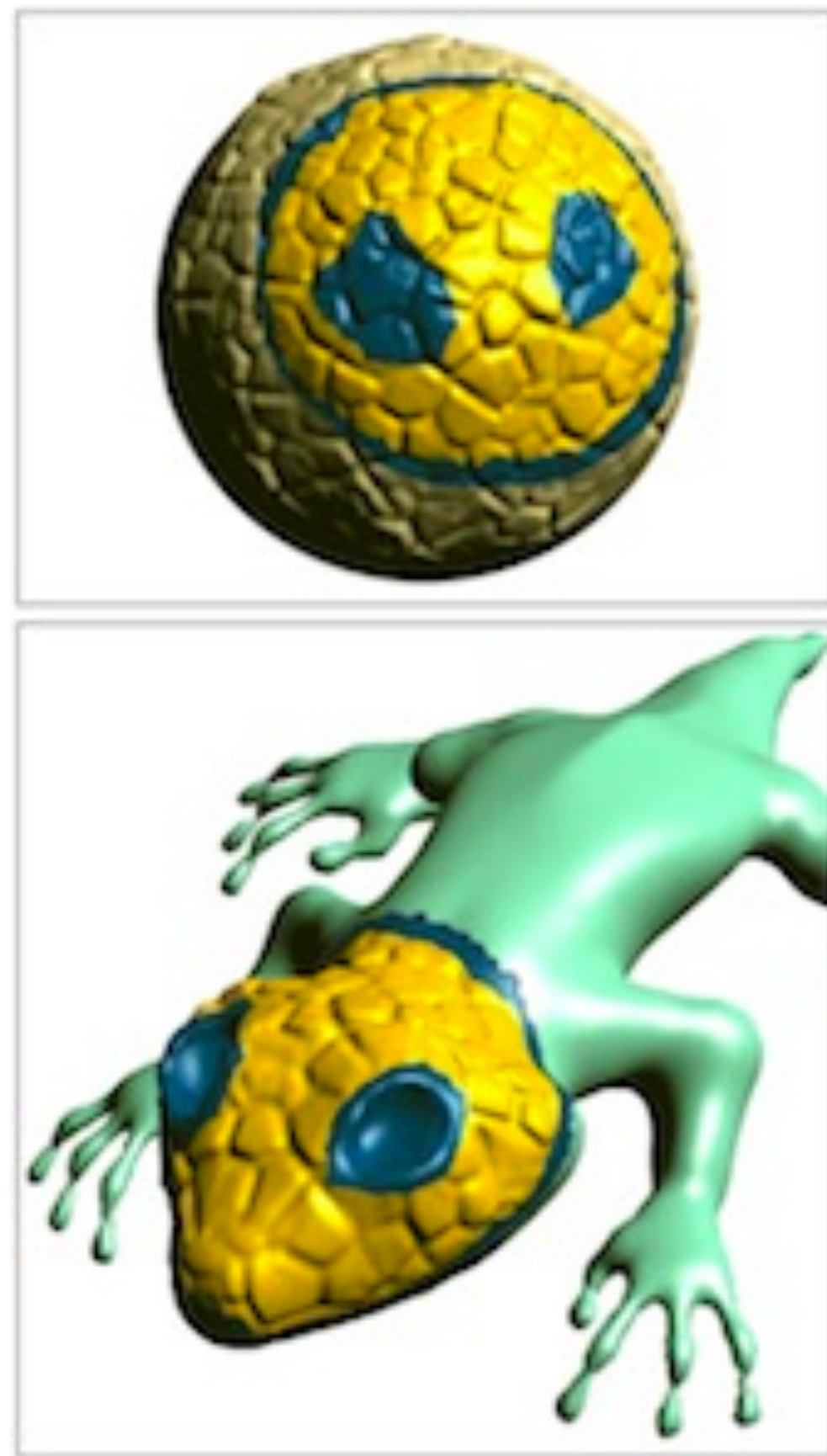
1. Summary

2. Related Work

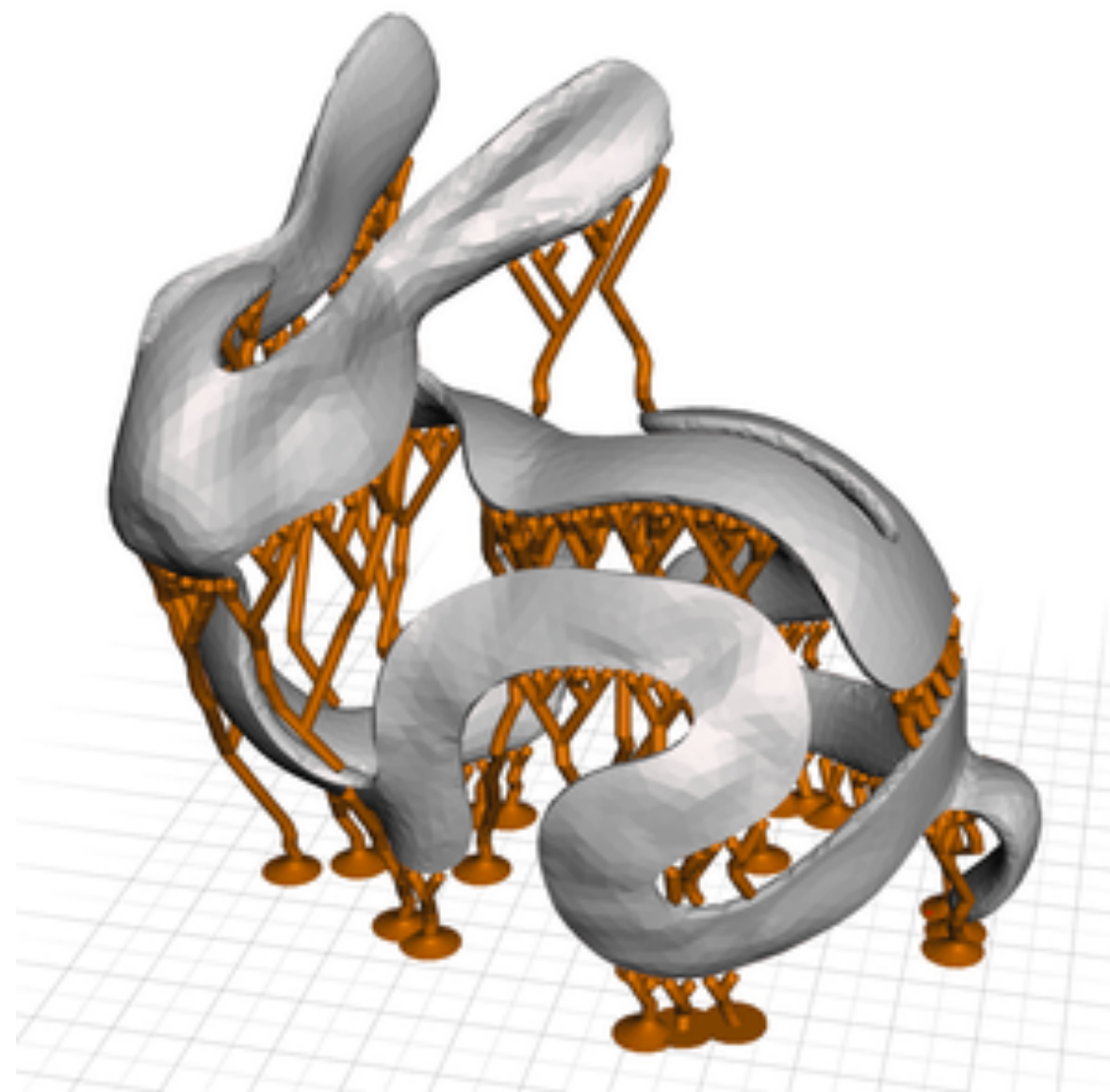
3. Design Goals

4. System and Implementation

5. Conclusion



GeoBrush



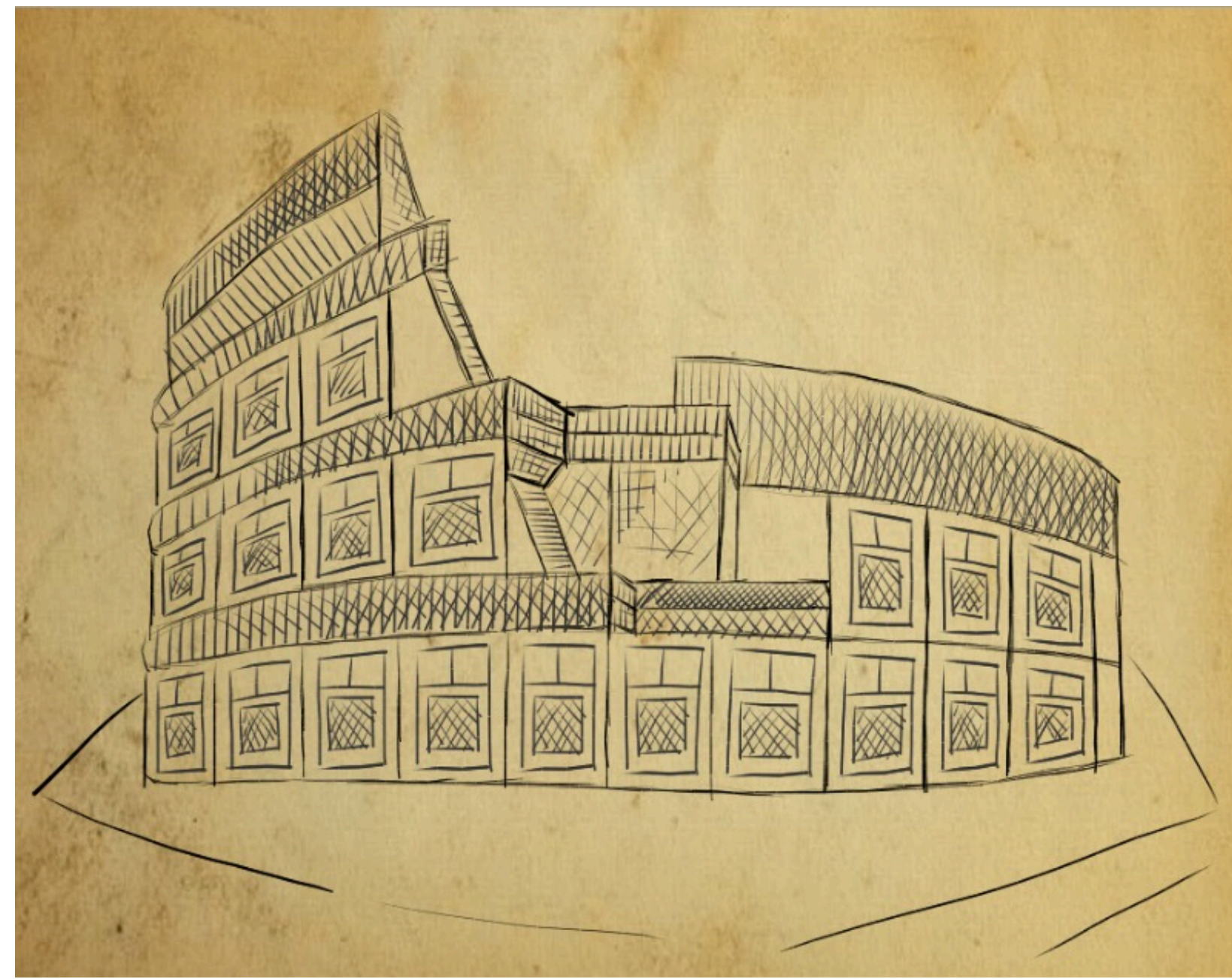
MeshMixer



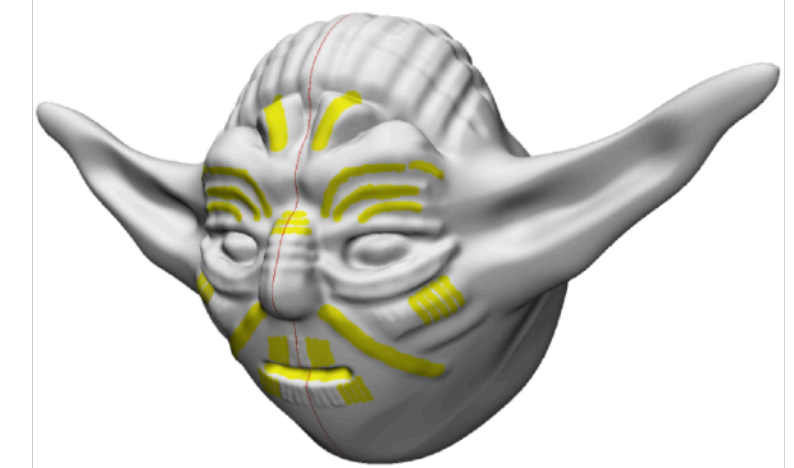
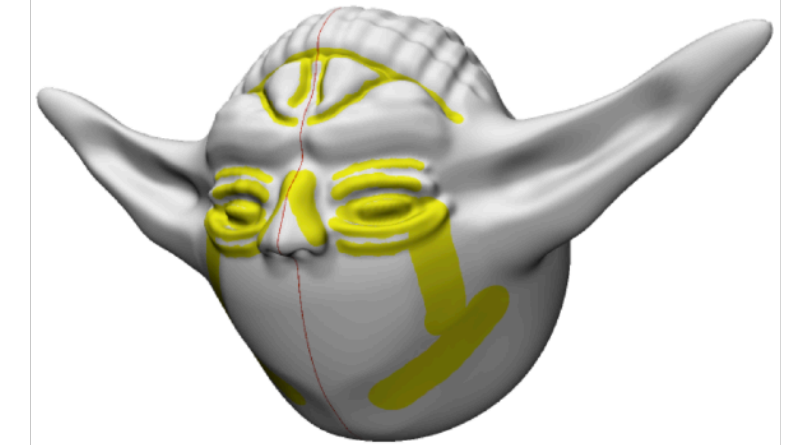
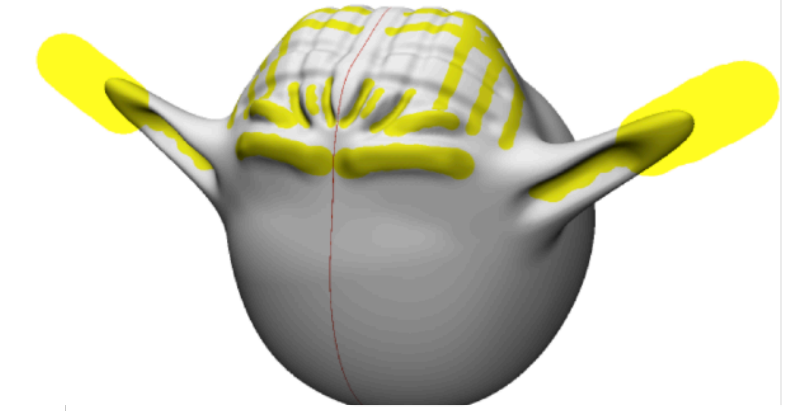
By-example
synthesis



Vignette



Auto-complete
painting



Auto-complete
3D sculpting

1. Summary

2. Related Work

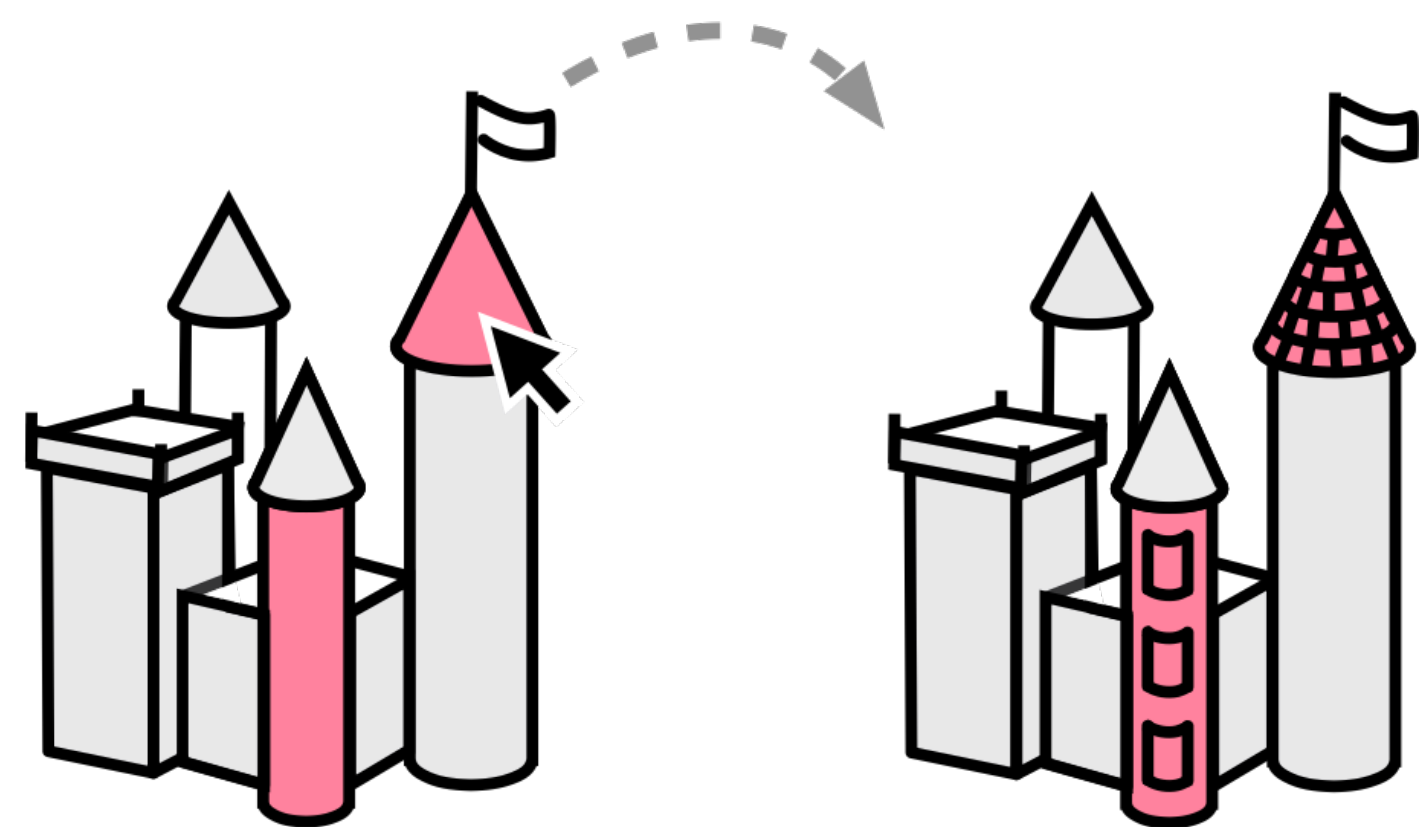
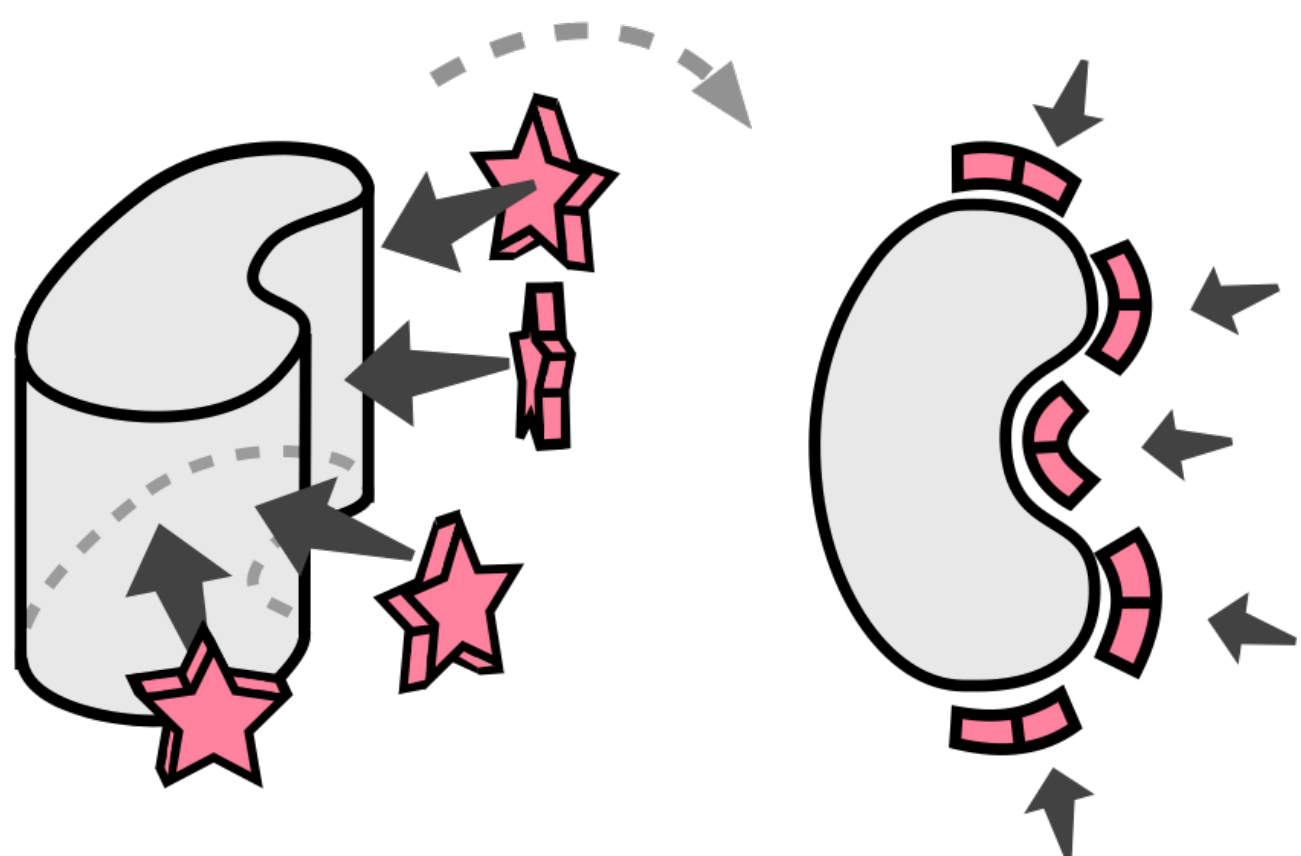
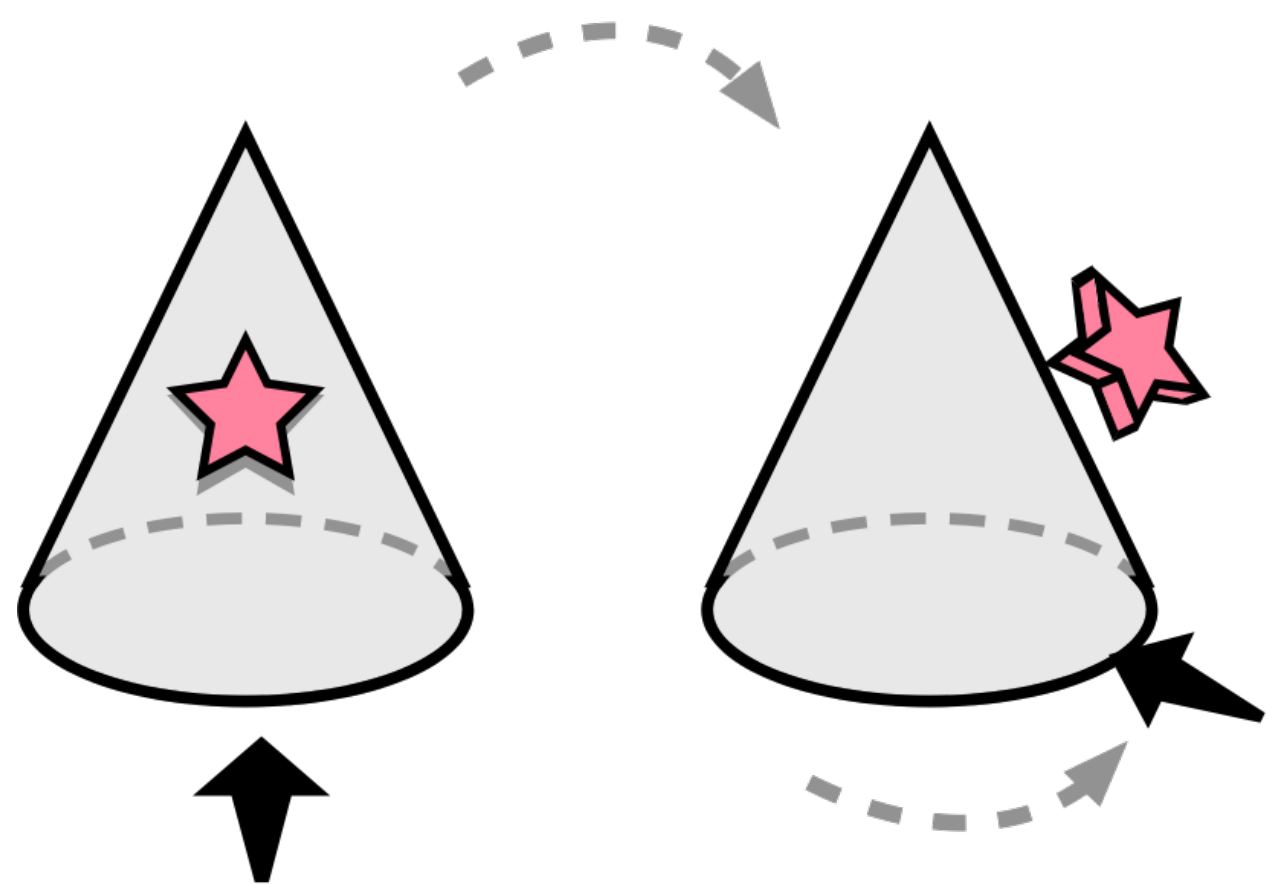
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User-Centered Design Approach

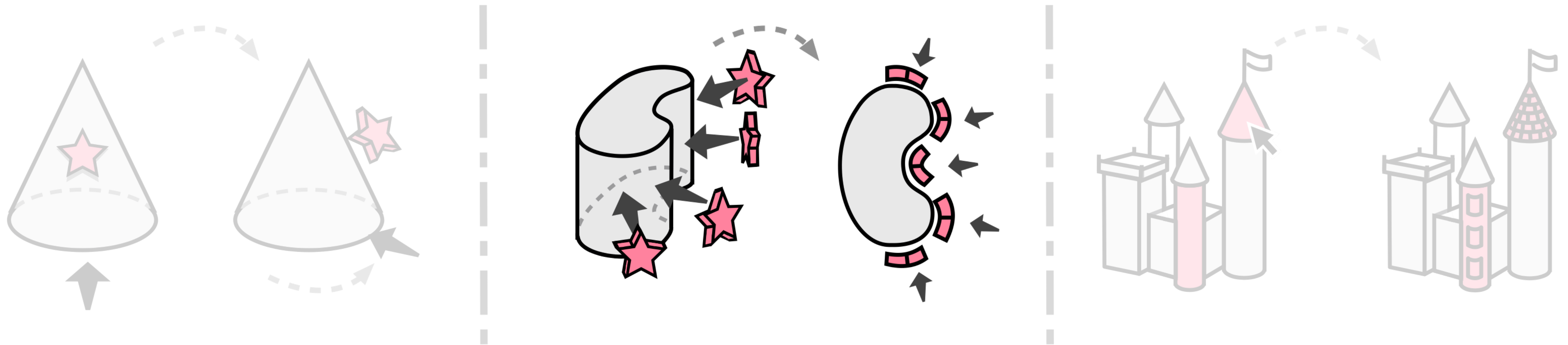
1. 3D Printing Workshop with 25 novice users
2. Observation with 3 professional CAD users



1. Exploiting 2D Operations



2. Liberating from Repetitive Operations



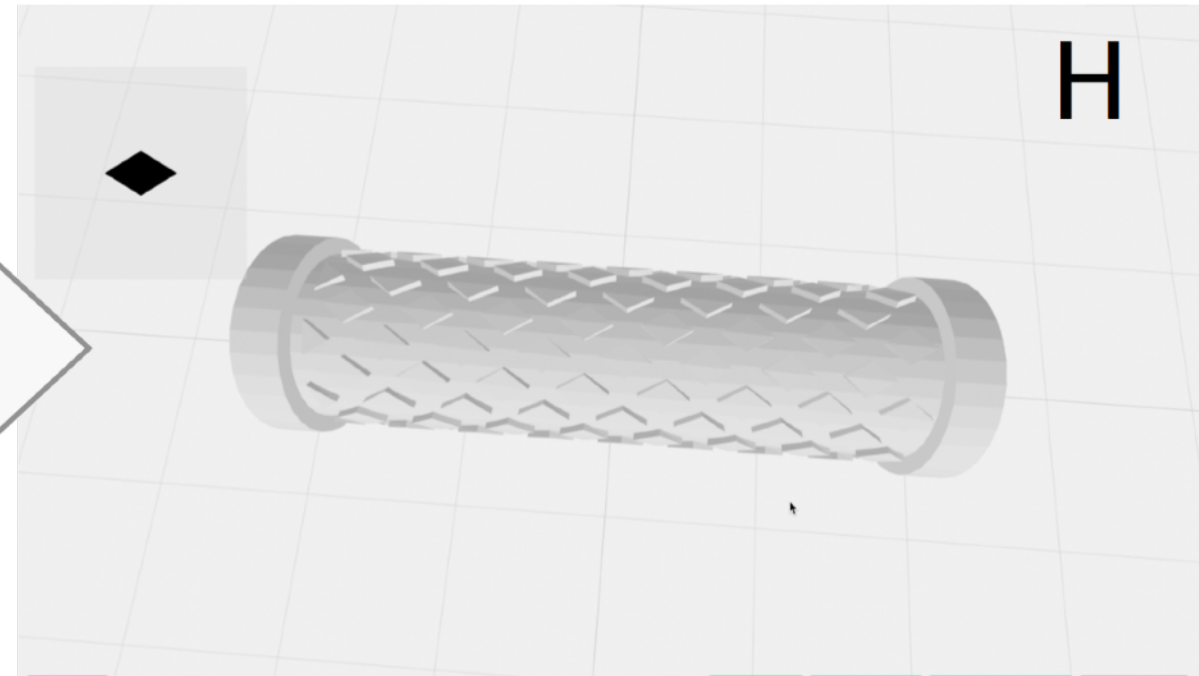
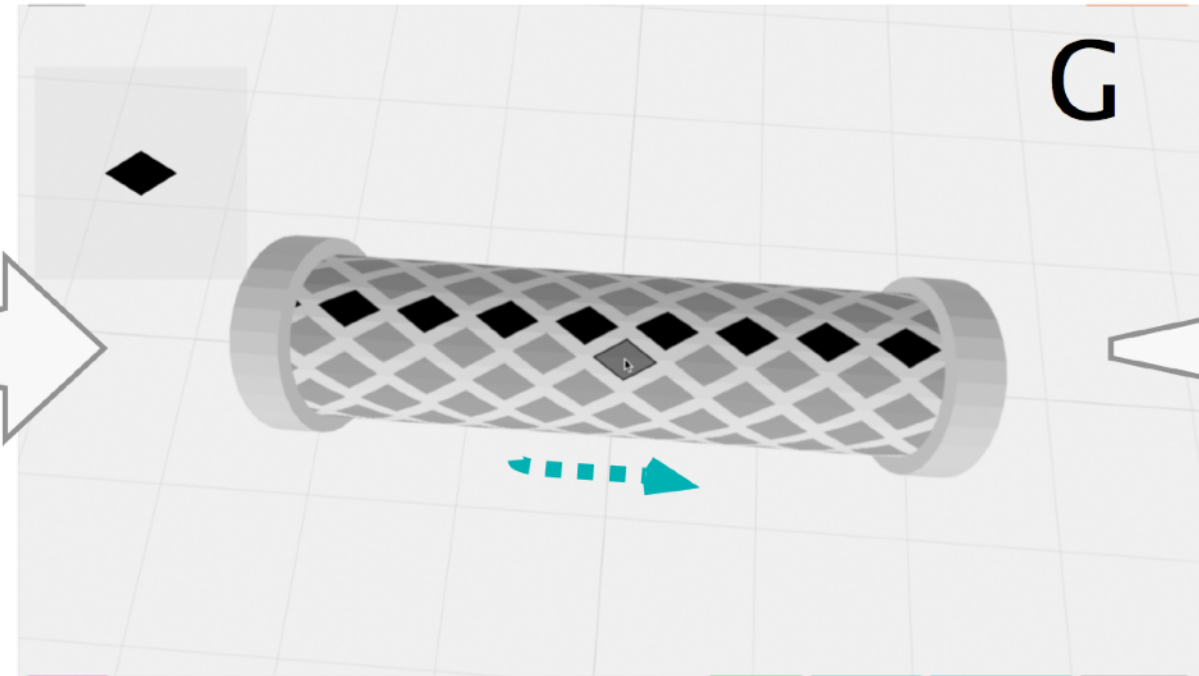
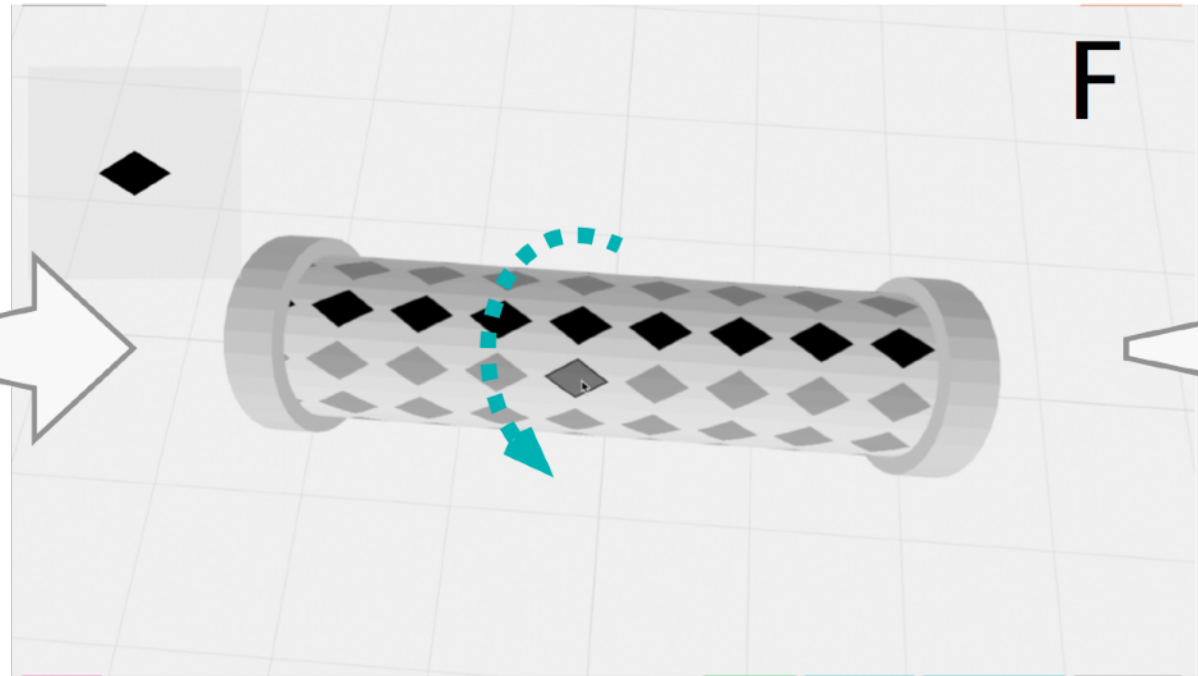
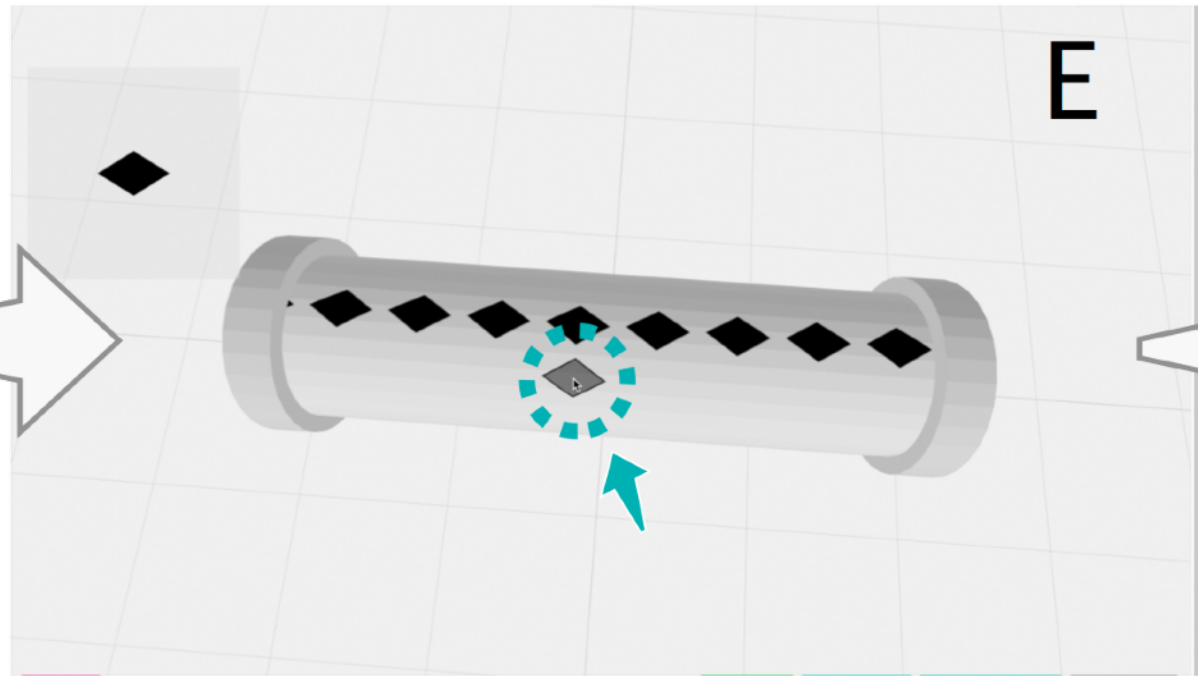
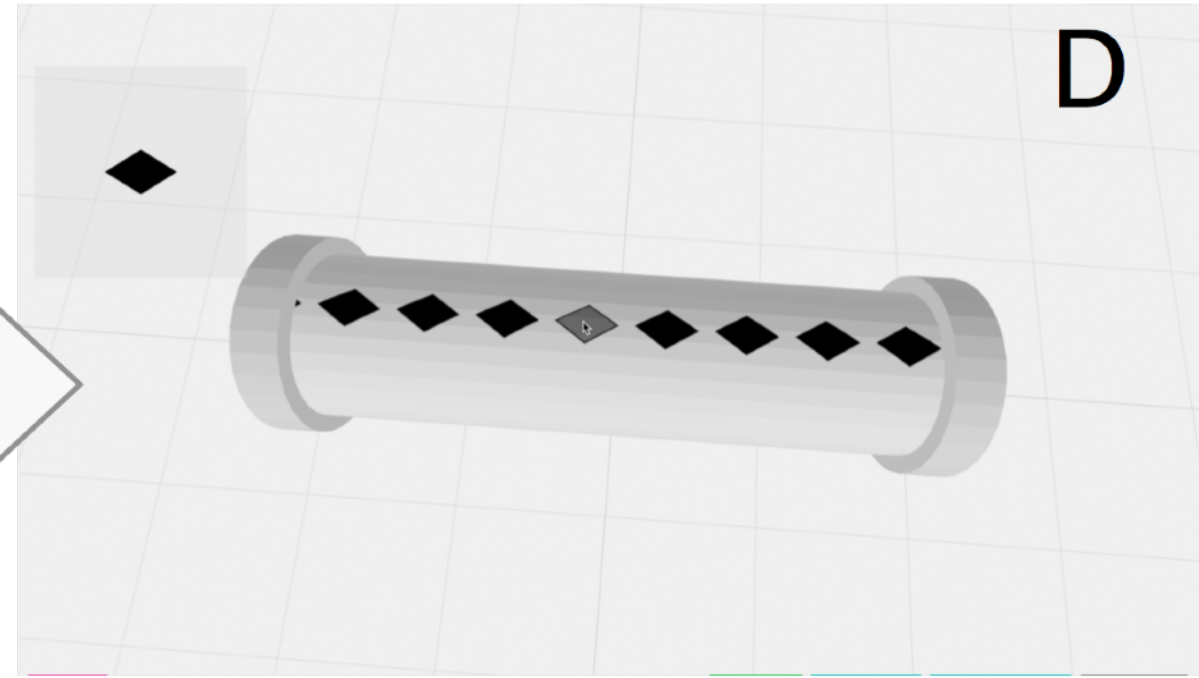
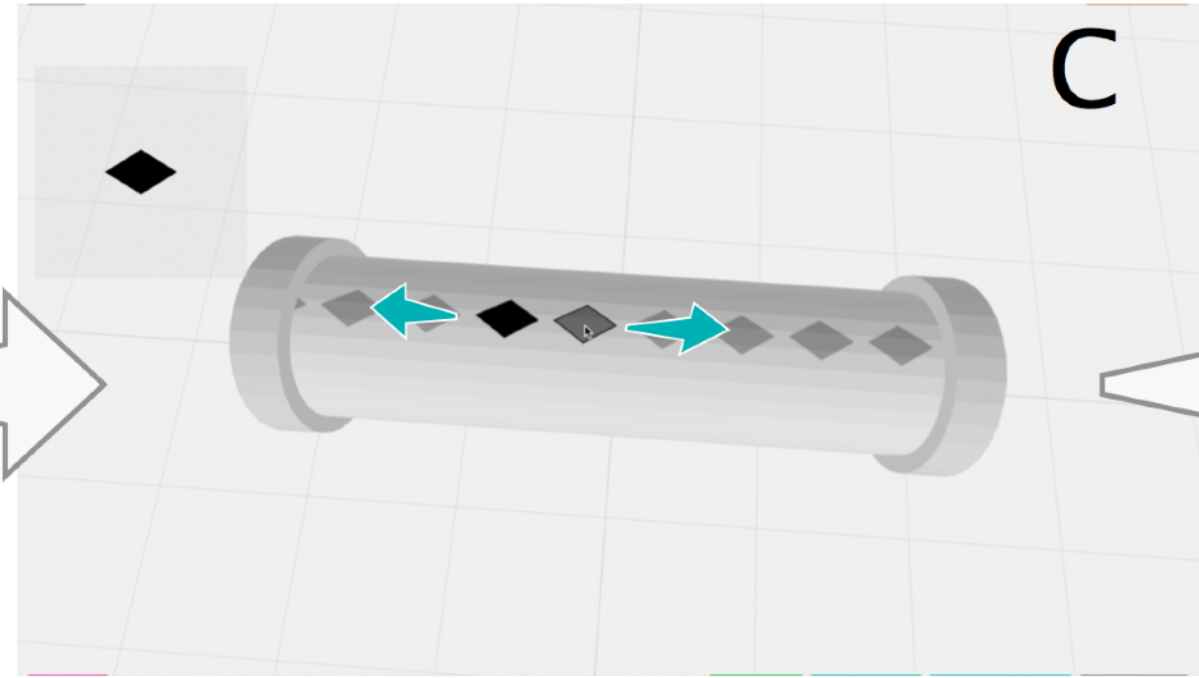
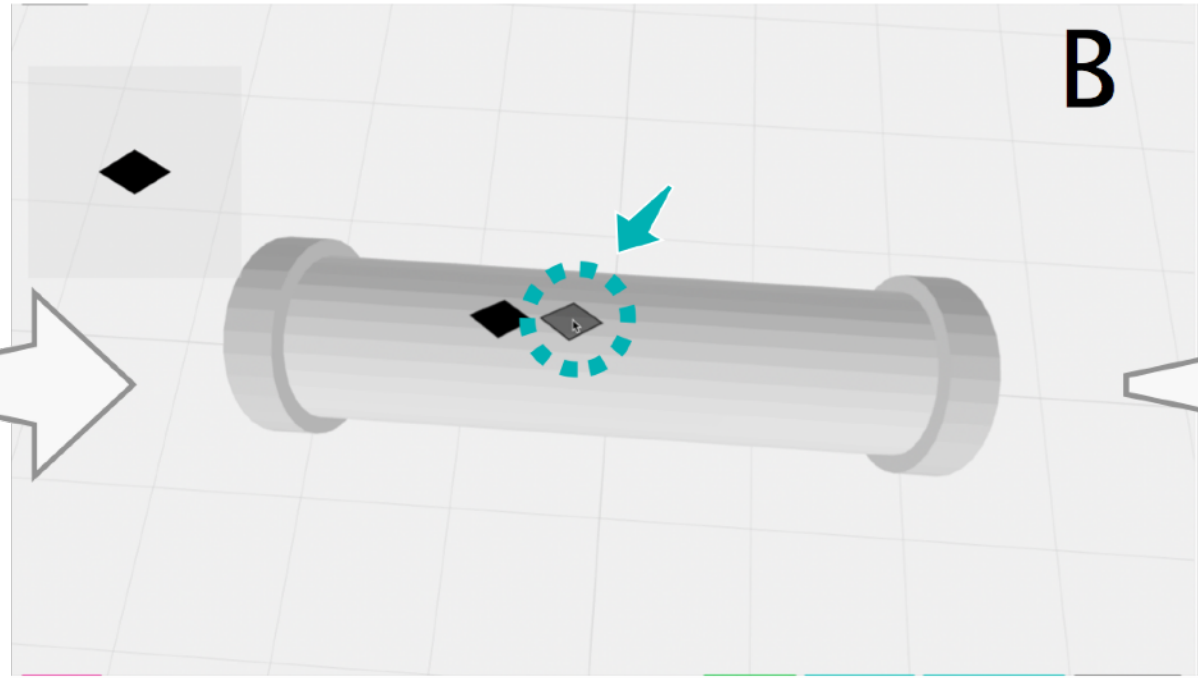
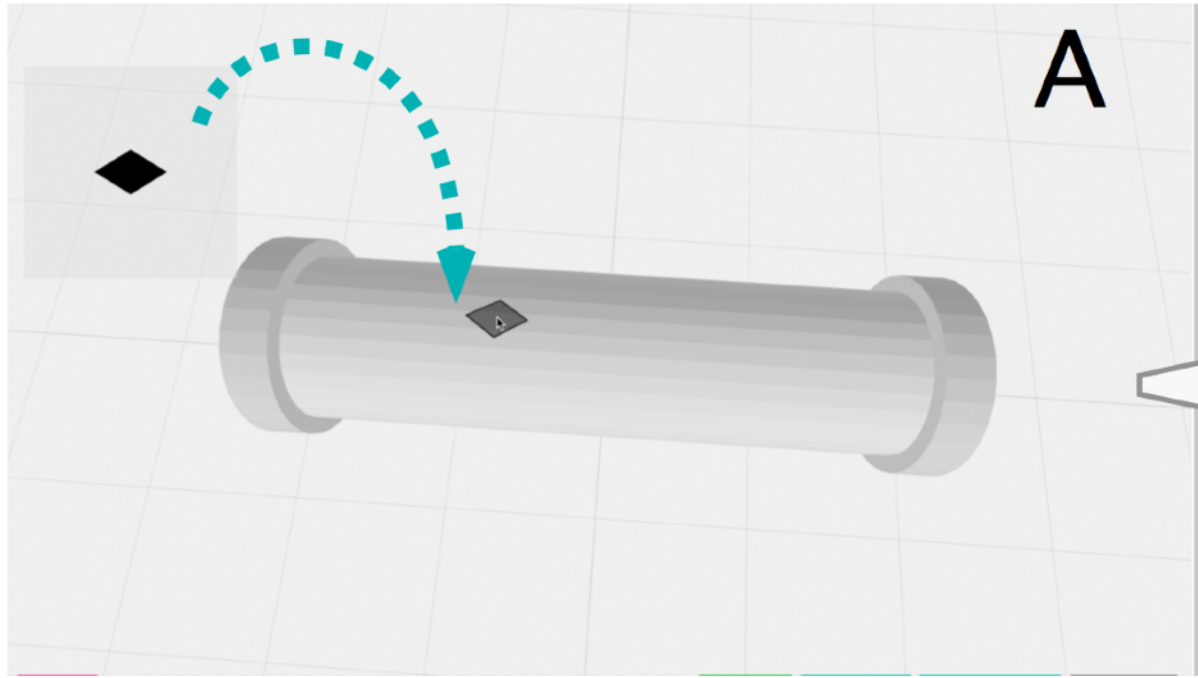
3. Allowing Intuitive Exploration

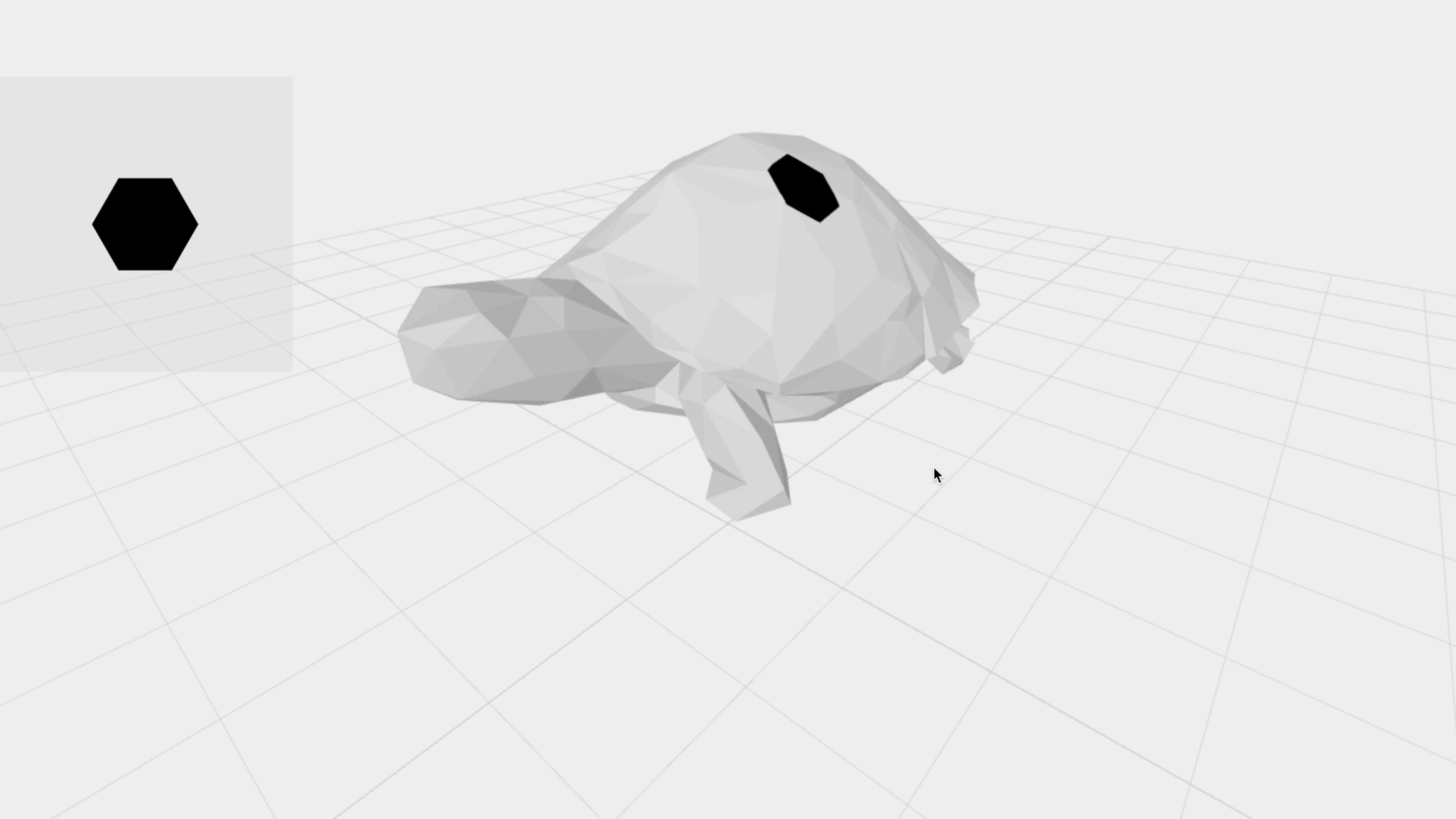


1. Summary
2. Related Work
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4. System and Implementation

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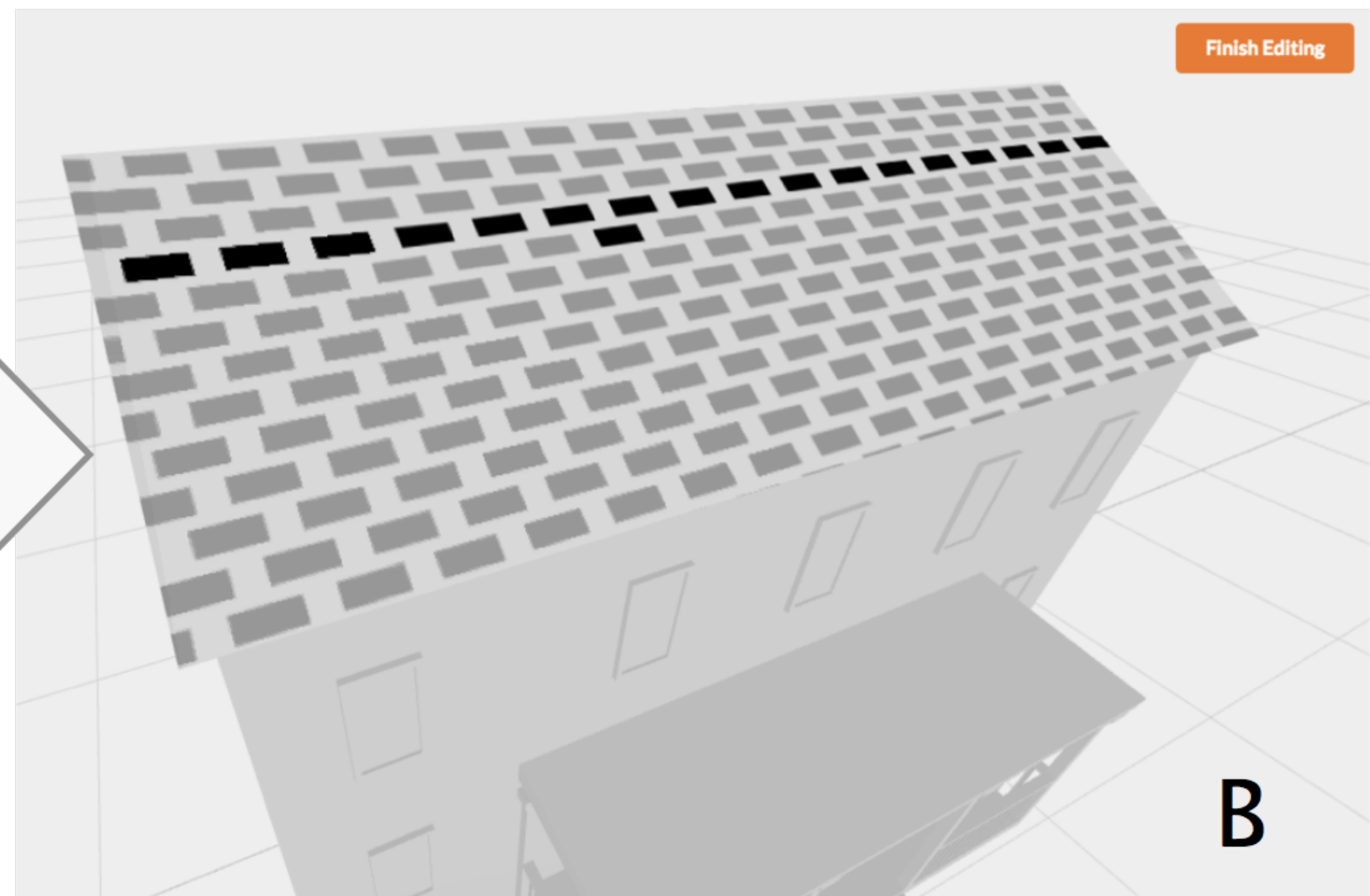
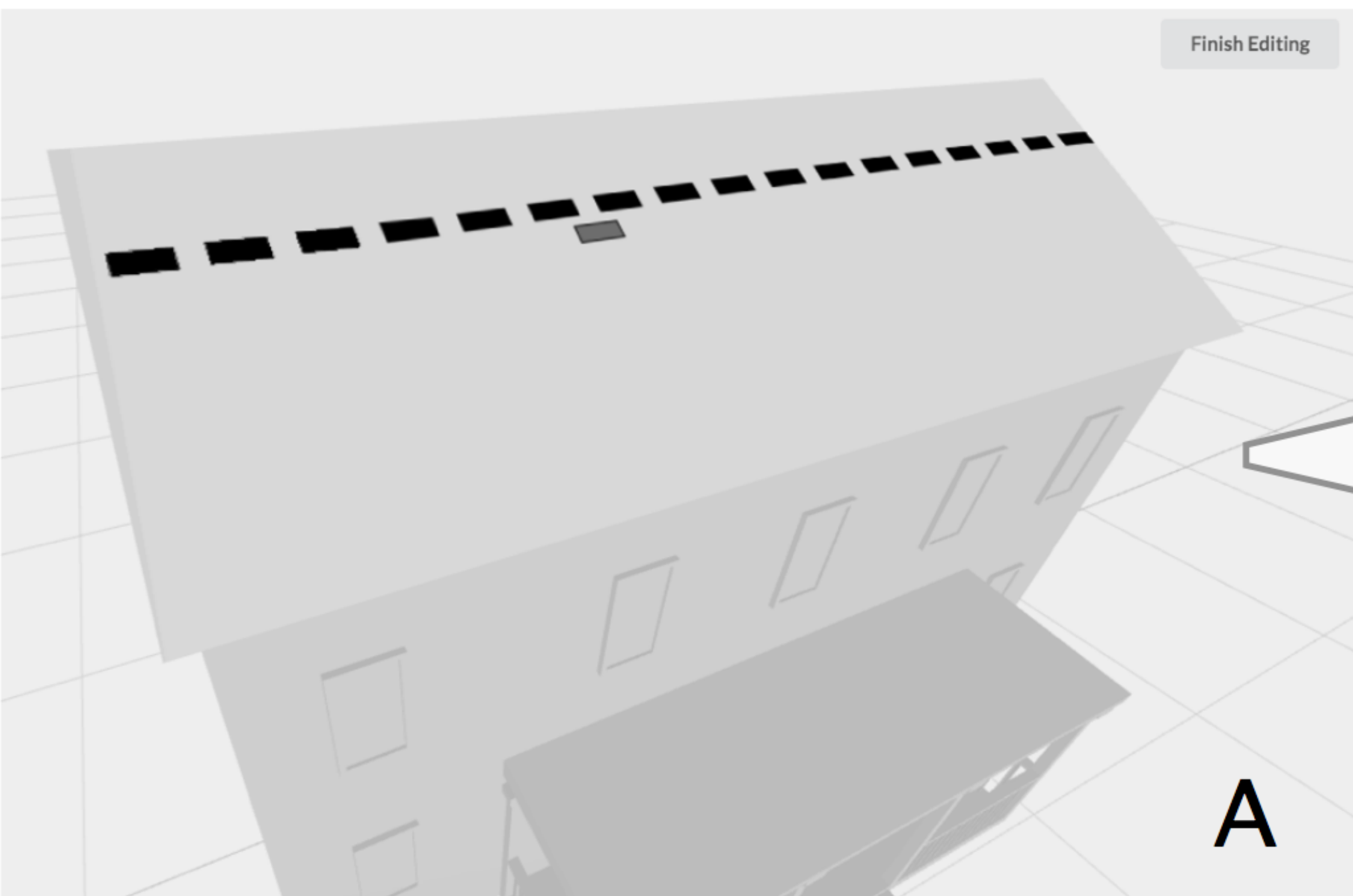


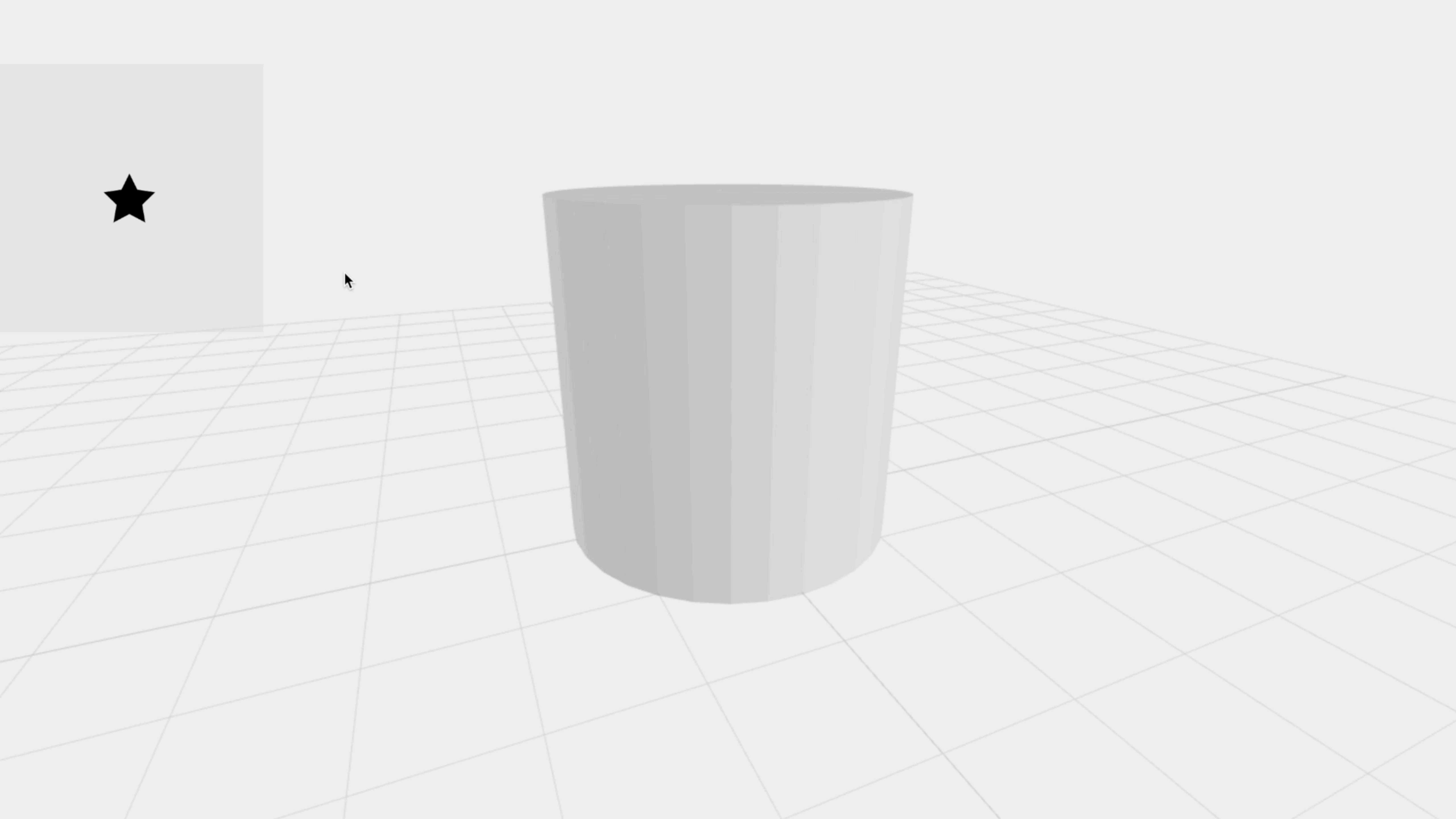
1. Pattern Auto-Completion
2. Semantic Region Selection
3. Texture Mesh Generation

1. Pattern Auto-Completion

2. Semantic Region Selection

3. Texture Mesh Generation





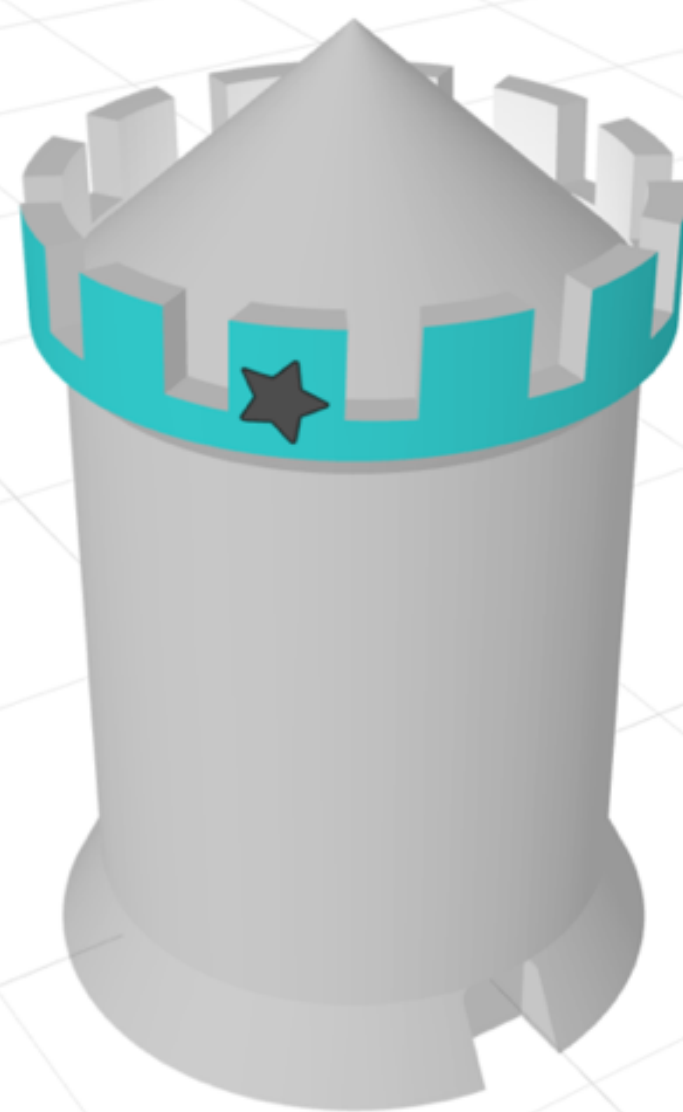
1. Pattern Auto-Completion

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A



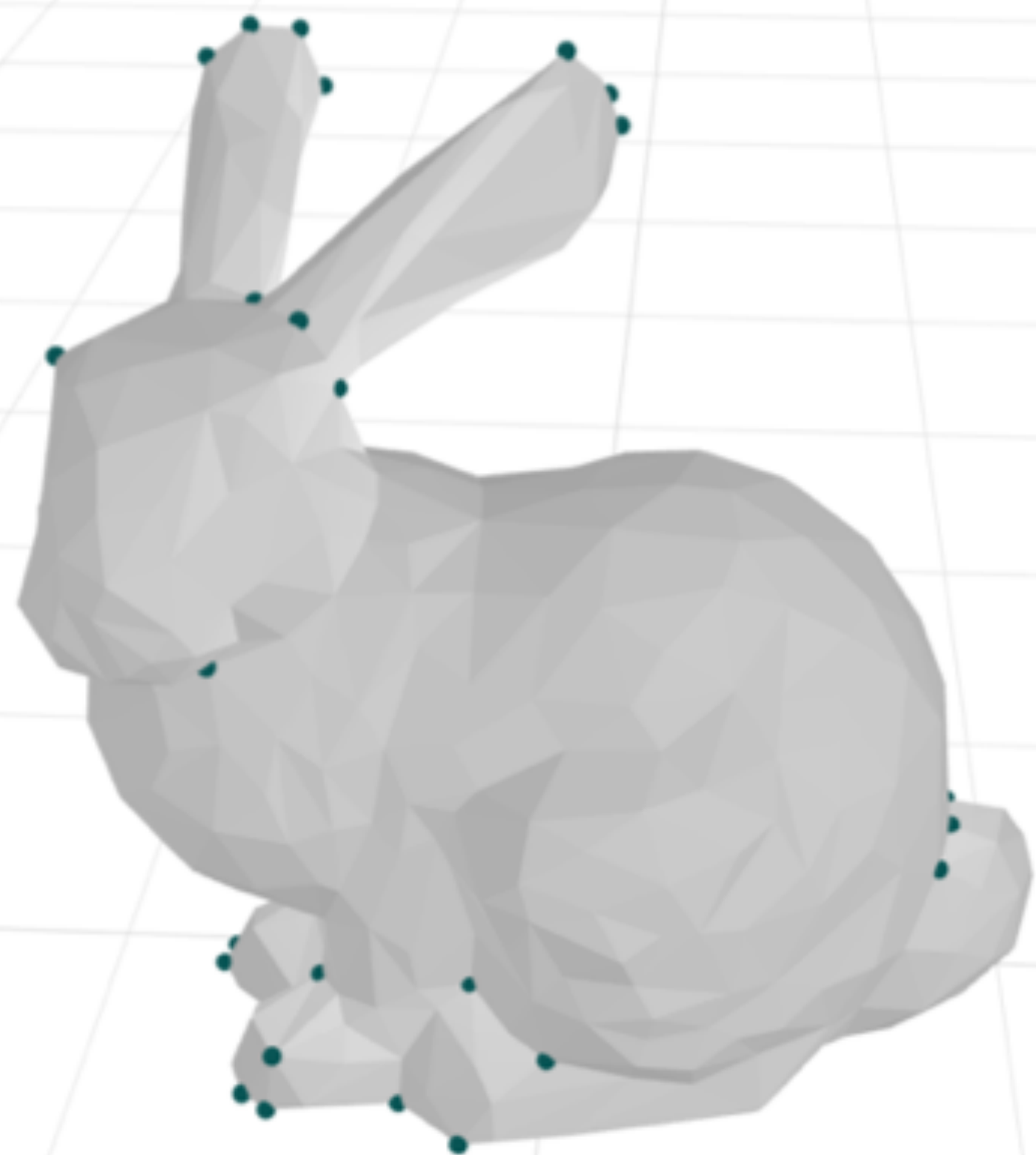
B



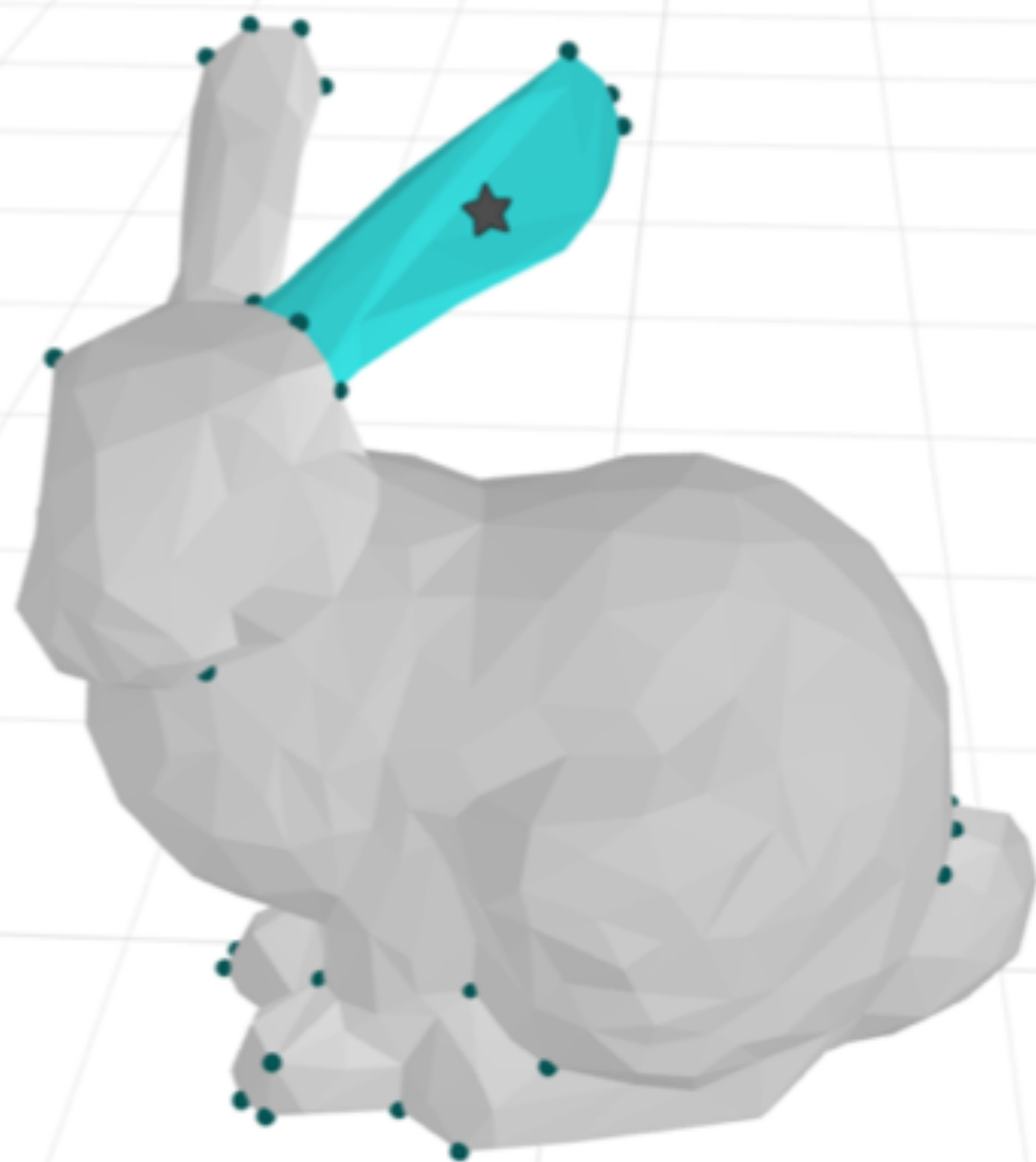
C



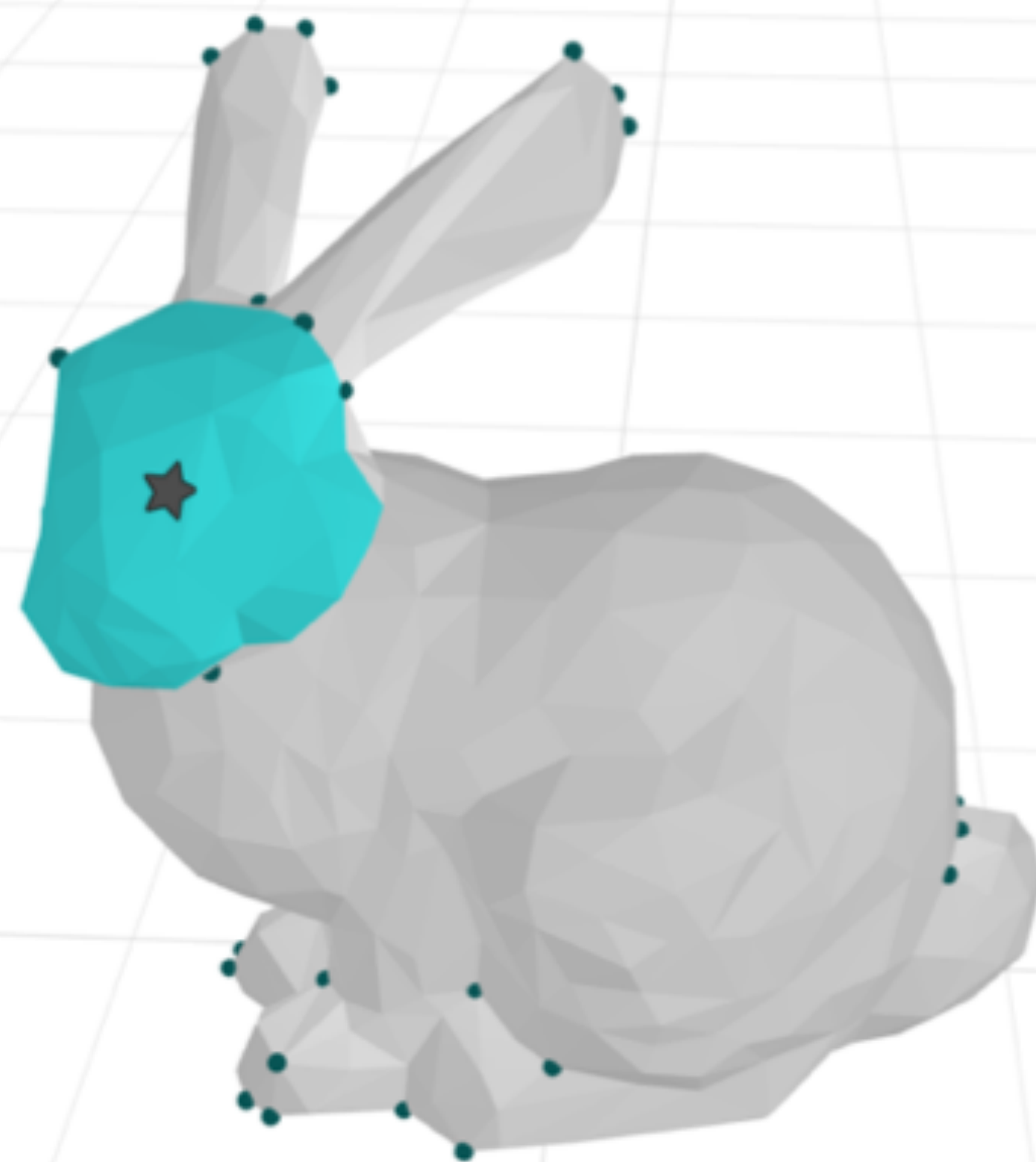
D



A

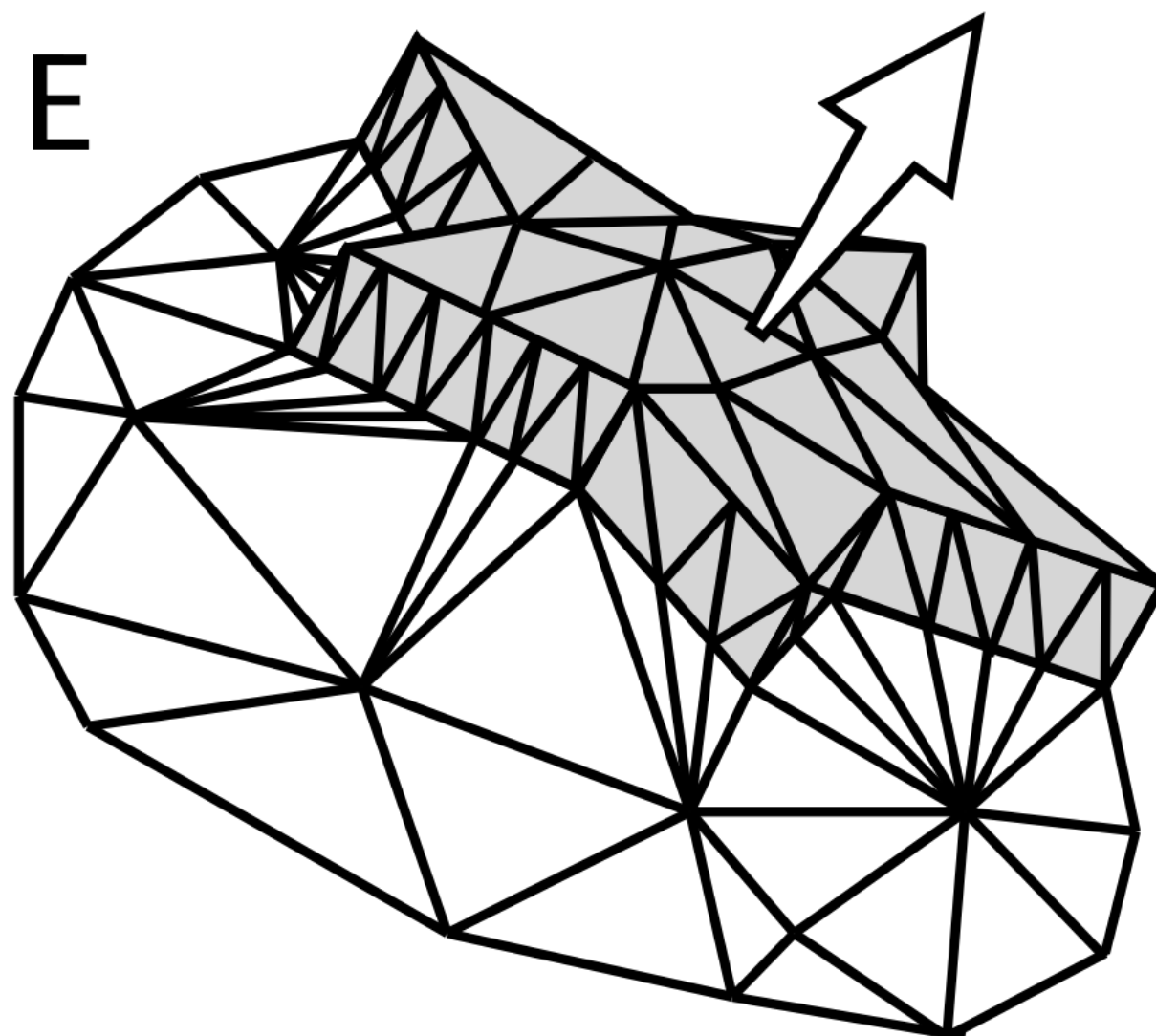
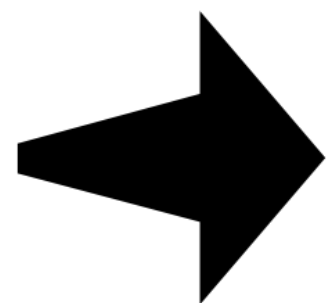
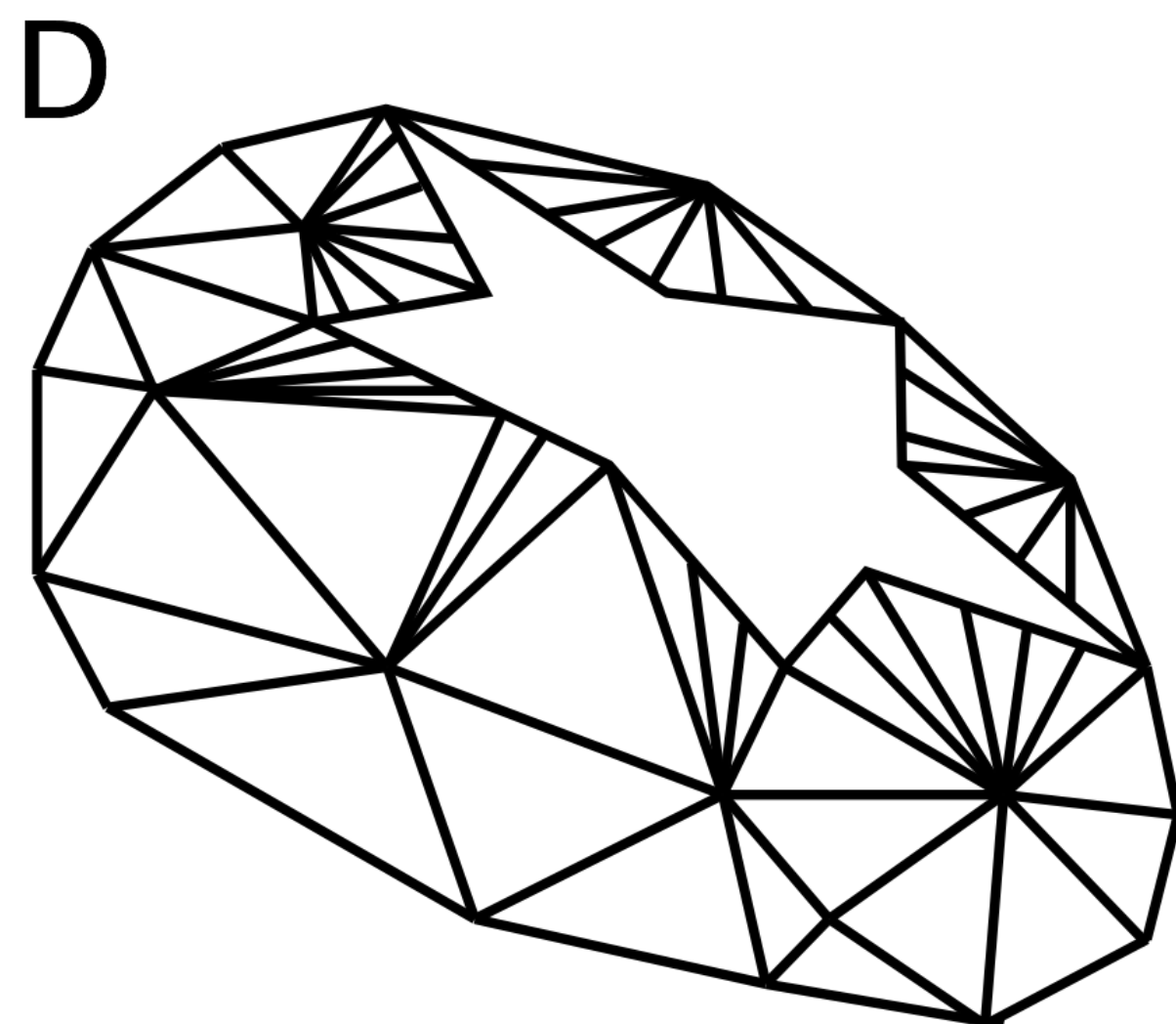
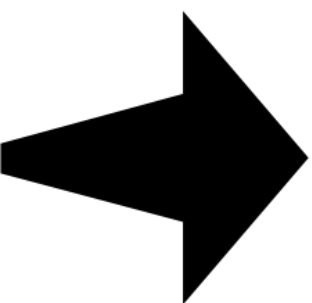
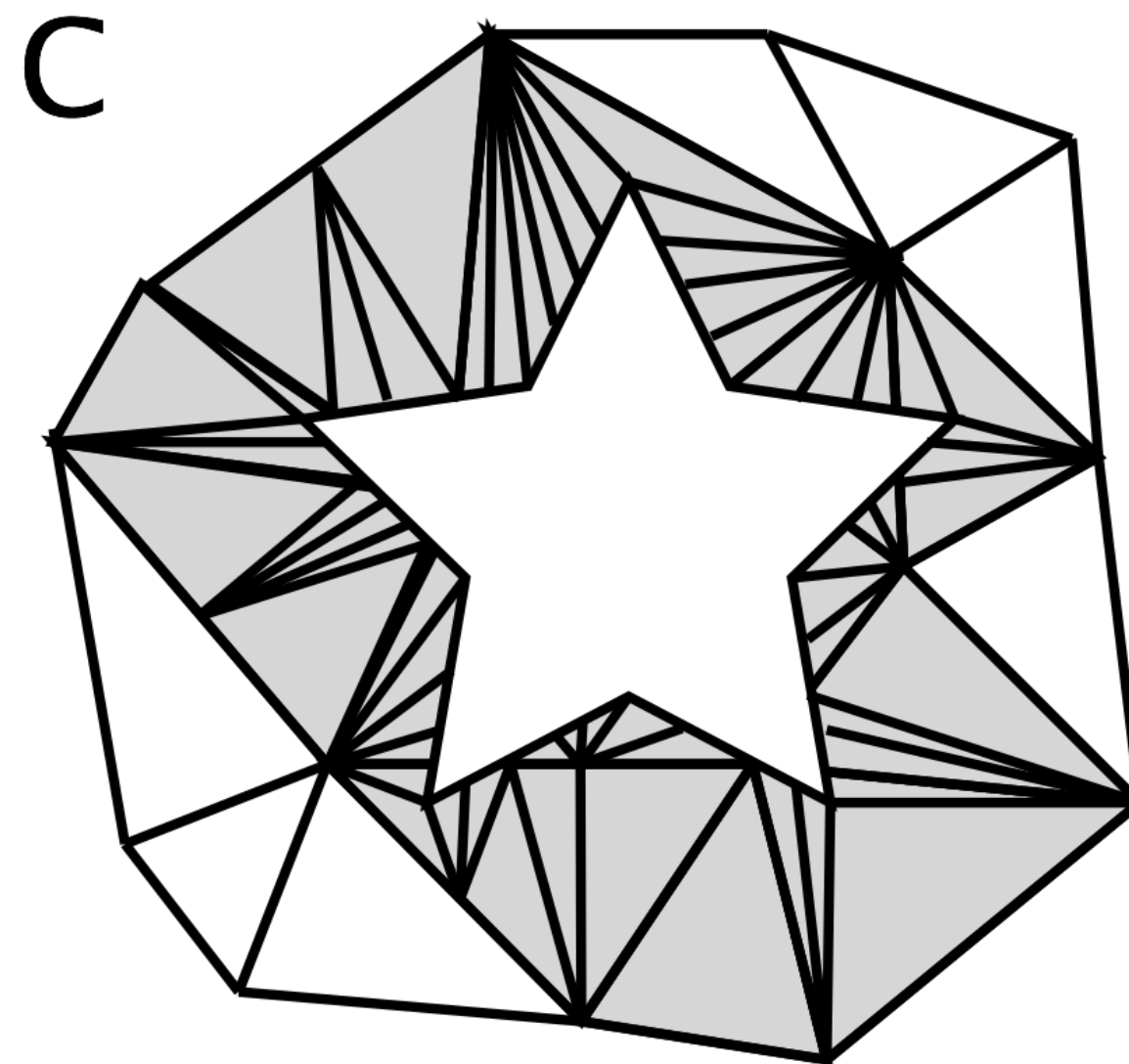
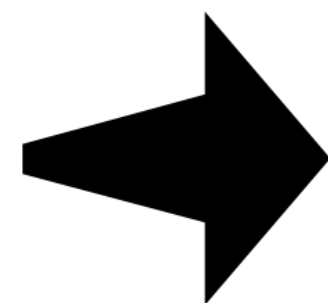
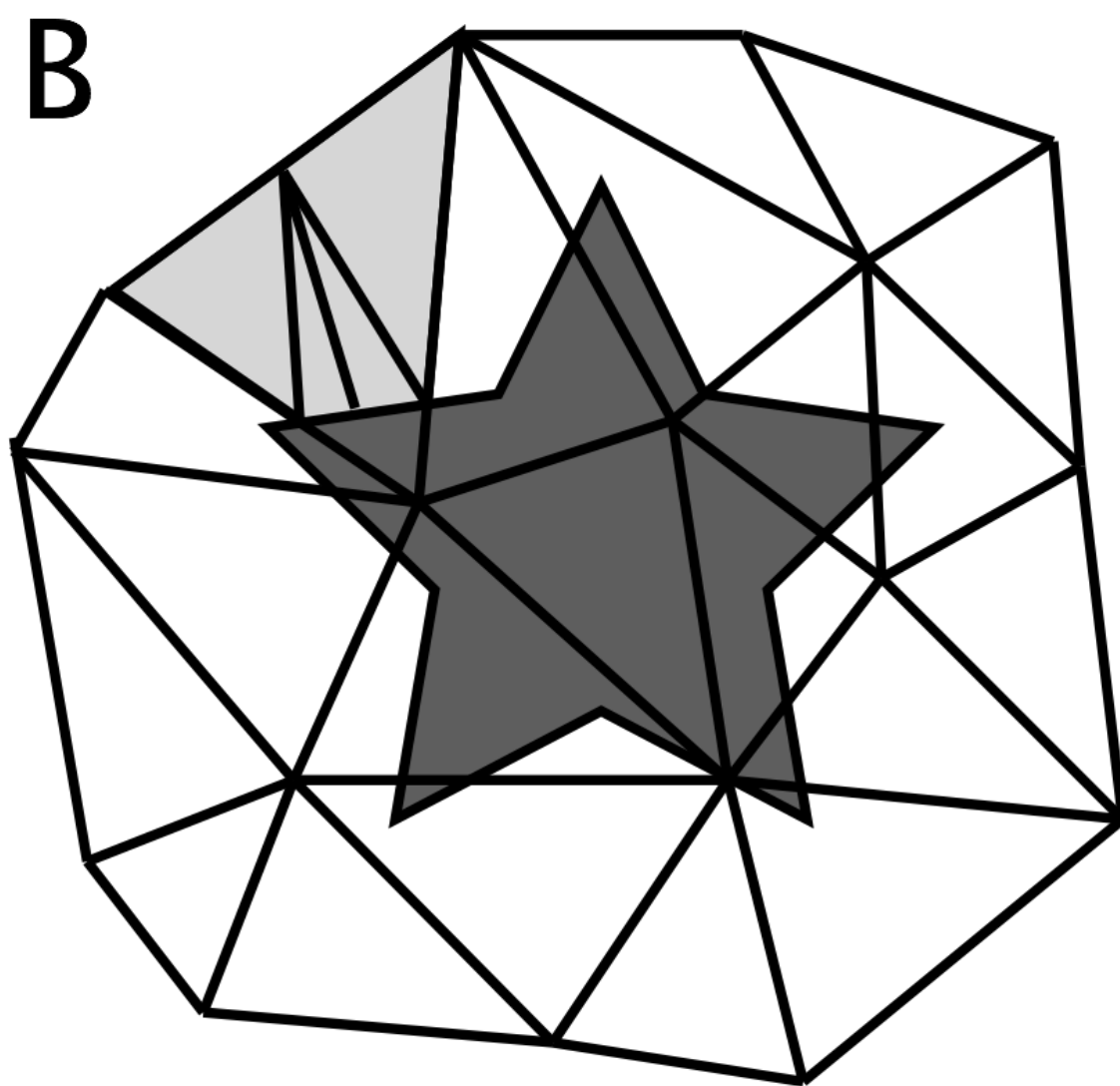
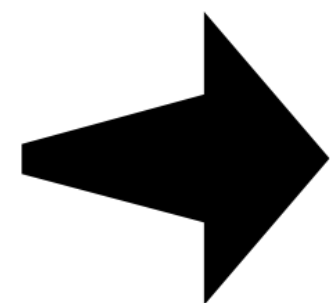
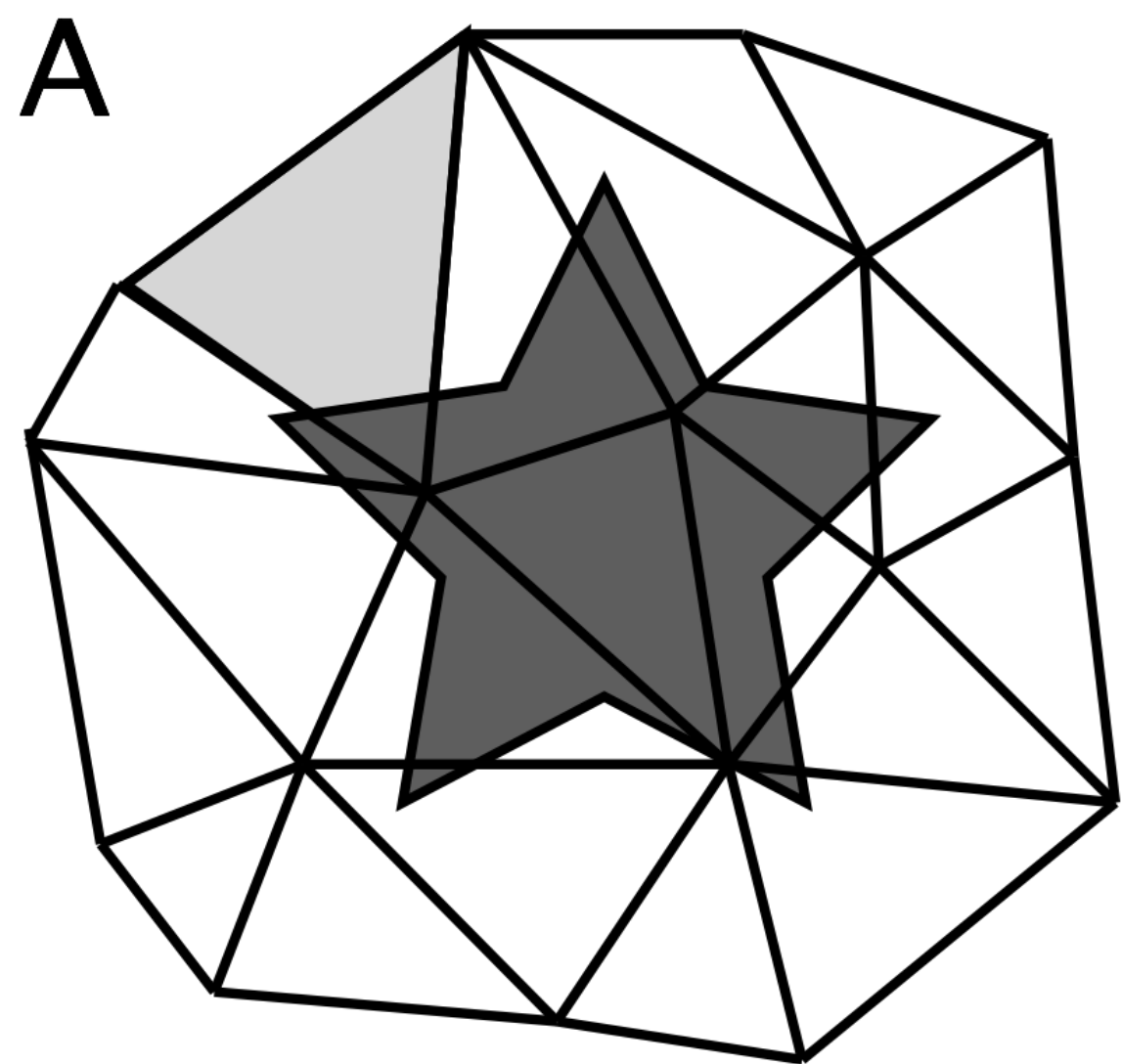


B

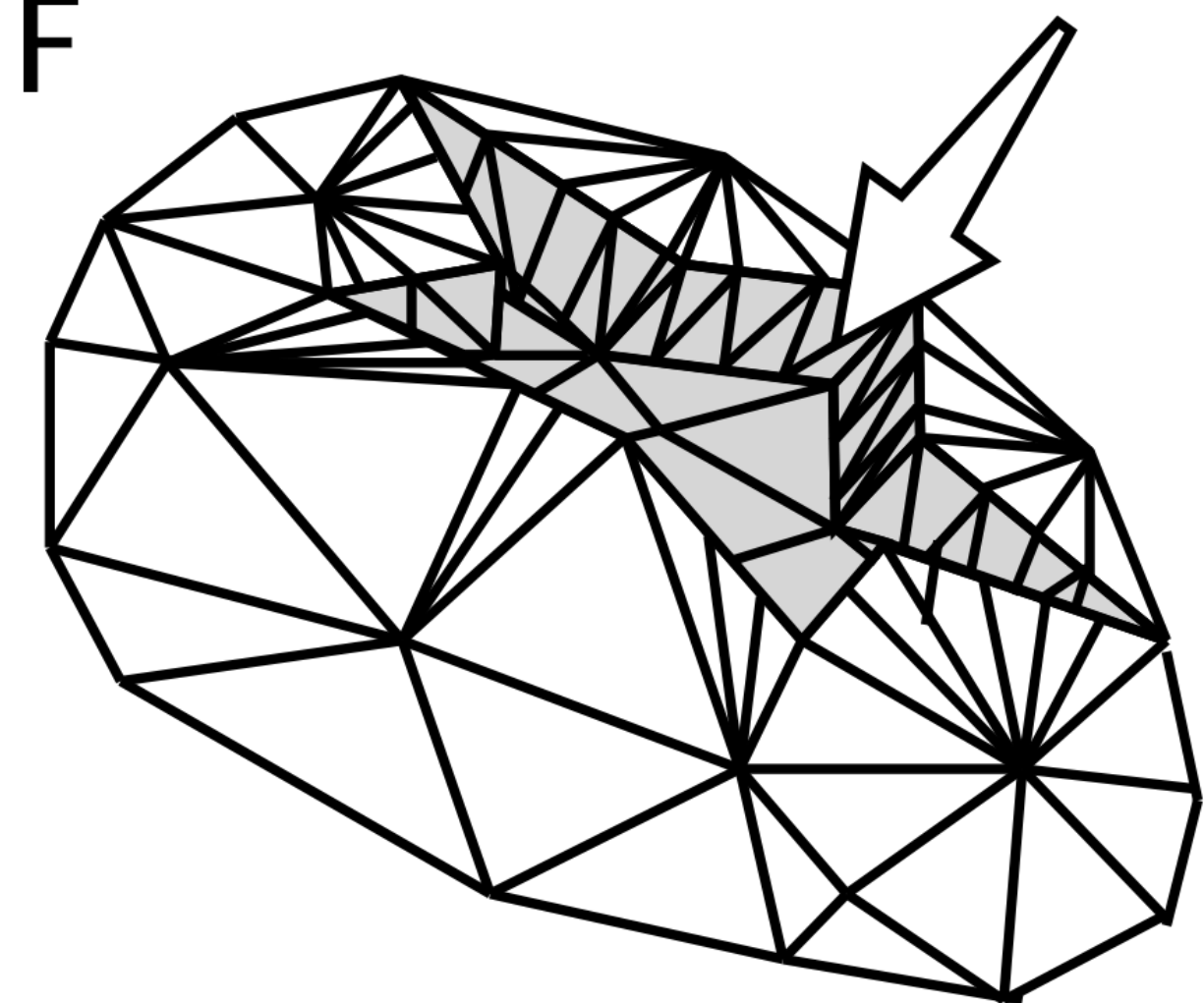


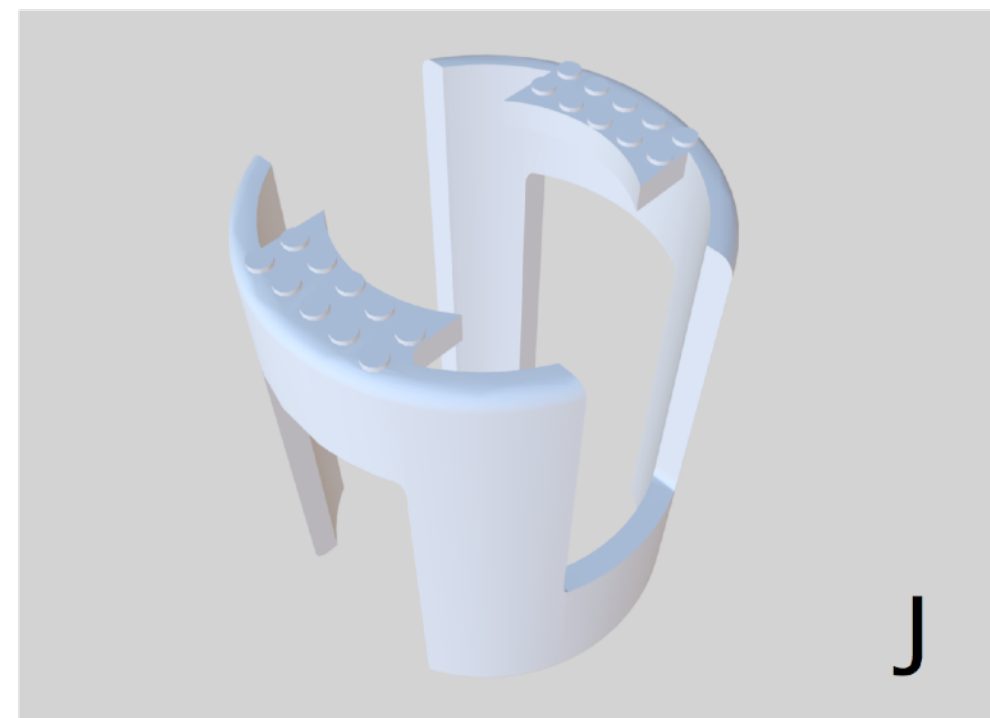
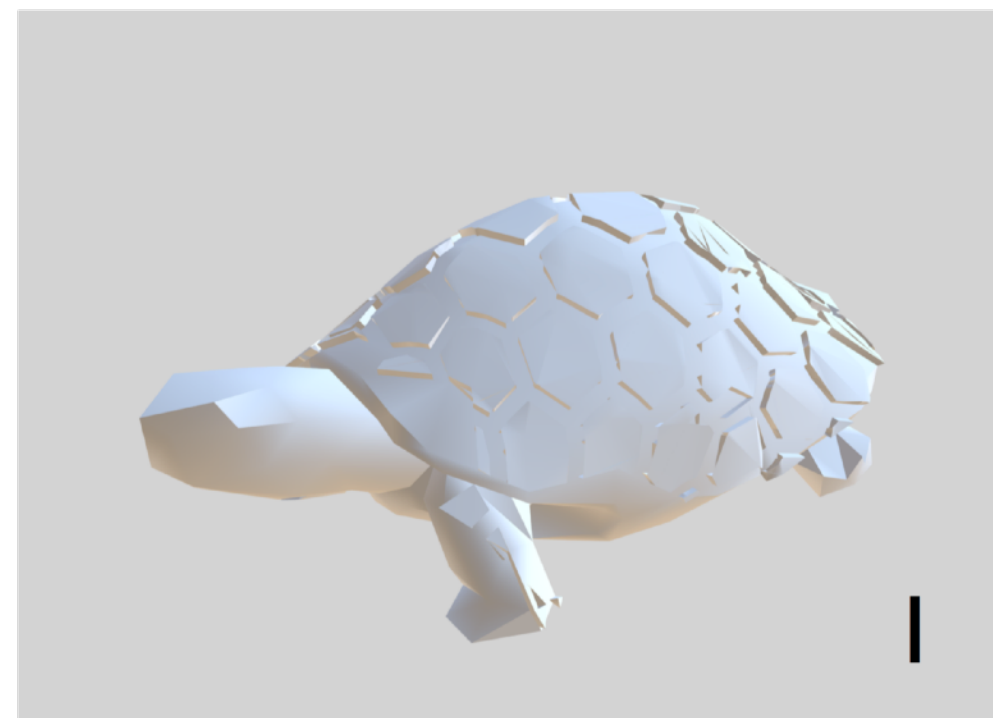
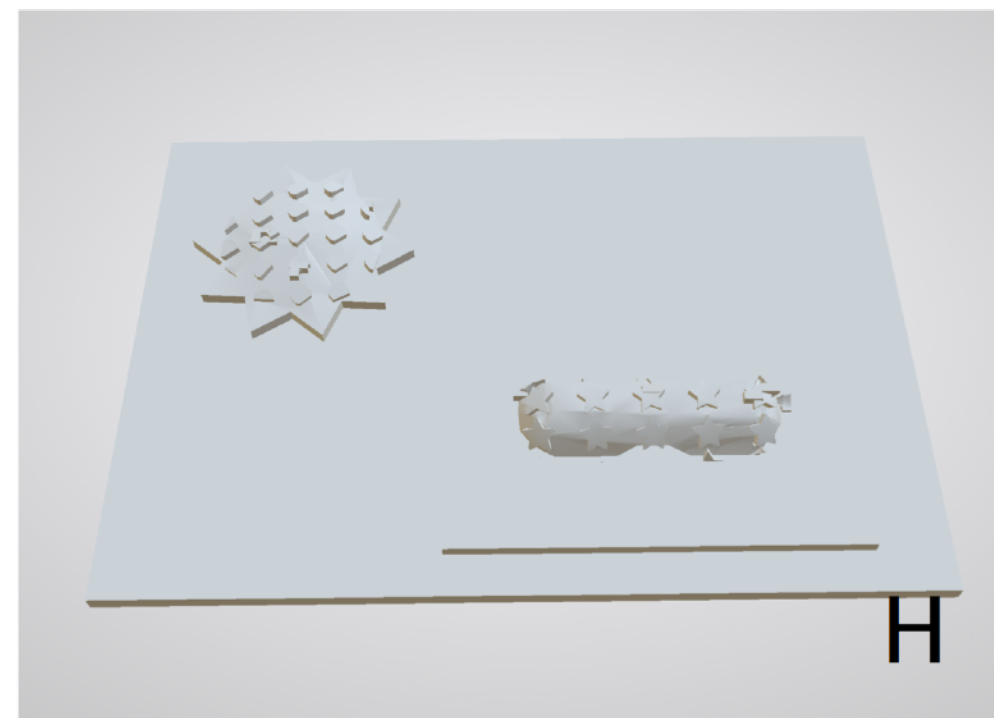
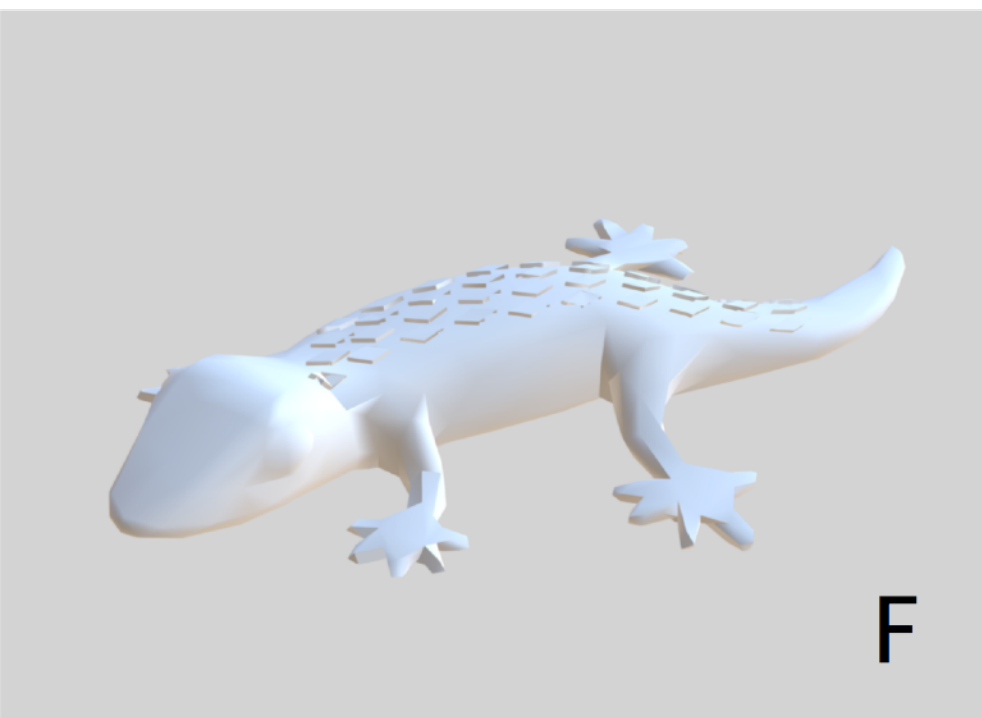
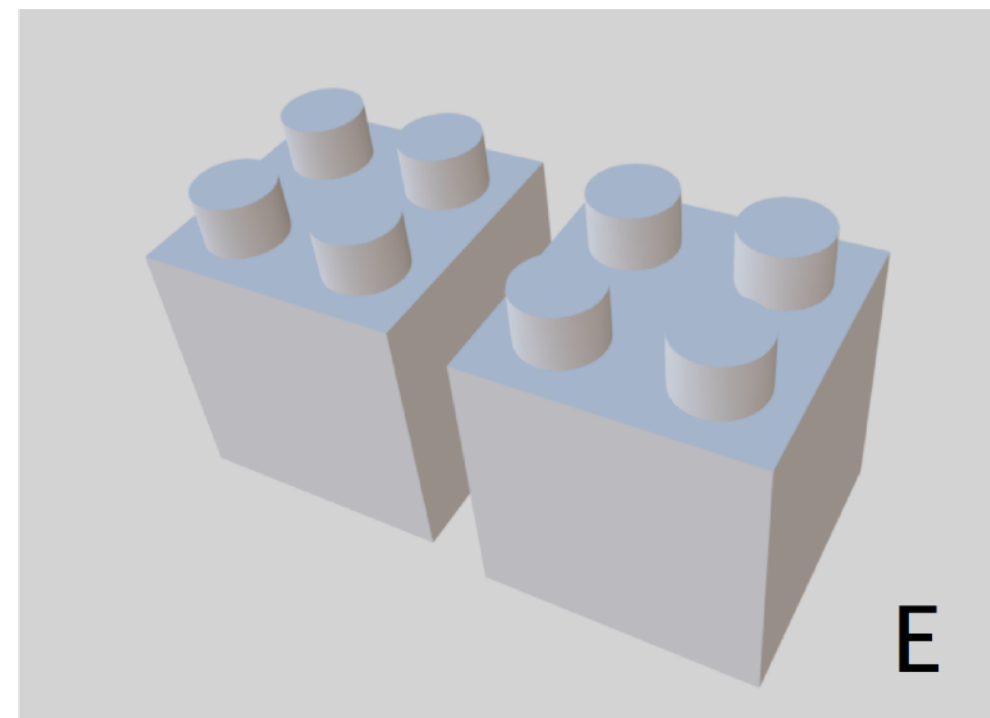
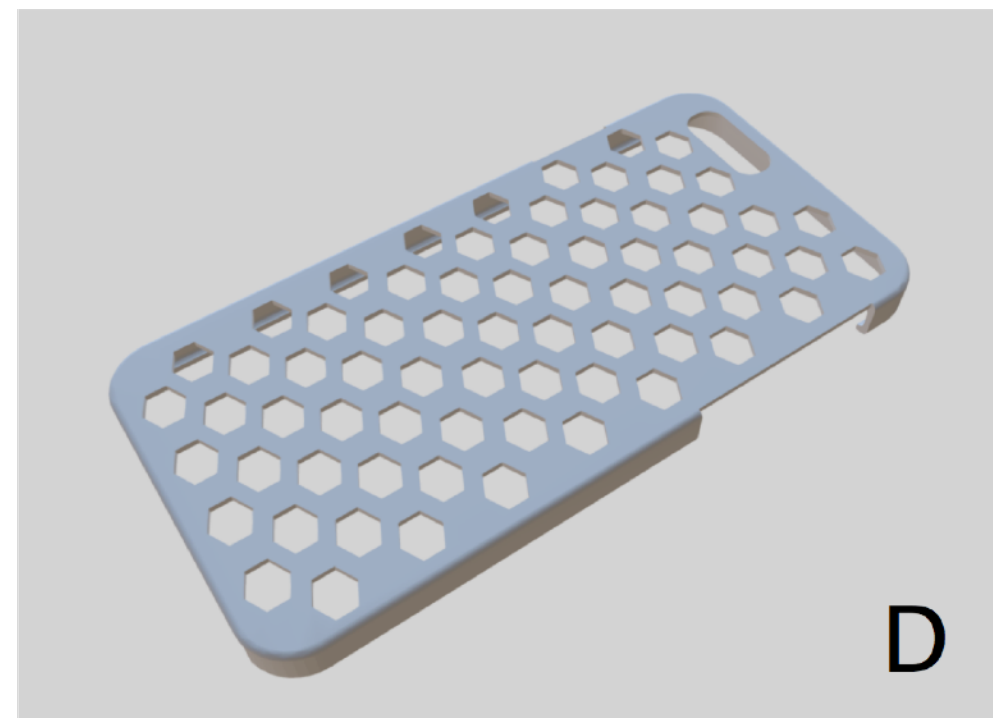
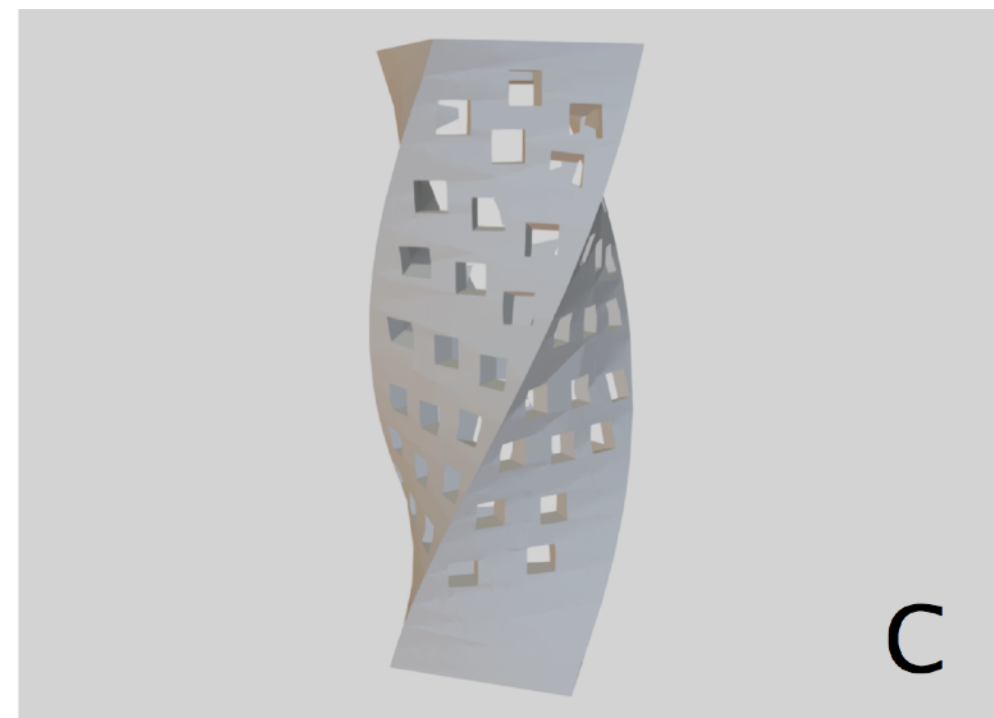
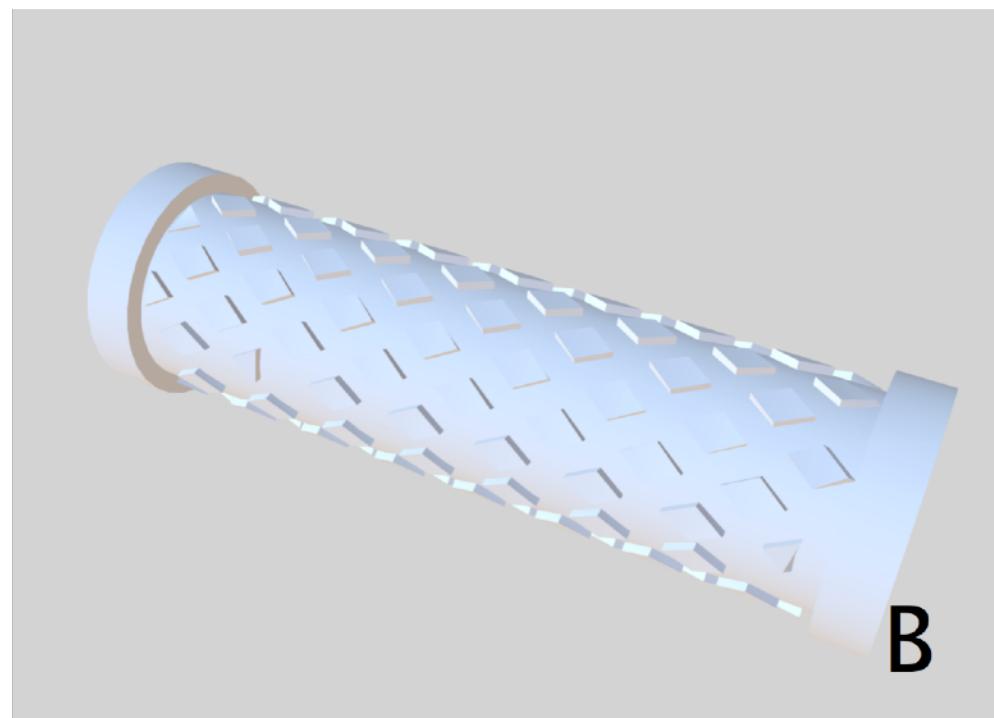
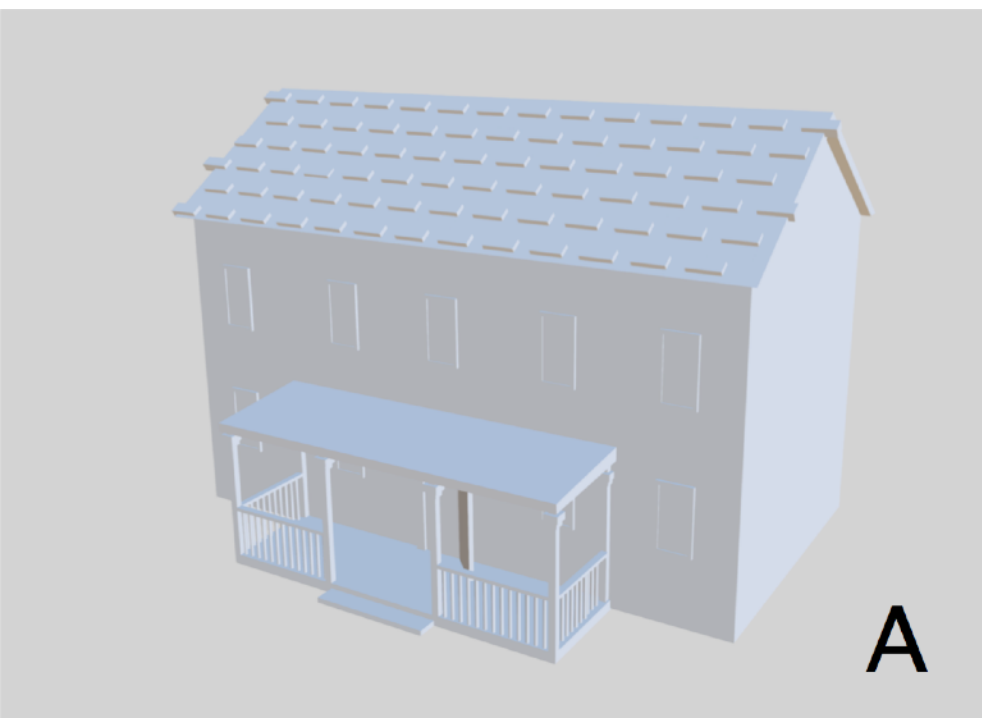
C

1. Pattern Auto-Completion
2. Semantic Region Selection
- 3. Texture Mesh Generation**



or







A



B



C



D

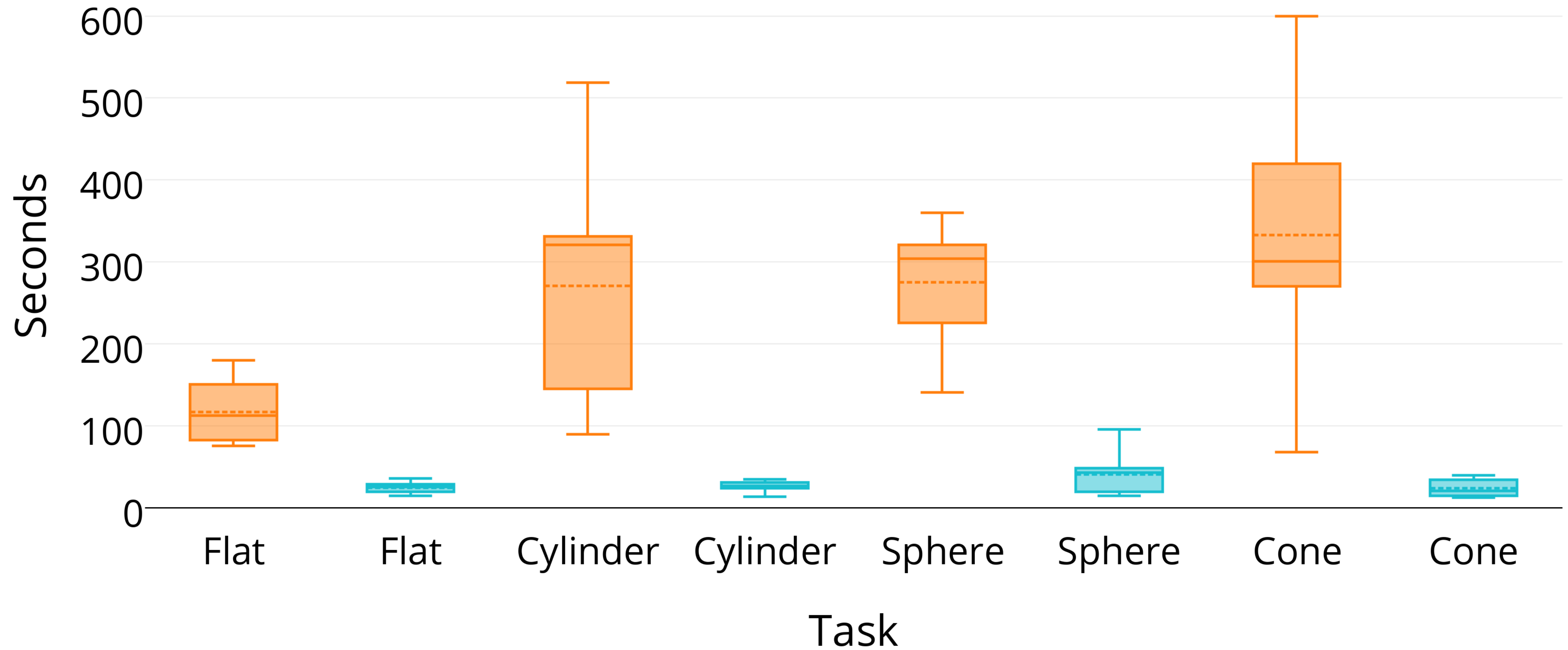


E



F

Texture Creation Task



1. Summary

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Contributions

1. **Tabby, an interactive system** that instantiates the auto-completion method in the context of 3D texture design
2. **A set of workflow and techniques** that support 2D operations for designing 3D-printable texture patterns;
3. **A controlled experiment** with seven designers that shows users can efficiently and flexibly design textures compared to conventional tools

Thank you