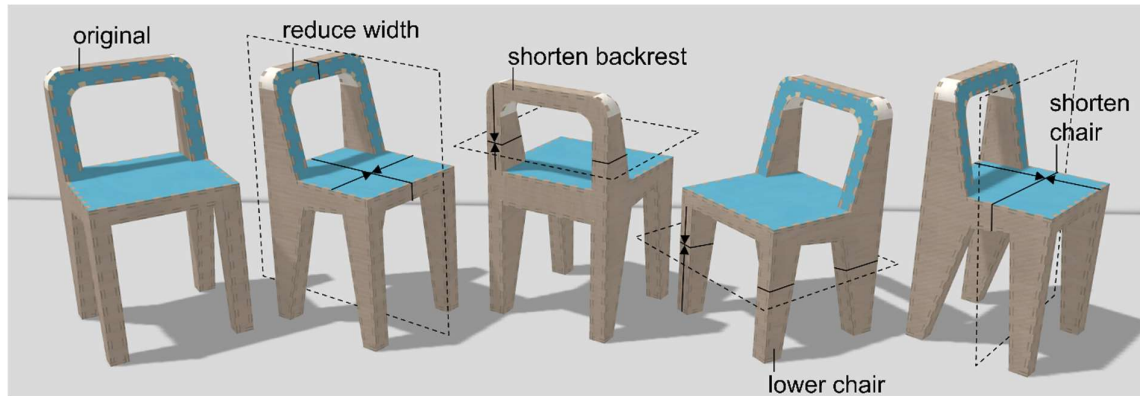
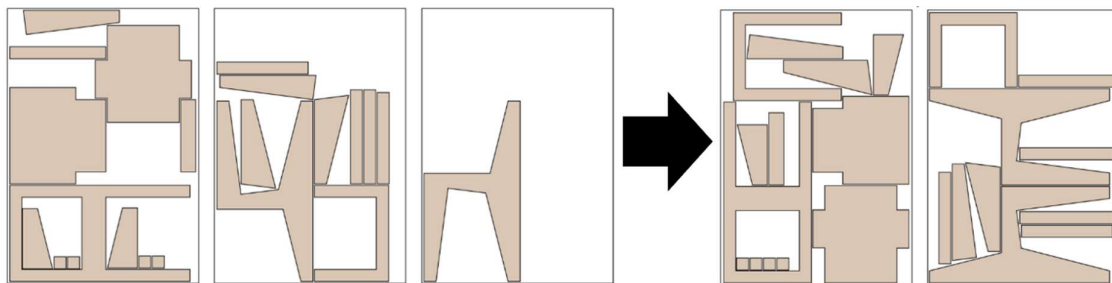


## In collaboration with MIT: Interactive 3D visualization for sustainable material optimization



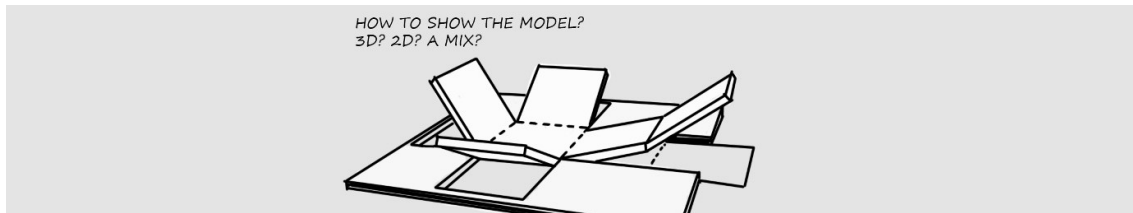
Help product designers save material and thereby make their designs sustainable by highlighting which modifications to their models, as shown above, lead to substantial material savings, as shown below.



Draw inspiration from the field called 'design for manufacturing,' which traditionally performed these tasks manually and was thus only applicable to mass manufacturing. However, with you automating the underlying algorithms, we think this could apply to the production of mini-series or even to one-offs.

In this project, we aim to partially automate this design and optimization process, eliminating the cost and thus bring it to individual end users.

**Your objective:** Implement a system that allows users to interact with and explore the design space of acceptable modifications to their 3D model while creating a visualization that shows tradeoffs with manufacturing costs such as 2D material sheets and production time.



**Action items:** Write an algorithm that optimizes for different metrics generating multiple solutions. Decide which of the pareto optimal solutions to pick and present as suggestions to the user. Visualize these suggestions and allow the user to directly manipulate the results.

### **Technologies involved in this project**

1. Write in JavaScript/Typescript
2. Implement a parametric modelling interface
3. Write 3D Interactive tools to render and edit 2D plates in a 3D web-based environment
4. Write an algorithm that deals with an NP-hard problem
5. Integrate into a medium-size software system (Kyub, 240.000 lines of code, kyub.com)

**Your project:** Develop and test the new system using **real-world** application scenarios.

**And then deploy.** Help thousands of users worldwide save time and resources—and thereby extend the scope of personal fabrication to a non-technical audience.

### **Contact**

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