Fold and Cut

Projektgruppe "Praxis der Forschung"
Sommersemester 2024

1 Motivation

Fold a piece of paper flat and make one straight cut. Now unfold the pieces and see what you get. It is known that, somewhat surprisingly, you can get any shape you like with this process. However, some shapes require folding patterns that are rather difficult to fold. Sometimes, only small changes in the desired shape can make a huge difference in the complexity of the folding pattern.

2 Project

The goal of this project is to formalize measures for the complexity of folding patterns, define algorithmic problems that aim to minimize the complexity, study their computational complexity, and provide a proof-of-concept implementation of the most promising algorithms.

Examples for such problems could be: Given a polygon, what is the closest shape that results in a folding pattern with sufficiently low complexity? For each vertex of a given polygon, what are the alternative positions that yield a local minimum in complexity?

3 Contact

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