A Virtual Computational Paper Folding Environment Based on a Computer Algebra System

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Abstract. Many people enjoy doing origami, an art of paper folding, since childhood. Origami is a more powerful geometry construction tool than straight edge and compass. But there are some physical limitations with traditional origami on paper. In this study, a computational origami environment has been developed. Huzita axioms are implemented with a computer algebra system, which not only deals with fundamental computation of axioms but also can prove some geometric consequences of an origami construction. Furthermore, the process of paper folding is visualized so that users can observe the 3D animation of folding steps from different viewpoints.

Keywords: origami, computational origami, paper folding, geometry theorem proving, origami visualization.

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