

# **Development of an Intuitive Algorithm for Diagramming and 3D Animated Tutorial for Folding Crease Patterns**

Hugo Alves Akitaya, Matheus Ribeiro Castro, Jose Carlos Ralha,  
Carla Cavalcante Koike.  
Computer Science Department, University of Brasilia.

When designing new origami artworks, crease patterns (CPs) appear as an extremely useful tool. Usually, origami bases are designed through CPs, which contains information about how the model was designed and the basic structure of the origami. These details are not always noticeable at diagrams. Moreover, some authors present only the CP for most of their designs because of the difficult and time-consuming process of diagramming.

However, folding a CP into an origami is not a simple task. Due to the possibility to follow different strategies, one CP results in different step-by-step folding sequences, and sometimes it is a puzzling problem to find any sequence at all. Furthermore, some sequences can be more intuitive than others, but a few represent more natural and linear ways of folding.

This work describes the development of an algorithm to simulate the construction of flat origami bases designed with circle packing CPs. The proposed algorithm intends to present an intuitive and natural step-by-step sequence from a CP. A software implementation plan (containing the 3D simulation) will be presented, which aims at simplifying the process of diagramming by taking snapshots from the simulation, as well as helping origami beginners fold from CPs with the support of a 3D animation.