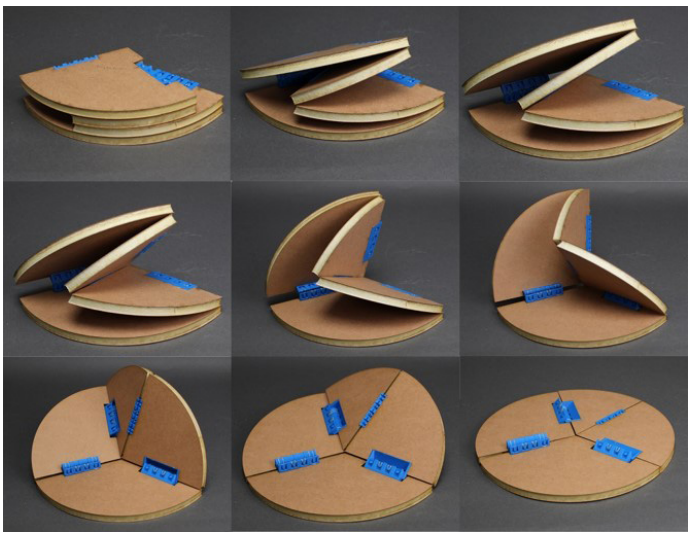
Folding Rigid-Panel Mechanisms Using Computed-Surface Rolling-Contact Joints

BYU #2016-003

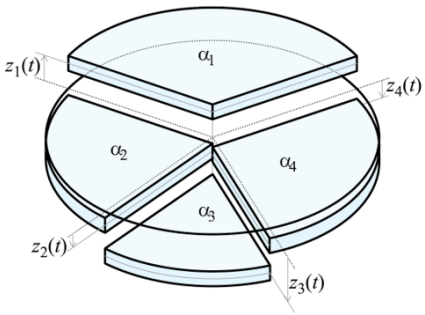
DESCRIPTION

Researchers at BYU developed an origami-inspired technique that allows for a folding mechanism with rigid panels to unfold to a planar flat position and then fold into a configuration where the panels are stacked parallel to one another and offset perpendicular to one another.



PROBLEM SOLVED

While many zero-thickness origami mechanisms are theoretically rigidly foldable, the introduction of thickness into the model commonly brings challenges such as achieving the full folding range of motion, having panels lying in different planes in the flat unfolded position and preserving the kinematic qualities of an equivalent mechanism with no-thickness panels. This technique allows for all of these issues to be addressed simultaneously.



KEY ADVANTAGES

- *Accommodates panels of arbitrary thickness*
- *Preserves the kinematic motion of zero-thickness model*
- *Begins in a planar unfolded state and ends with side-by-side parallel stacked panels in the fully folded state*

APPLICATIONS

Stowable camping gear, emergency shelters, aerospace applications, minimally invasive surgery and applications where two states are desired - a folded compact state, or unfolded state.

Offer:
License
Exclusive
World Wide
All Fields of Use

IP STATUS:
US Provisional Application
62/289817

Lead Inventor

Dr. Larry Howell
PhD, Mechanical Engineering

BYU TECHNOLOGY transfer

Spencer Rogers
srogers@byu.edu
(801) 422-3676