

## **Inflatable Product Design Based on Origami Theory**

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This presentation is to show modelling techniques for inflatable structures based on origami theory and to demonstrate simulation results of deploying origami-inspired inflatable structures. Origami is originally a traditional Japanese art and culture to enjoy paper crafts by folding. Recently it has been applied to engineering aspects; i.e., a sheet of material constructs three-dimensional structures and can be folded up onto plane and stored compactly. The presentation starts with a systematic technique by using conformal maps to design various origami-inspired inflatable structures. Next, for practical cases, inflatable products based on the origami theory are considered and numerically simulated to demonstrate the process of deploying from compact state to inflated state. Last, applicability of origami structures to industry is discussed.

**Keywords:** Origami, Inflatable Products, Industrial Design, Simulation