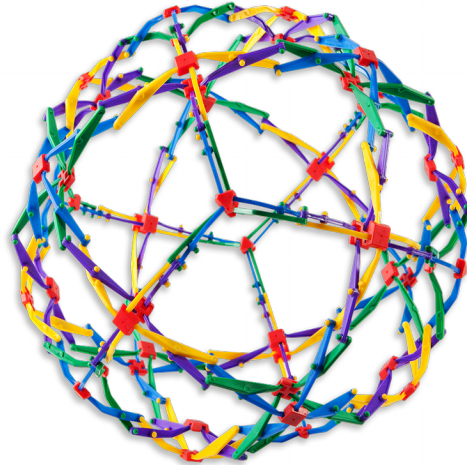


# M.Sc. Thesis Proposal

## Dilational Surfaces



*A Hoberman Sphere*

### Background

Dilational structures expand equally in all directions when actuated. A popular example of such a structure is the Hoberman sphere. Recently, much research has gone into 2D and 3D structures with dilational properties within the field of auxetic metamaterials. Many of these structures are either confined to a plane or obtain their dilational properties from the bulk structure. This limits the possible applications of such structures. For usage in deformable surfaces and exoskeletons, it would be beneficial to have dilational shell structures which retain their shape and curvature while performing dilational motion. A big challenge here is that we would like these structures to stay confined within the shell during motion.

### Challenge

You will design a basic (compliant) mechanism to be used as a building block for dilational thin-walled structures of arbitrary shape and/or curvature. you will provide a literature review, generate design concepts and demonstrate the mechanism through prototypes.

### Please contact for more details

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