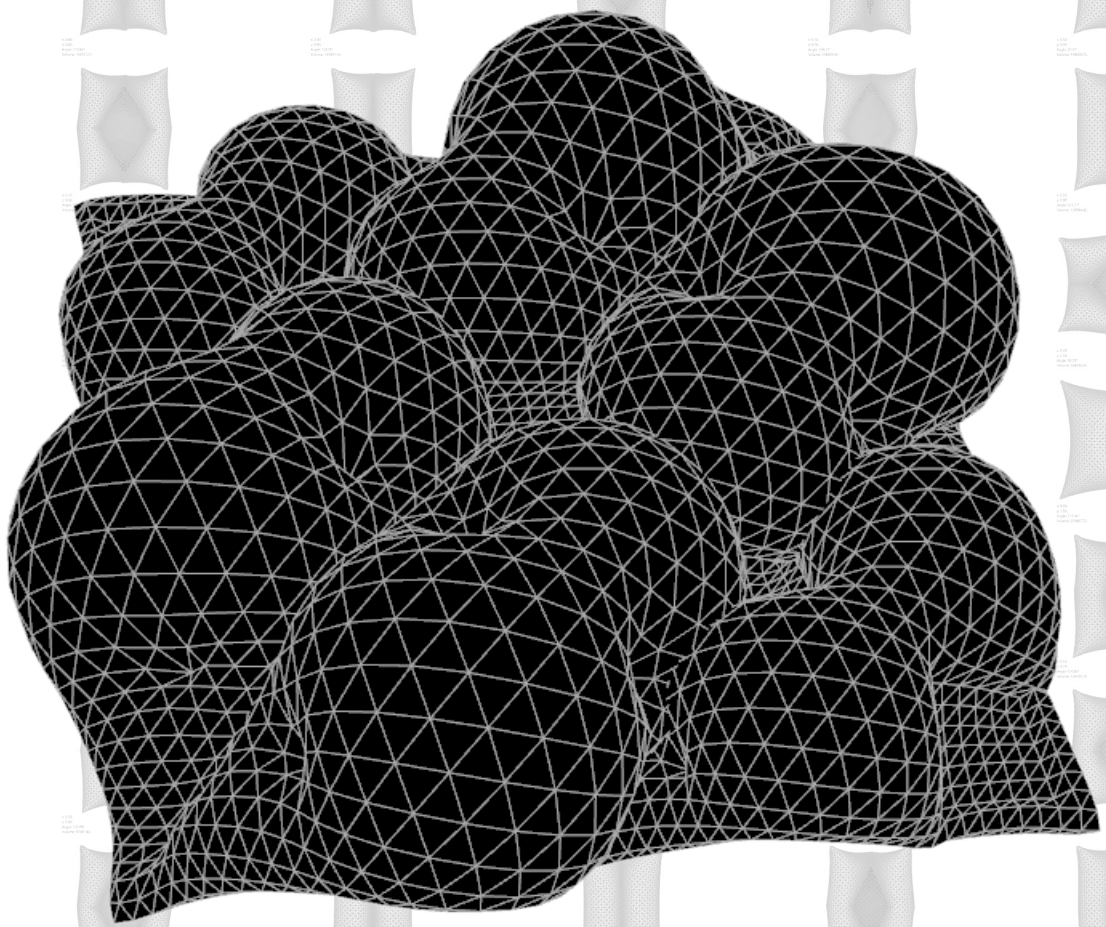
Institute for advanced architecture of Catalonia | BARCELONA



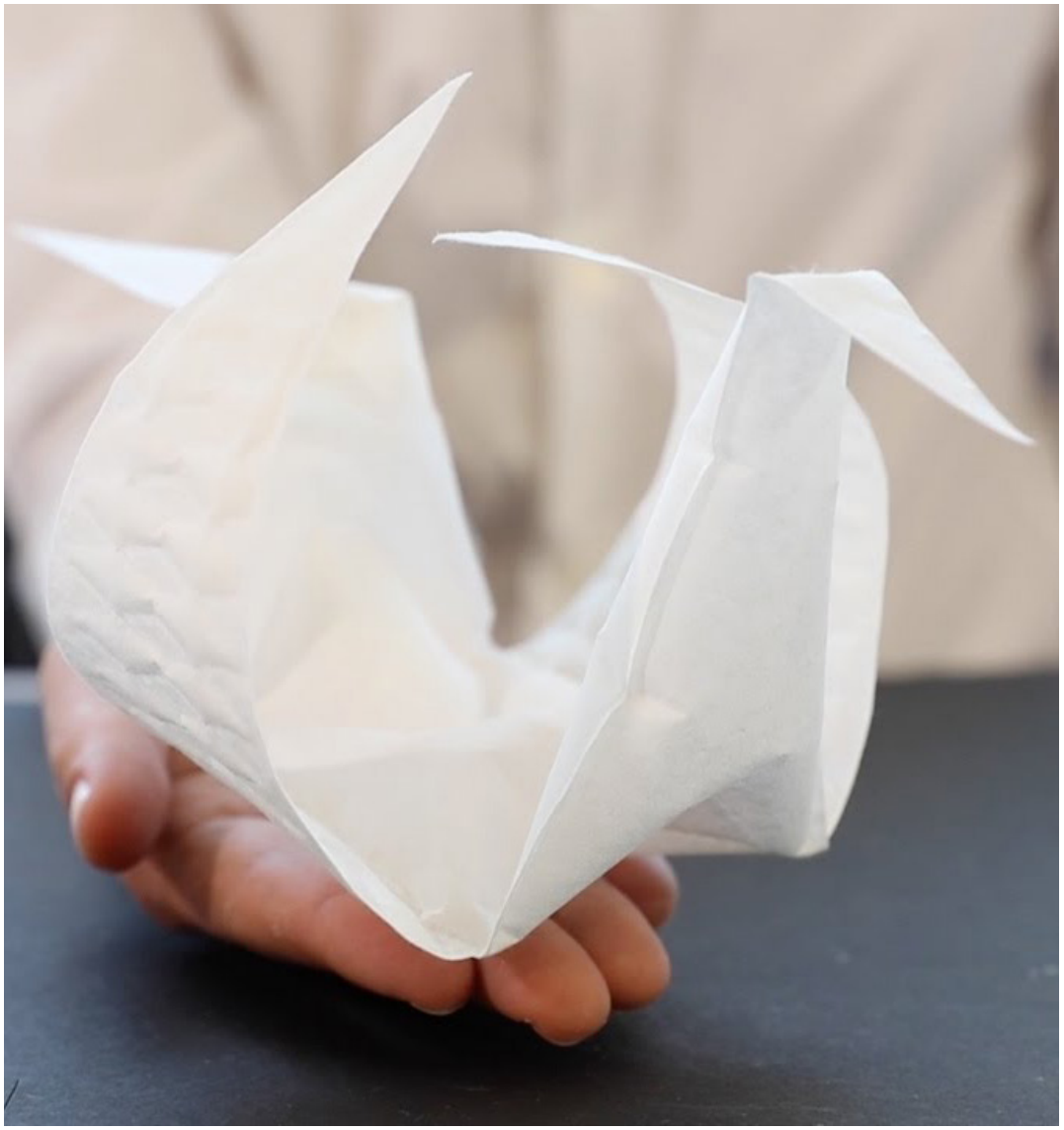
**MASTER IN ADVANCED ARCHITECTURE**

**SO.3 COMPUTATIONAL DESIGN 2018/19**

# GENETIC OPTIMIZATION

TUTORS : Rodrigo Aguirre
ASSISTANT : Danil Koshelyuk / Nikoleta Mougkasi

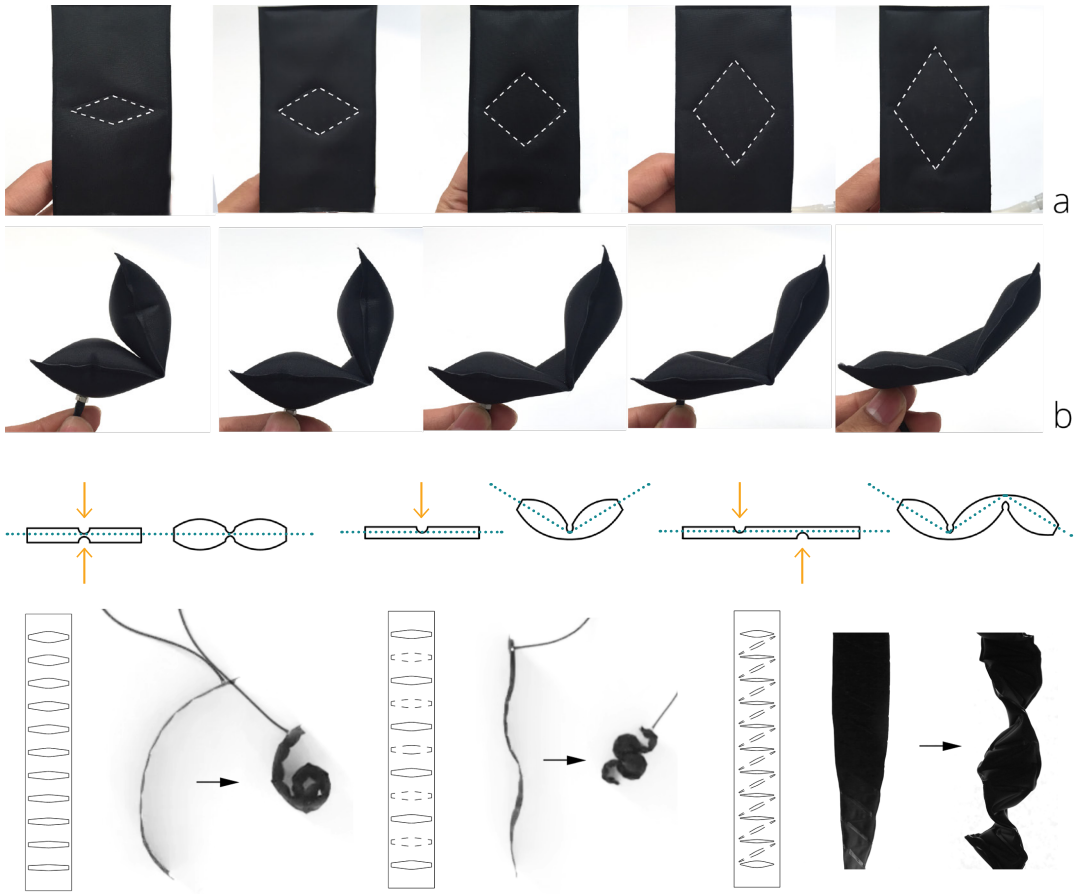
CHIOU, JING-WEN



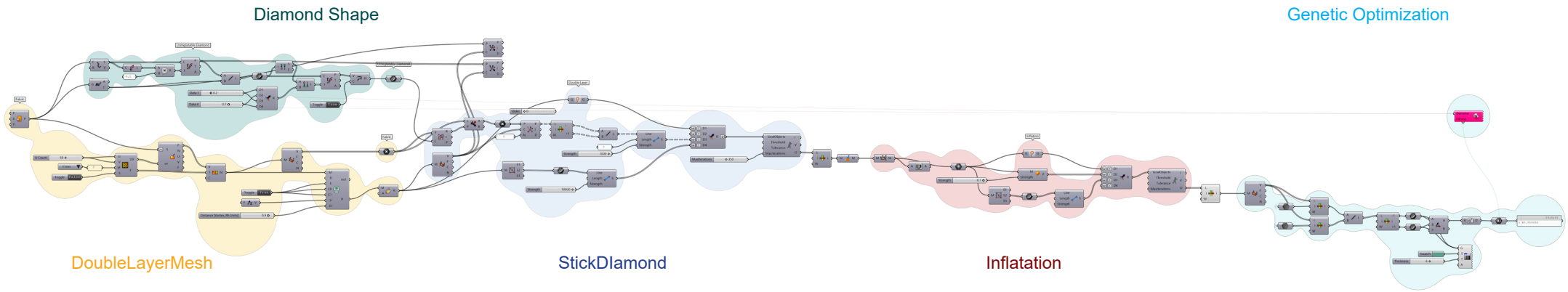
# AeroMorph

The project investigates how to make origami structure with inflatables with various materials. It introduces a universal bending mechanism that creates programmable shape-changing behaviors with paper, plastics and fabrics.

https://tangible.media.mit.edu/project/aeromorph/



# INFLATABLE (Kangaroo Pressure)




PRE FAB

- Create a Double-Layer Mesh
- Difine thesize of diamond
- Sort the points indise/outside of the diamond
- Reduce the length to 0(Kangaroo)
- Unify the mesh (check the faces)

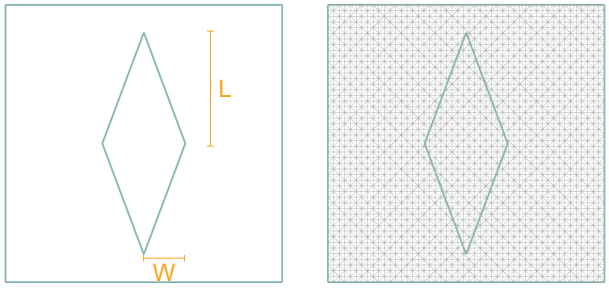
INFLATABLE

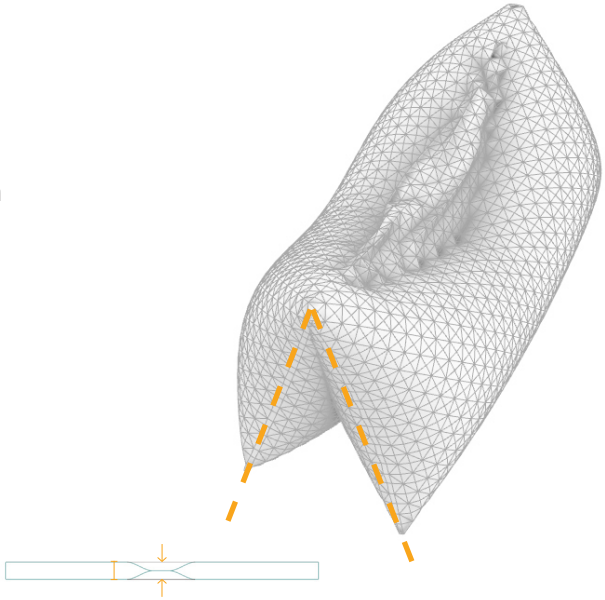
- Set different elasticity for up/below layer
- Pressure

GENETIC OPTIMIZATION

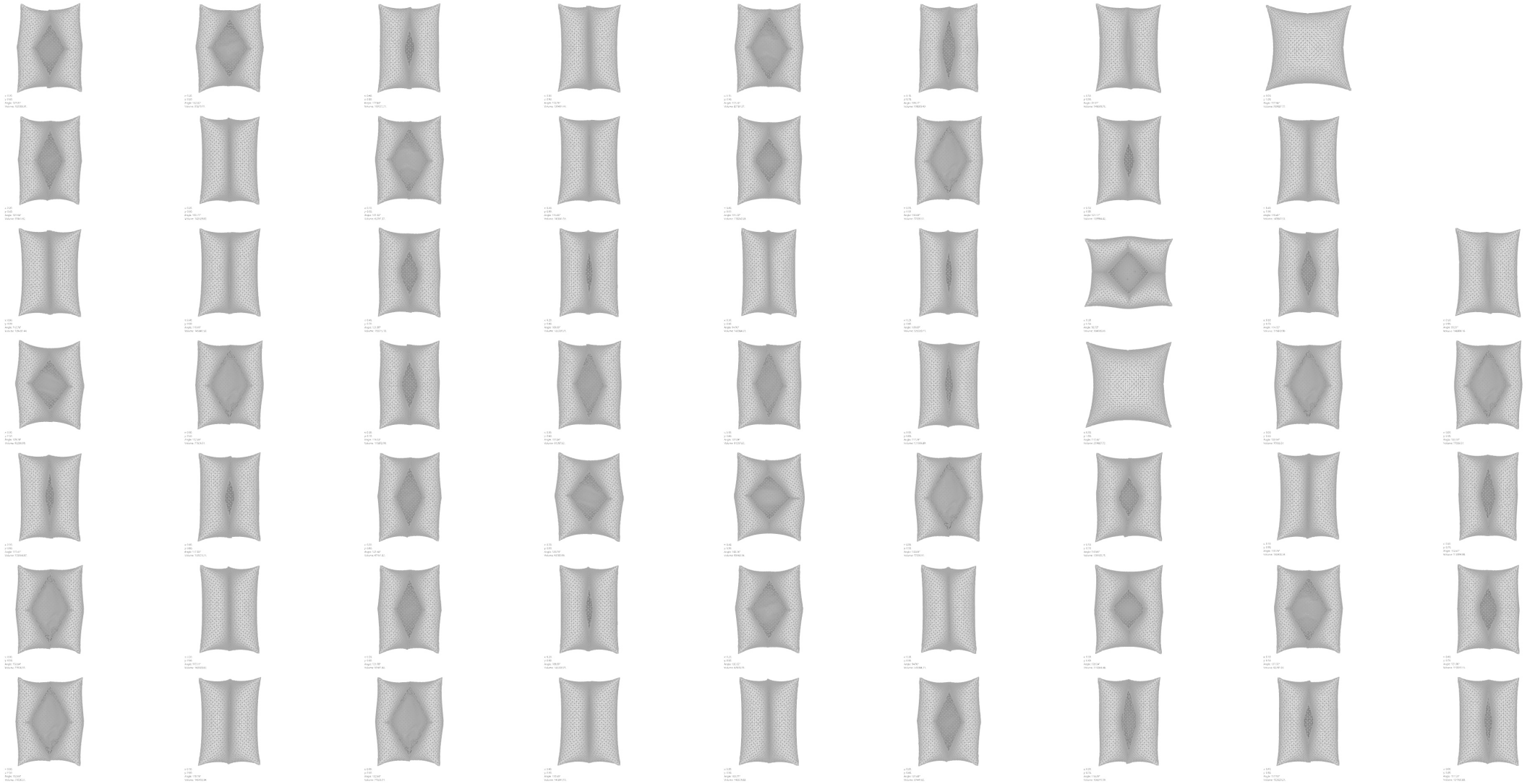
- Genetic Input : Size of diamond(Length/Width)
- Fitness : The bending angle created by inflatation

  Volume demand

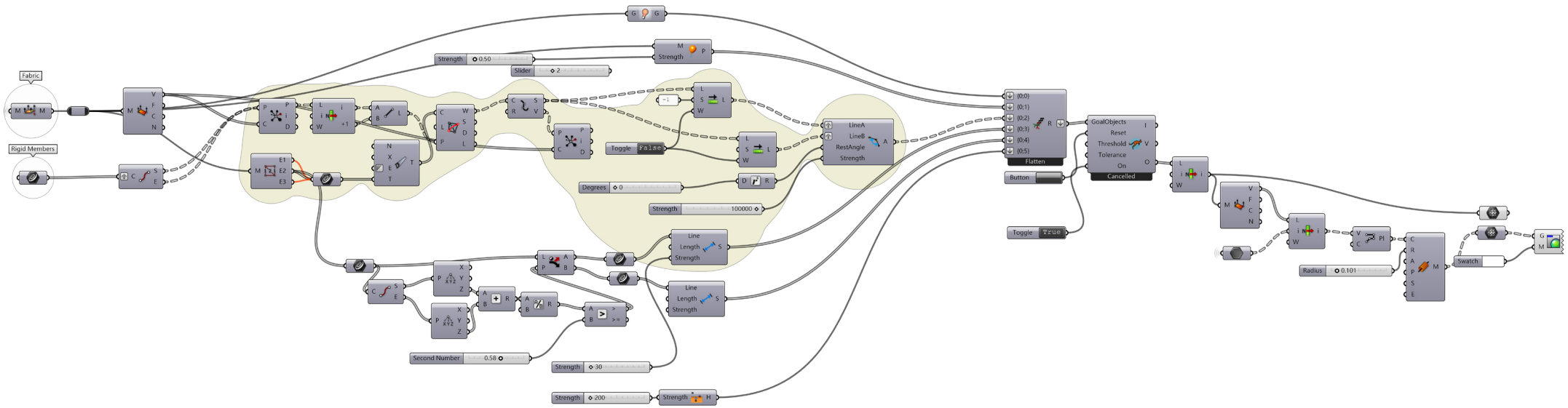


# GENETIC OPTIMIZATION (Galapagos)



# FUTURE STEPs

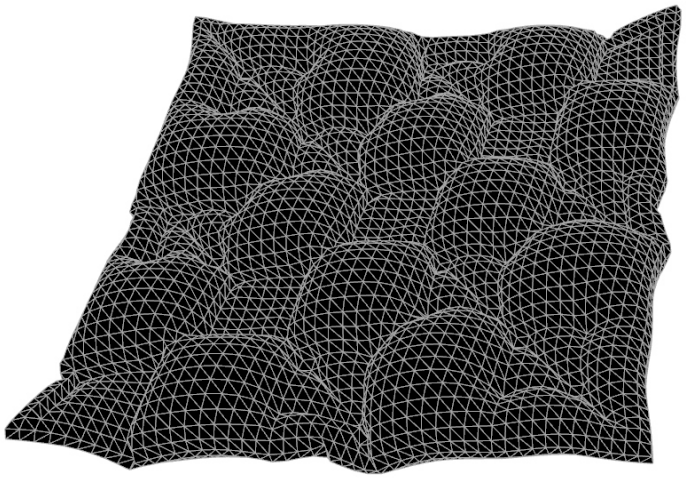



Diamond Chains

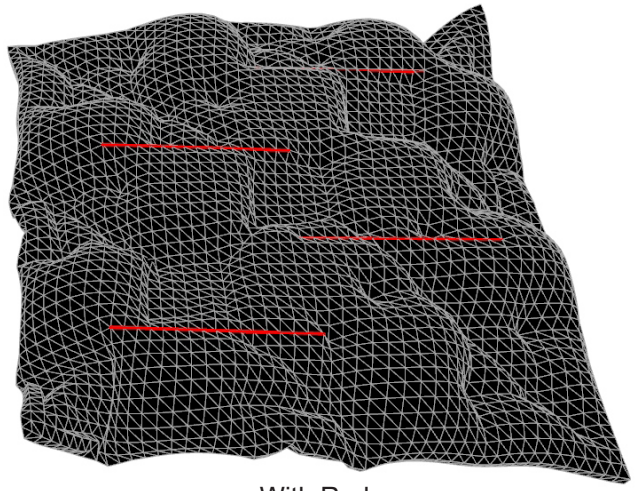
- Contour the mesh
- Divide the lines
- Define the size of dimaonds

Solid Rod

- Start and End points of members
- find the shortiest path in the mesh
- Fixed the rotate angle to prevend bending



Without Rods



With Rods