

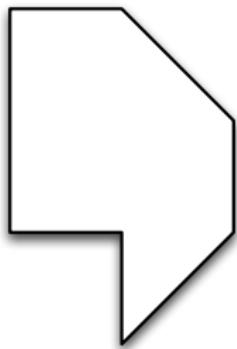
Computational Design + Fabrication: 2D Design

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EECS UC Berkeley

September 15, 2015

- News
- 2D Design
- 2D Rationalization
- Paper Review



- lab 1 due thursday
- section tomorrow 2-3p in soda 373
- please do jacobs online training
- review paper comments on thursday

- polygons
- flat sheets
- think boxes and clothing
- think plywood and cardboard

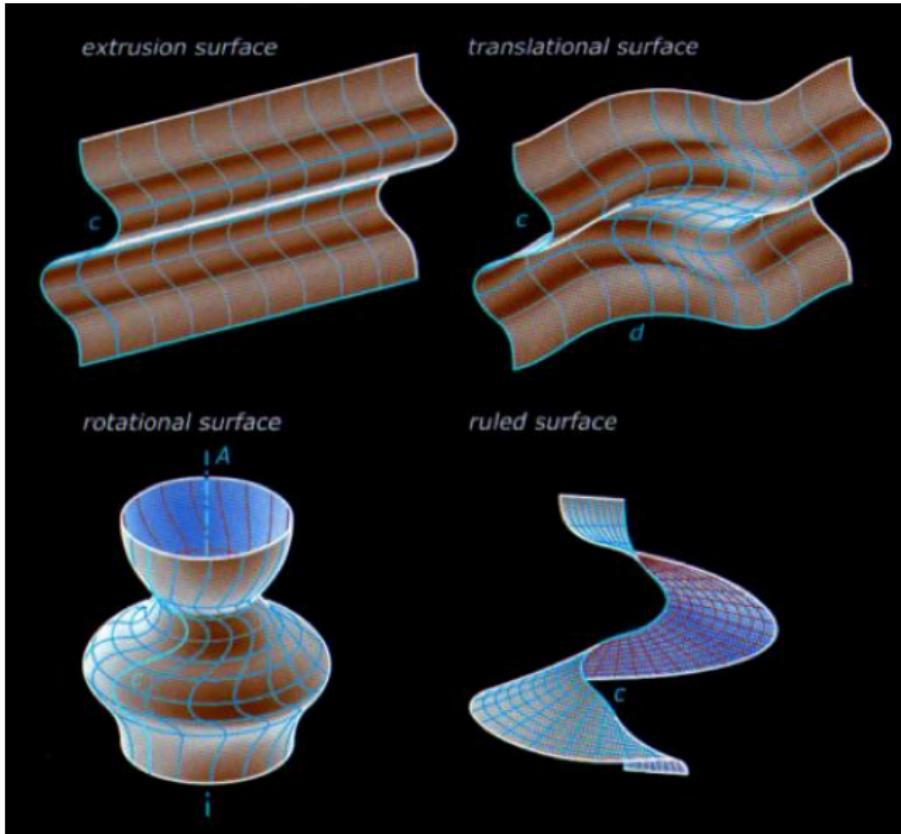


- simplification
- inexpensive
- ecological
- compact material
- strength to weight

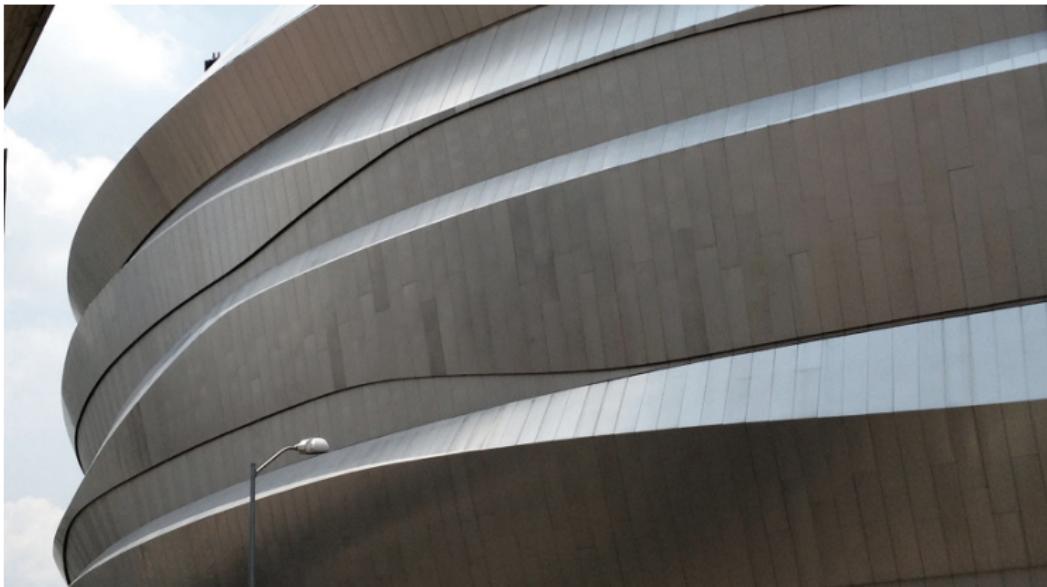
- design constraints
- developable surfaces
- origami
- plates
- slices
- panels

- what's the design algorithm?
- how would you want to design it?
- how do you break it down into bite sized chunks?
- what sort of machine could build it?
- how would you write assembly instructions?

Developable Surfaces



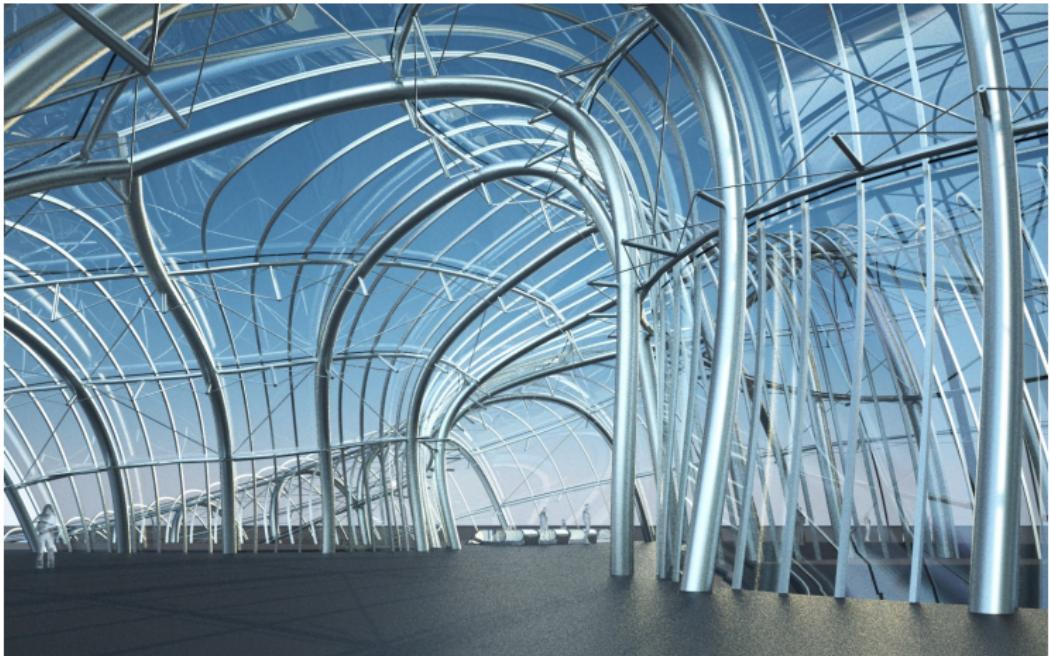
Building with Developable Surfaces



by Robert Stuart Smith

Glass Structure with Developable Surfaces

9



by Liu + Pottmann + Wallner + Yang + Wang

Developable Chair

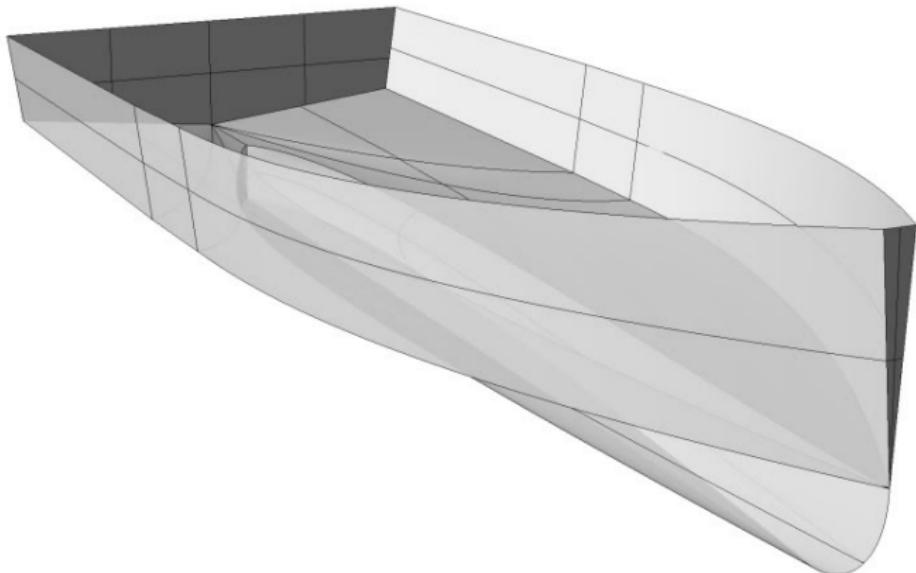
10



source <http://hivemodern.com/pages/product4835/grete-jalk-gj-chair-lange-production>

Boat with Developable Surfaces

11



by Martin Watts

Sculpture with Developable Surfaces

12



by Antoine Pevsner

- folded from one sheet of 2D material
- straight or curve folds
- joints and joinery
- multiple pieces?
- foldability

Cardboard Origami Chair

14



by Brandon Thomas Baunach

Origami Chair

15



source Yuji Fujimura

Folding Chair

16



by James Deiter

Klein Bottle House

17



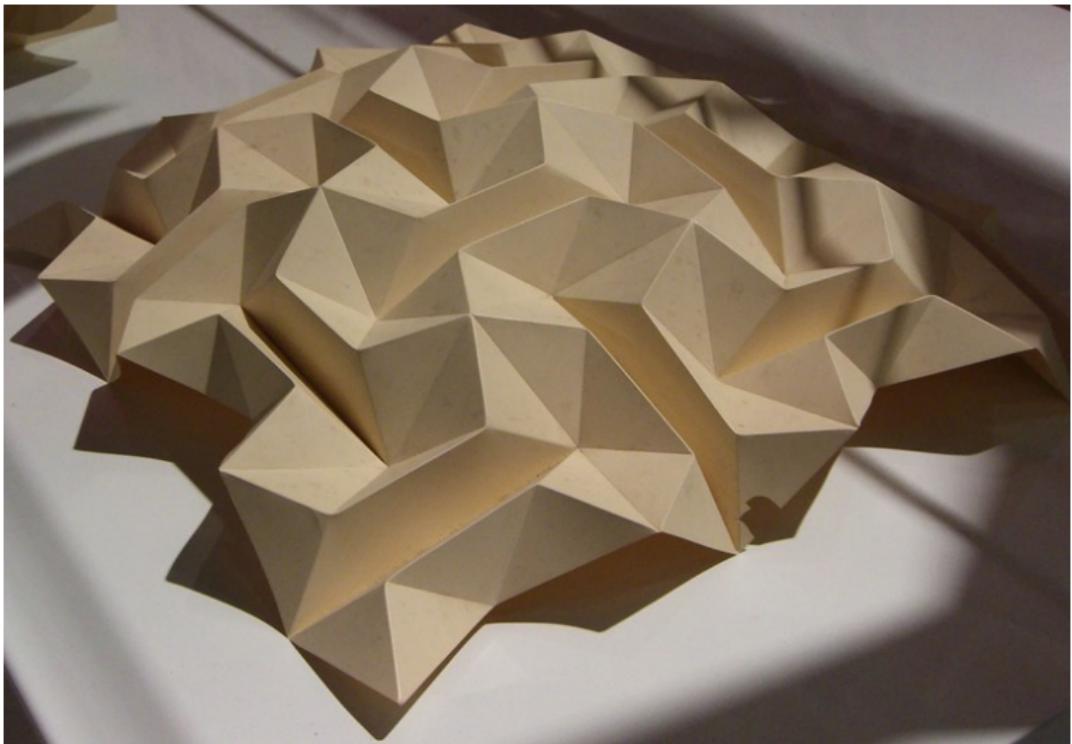
by McBride Charles Ryan Architects

Origami Inspired House

18



by Yuji Fujimura



by Ron Resch

Ron Resch Origami Tesselation

20



by Ron Resch



source Alice Drougard

Flux Chair

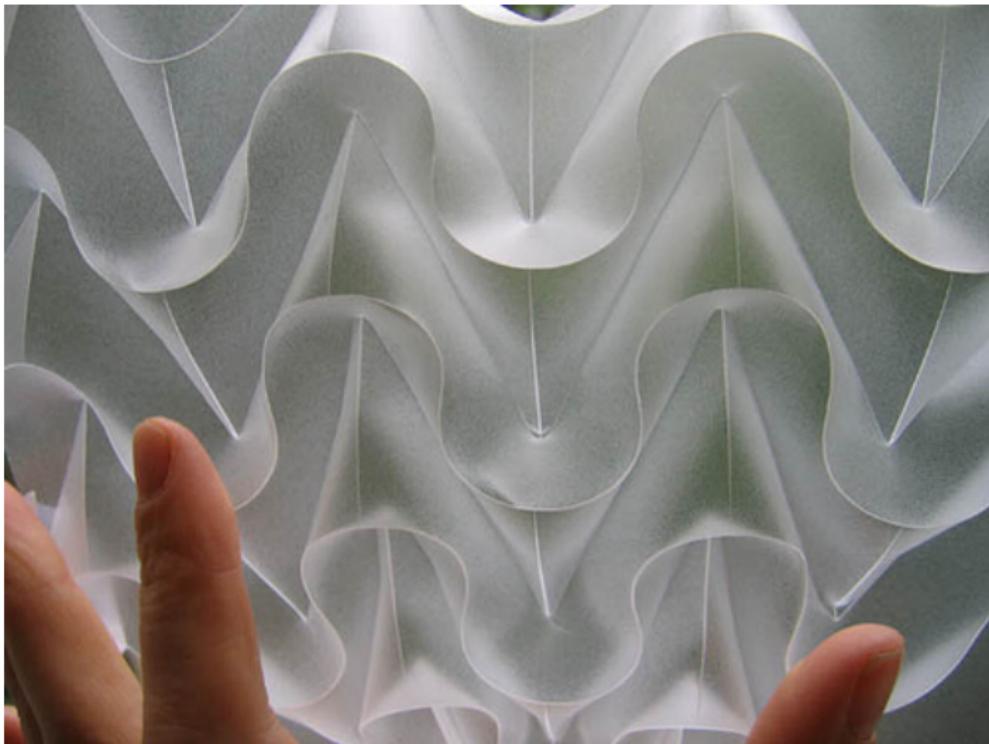
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Flux Chair

Curved Origami

23



by David Huffman

Kentucky Series

24



by Erik and Martin Demaine

Calliper Curved Fold

25



by Polyscene

- designed using intersecting 2D plates
- material and assembly
- fewest pieces



by Turner Collective

Earl-Pinto Kink Stool

28



by Alex Earl



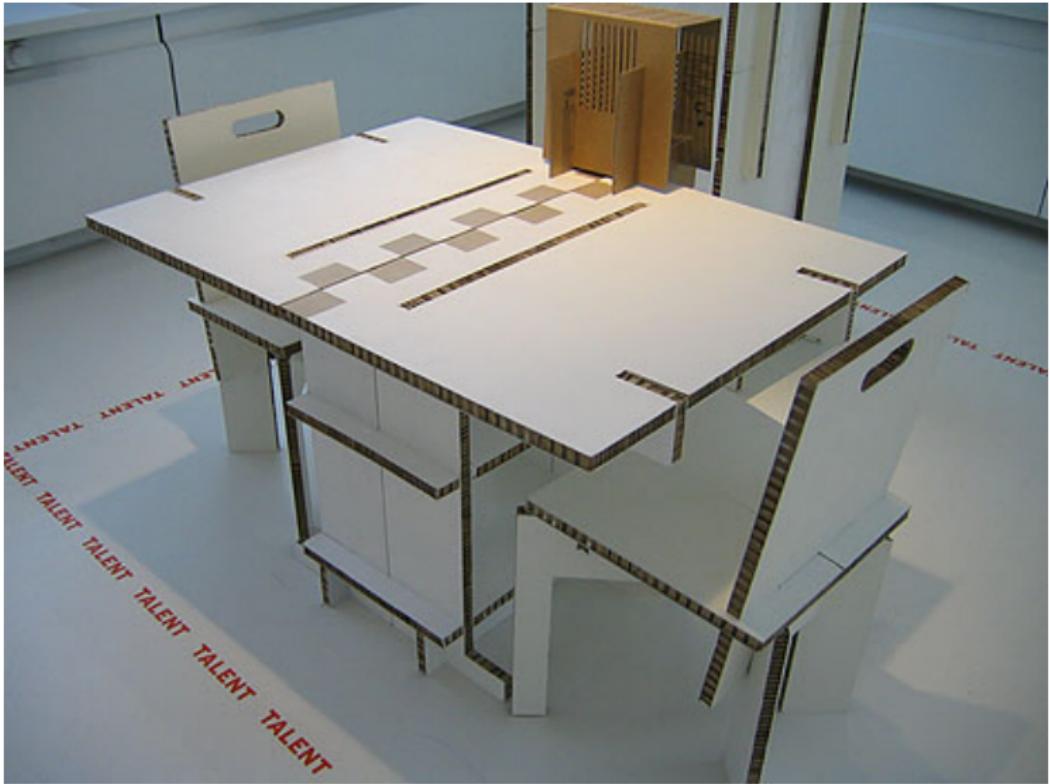
source <http://stefanopugliese.virb.com/2012-made-in-ch-i-taly-collection#/i/0>

Geometric Shelving

30



source <http://www.j1studio.com/furniture/tshelf/>



by Che Eyzenbach

Chair with Developable Seat

32



source <http://federicoluismuebles.tumblr.com/page/4>

- designed using combined slices
- material and assembly
- stacked, radial, waffle, etc???
- developable pieces?



by Motoroso

Lounge Chair

35



by David Graas



by Che Ezenbach



by Expand Furniture

Radial Sliced Chair

38

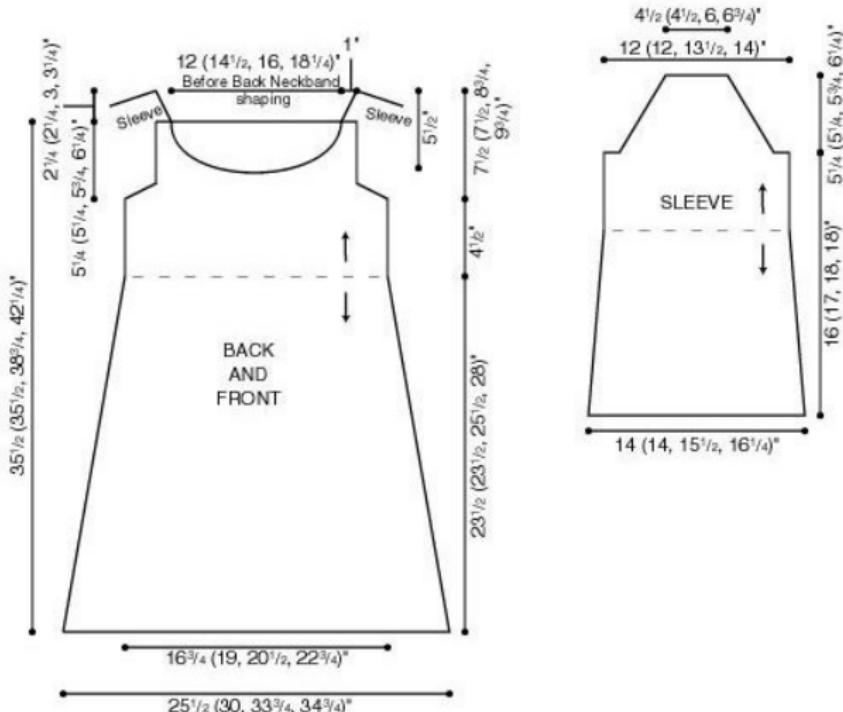


SOURCE www.yankodesign.com

- 2D pieces of fabric
- sewn or welded together
- draped or inflated

Dress Design

40



by Zelda K

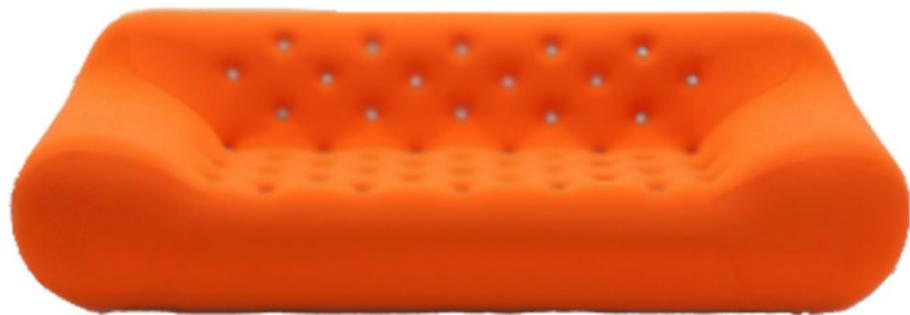




by branded tent

Inflatable Sofa

43



by Home Chesterfield

Inflatable Chair

44



by Anda Armchair

Inflatable Sculpture

45



by Bespoke Structure Design

Peace Pavillion

46



by Zundel and Cristea

Royal Artillery Barracks

47



by Magma Architecture

Inflatable Concert Hall

48



by Anish Kapoor in Japan

Bubble Building

49



by 3GATTI in Shanghai

Inflatable Robot Arm

50

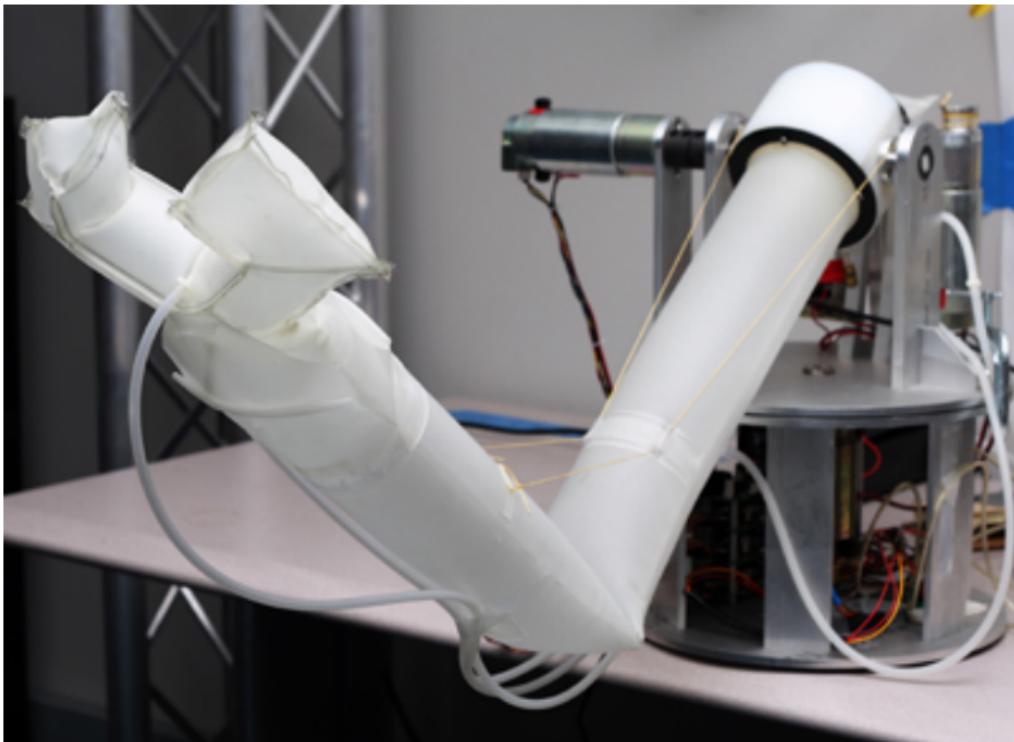


Otherlab
pneubotics

by Pete Lynn and OtherLab

Inflatable Robot Hand

51



by Siddharth Sanan

Inflatable Walking Robot

52



by OtherLab

- 2D CNC
- 2D Layout
- 2D Joinery
- Lab 1 Solutions
- Lab 2 Released