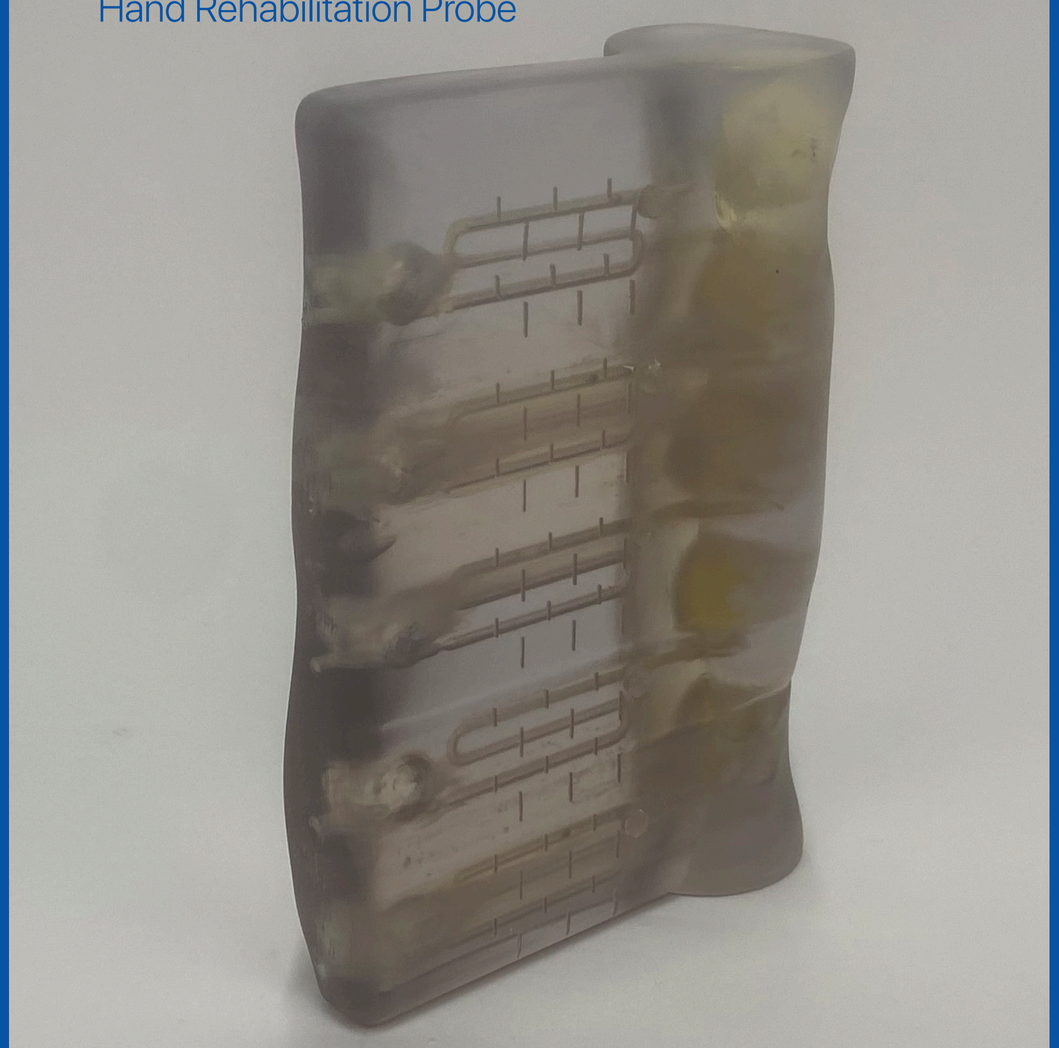
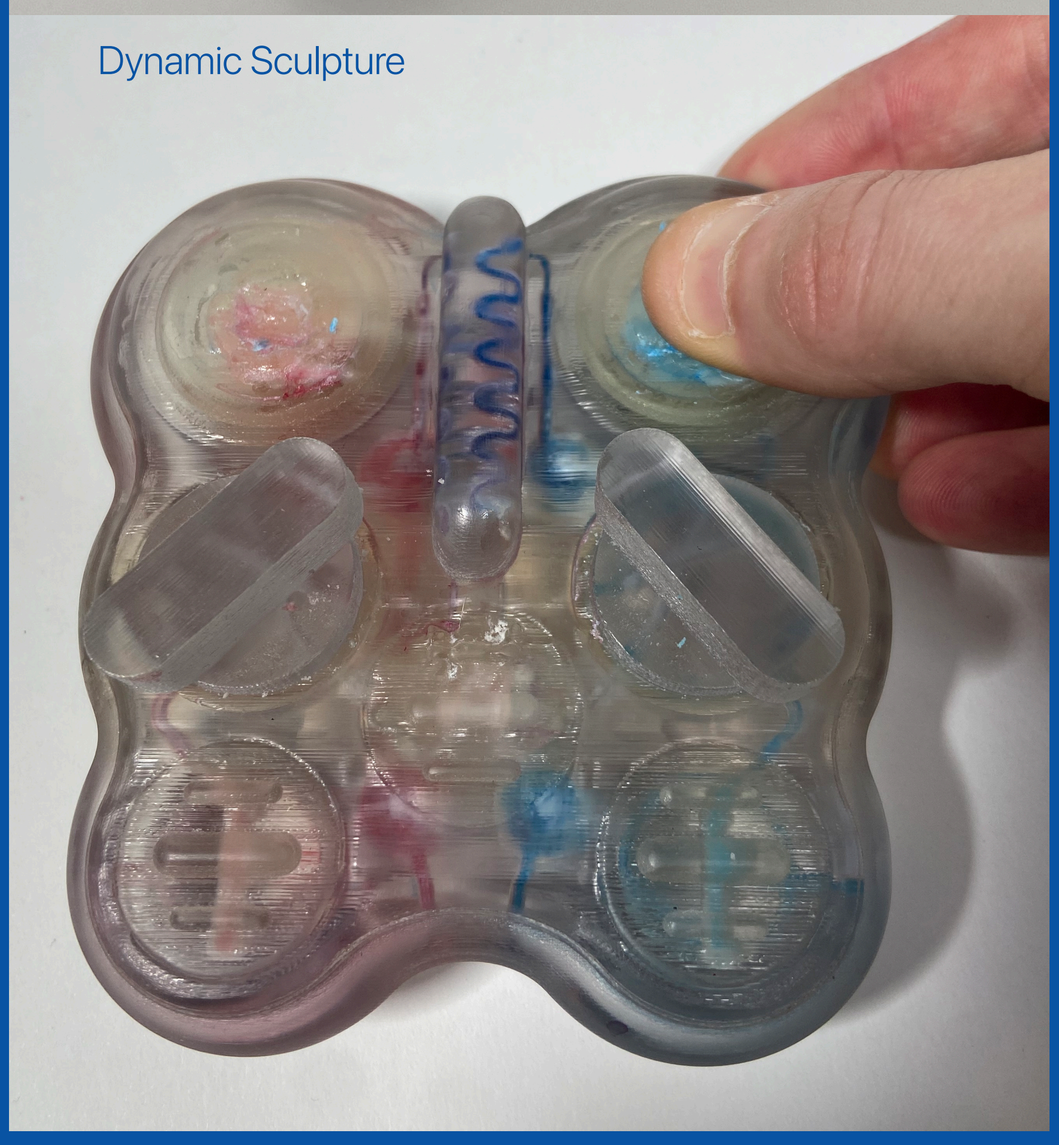
FLUIDIC CONTROL

Tangible control mechanisms for programmable multi-material fluidic interfaces with material jetting additive manufacturing

Hand Rehabilitation Probe



Dynamic Sculpture



3D printed fluidic interfaces are Tangible User Interfaces that leverage humans' natural abilities in manipulating physical objects as alternatives to Graphical User Interfaces.

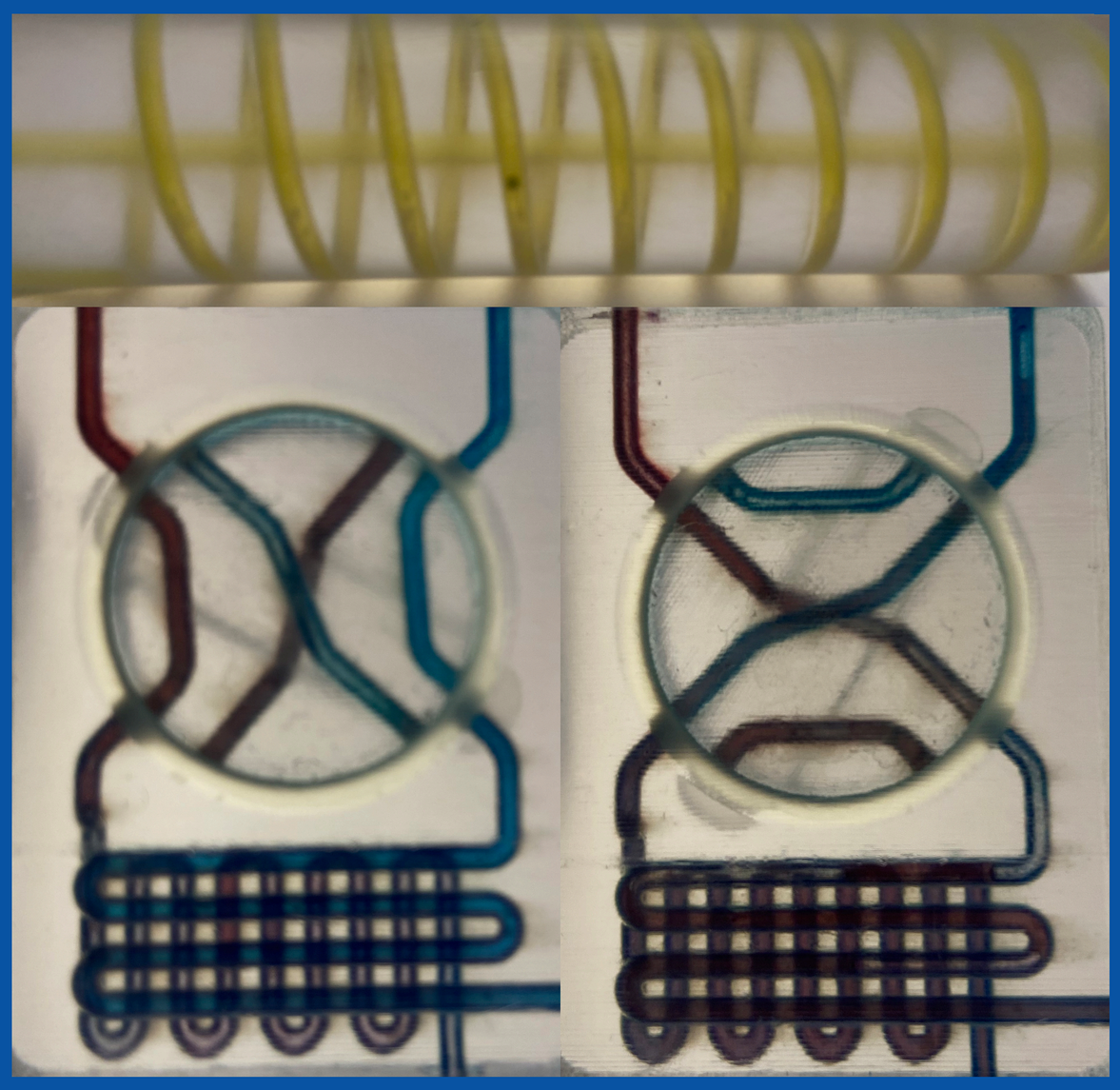
Fluidic interfaces use liquids to sense, compute, and output a dynamic appearance or behavior in response to mechanical deformation inputs.
This project focuses on integrating logic operators and controls in the interfaces to achieve more complex dynamic behaviors encoded in the material.

The artifacts are additively manufactured with material jetting technology using the novel possibilities of liquid and voxel printing to integrate sensing, computation, and dynamic output capabilities in the material structure.

Routing modular elements, finger-actuated flow control mechanisms, and integrating solid objects in the fluid channels are explored to design two demonstrators to showcase the possibilities of designing with this technology.

The hand rehabilitation probe integrates 1.5mm metal spheres in the channels that move proportionally to the pressure applied, allowing to evaluate the precision in grip strength for each finger through analog visualization.

The dynamic sculpture exemplifies the possibilities of encoding multiple behaviors in a single device, allowing the user to control the output via the routing knob.
The temporal factor is also user-controlled via flexible areas of the object that can be compressed to regulate or stop the fluid flow.



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