

Soft electronics

Helen Leigh

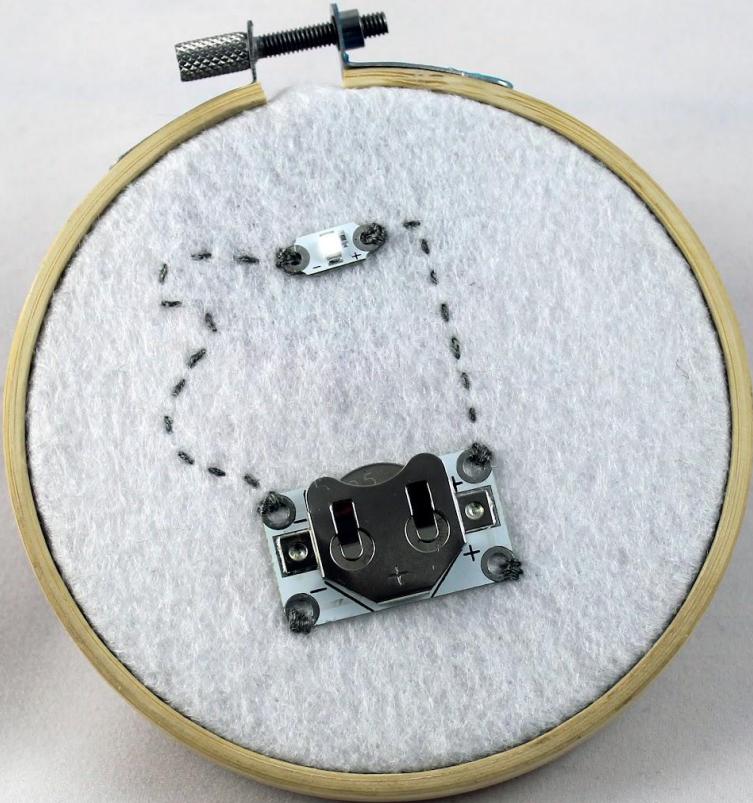
Head of Community at Crowd Supply
Hardware hacker and maker of experimental music things

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electronic embroidery



thread

Meet the materials



fibers



conductive
fibers



conductive &
non-conductive
fiber blend



filaments



conductive
filaments



spun from
fibers



spun from
filaments



spun from
blend
of conductive and
non-conductive
fibers



spun from
conductive
fibers or filaments



spun from synthetic
fibers or filaments,
then coated in thin
layer of metal



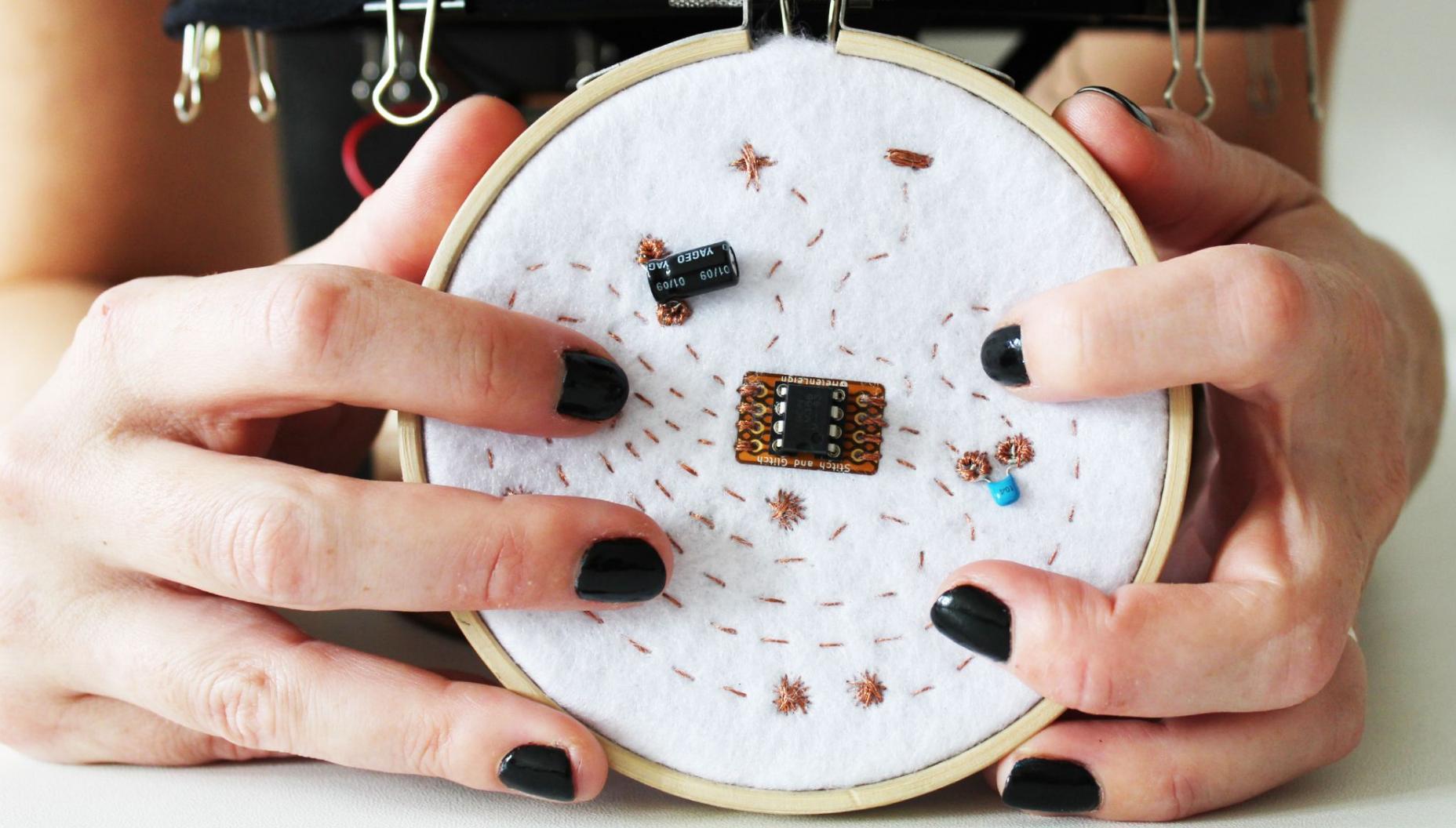
filaments
wrapped in metal
then spun together



fibers
wrapped in metal

Diagrams from Kobakant





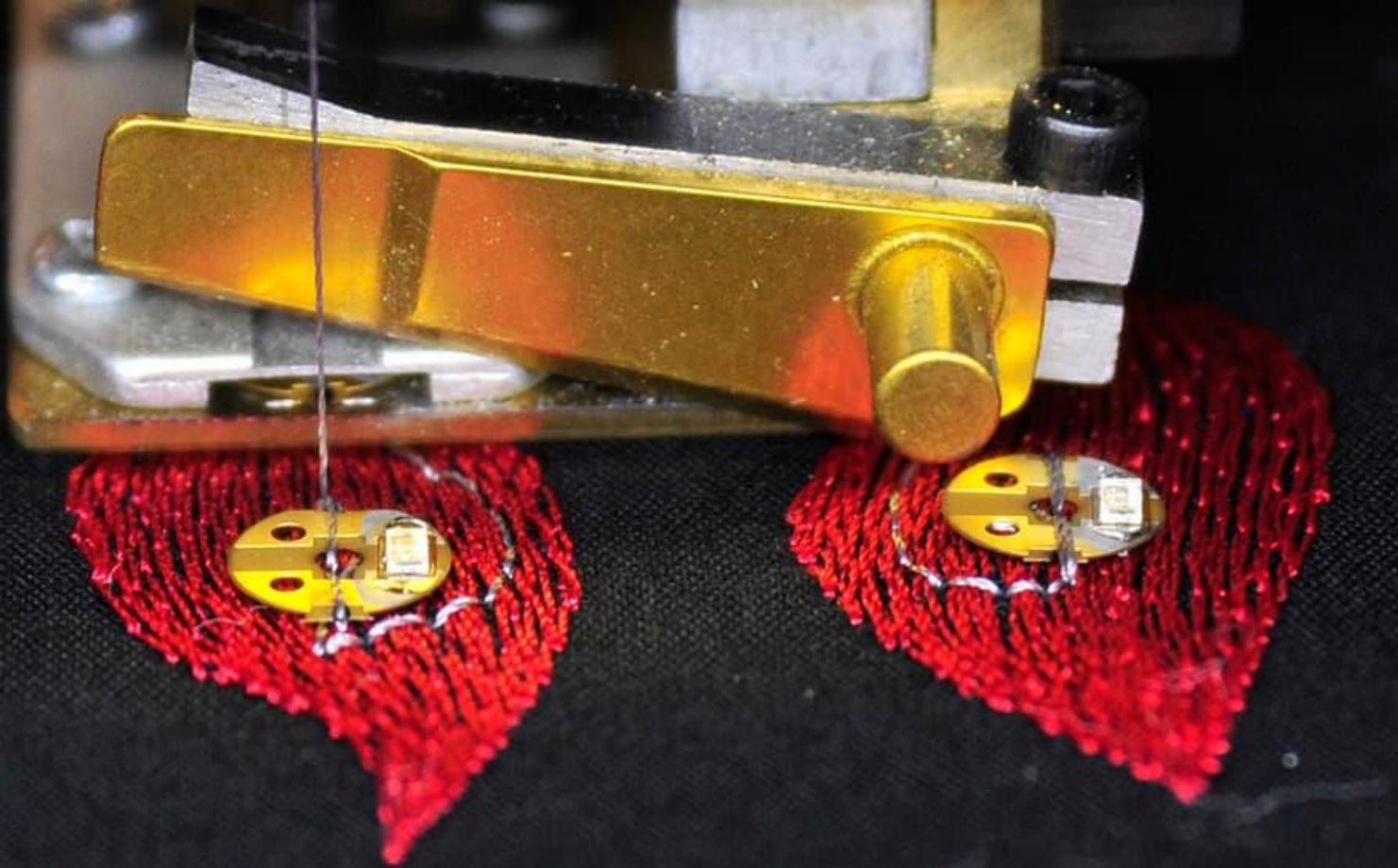




ZSK Technical Embroidery Systems

Embroidery Systems

30



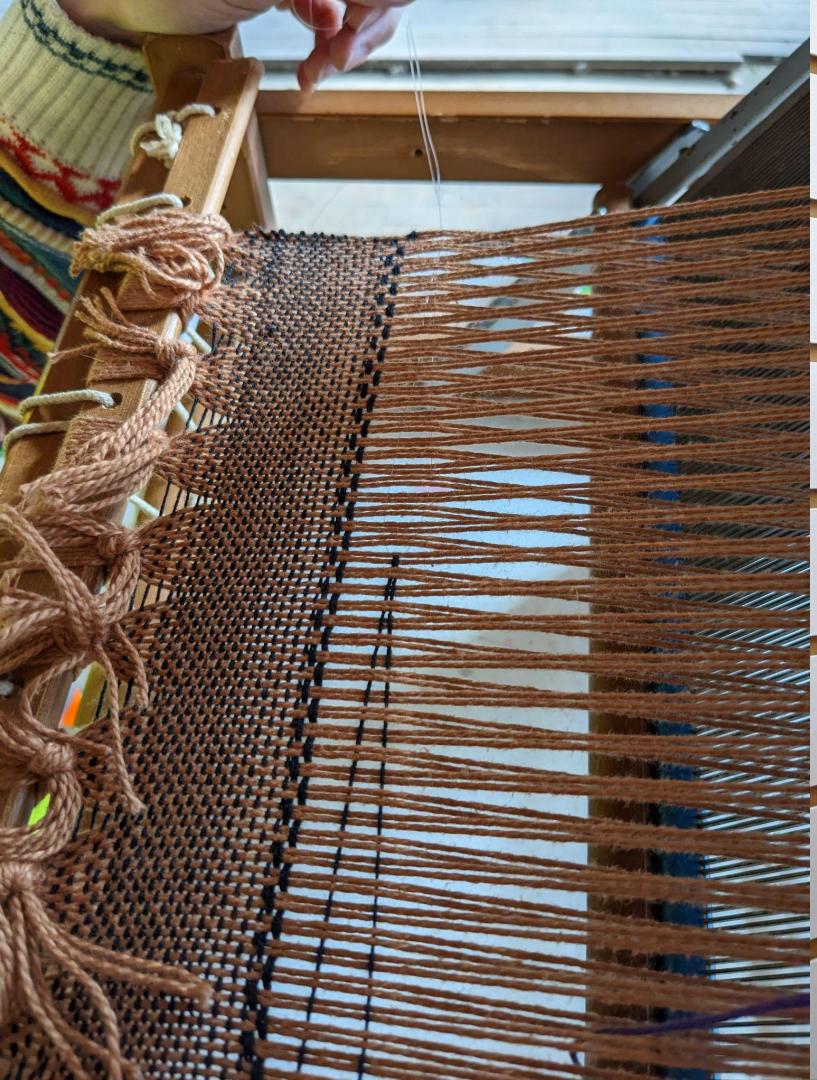


fabrics



woven vs. knit







A close-up photograph showing a person's hand holding a large, dark, and highly reflective sheet of velostat material. The material has a metallic, polished appearance with sharp highlights and deep shadows. The hand is visible on the right side, gripping the edge of the sheet. The background is a plain, light gray.

velostat <3

tapes



KOBAKANT



www.kobakant.at/DIY

Places to buy thread and fabrics (some are weird)

Adafruit and Sparkfun

LessEMF

VTech Textiles (Statex supplier in USA)

[Madeira USA](#) (also in EU)

[Statex](#) (DE)

Karl Grimm (DE, do not visit website, email only in German)

Bart and Francis (Belgium, hilarious website)

My faves: Adafruit (waxy, ok) Karl Grimm (beautiful, hard to get) and
Maderia HC range (perfect, kinda boring looking)

Be prepared for ‘interesting’ customer service and 404s

please note very good that you do not need to mail me

1 asking how to use these kind of threads

i will not do your work, do it yourself

2 what the resistnce in ohm per meter is

a lot ask this but do not realise that it changes wildly to the
and the rest of the materials you work it in, over and or arc

and also we get paid for doing this kind of R&D

3 what the actual technology behind it is

firms institutes and R&D think-tanks pays us per hour for this ki

so if you want to kno, be prepared to fo deep into your n

we have the knowhow on the cross-border thechnolo

products that are beeing creted in the mind and the actu





“Yarn *is* hardware”



Dr. Anuradha Reddy
@anu1905

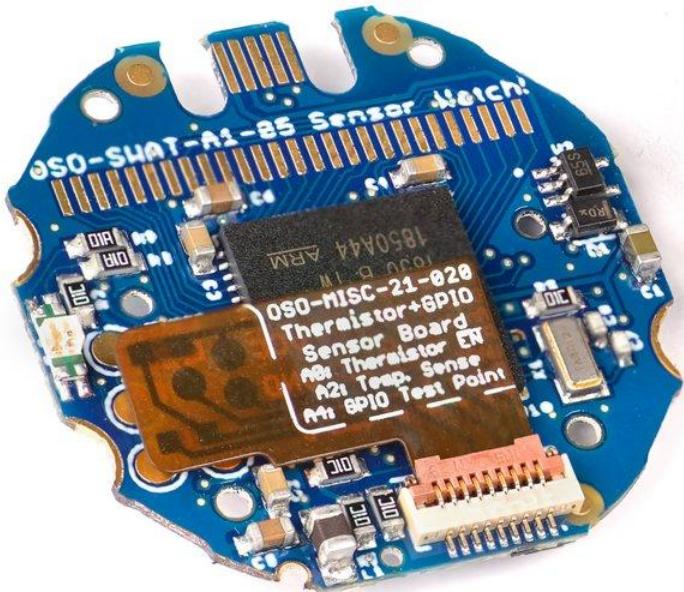


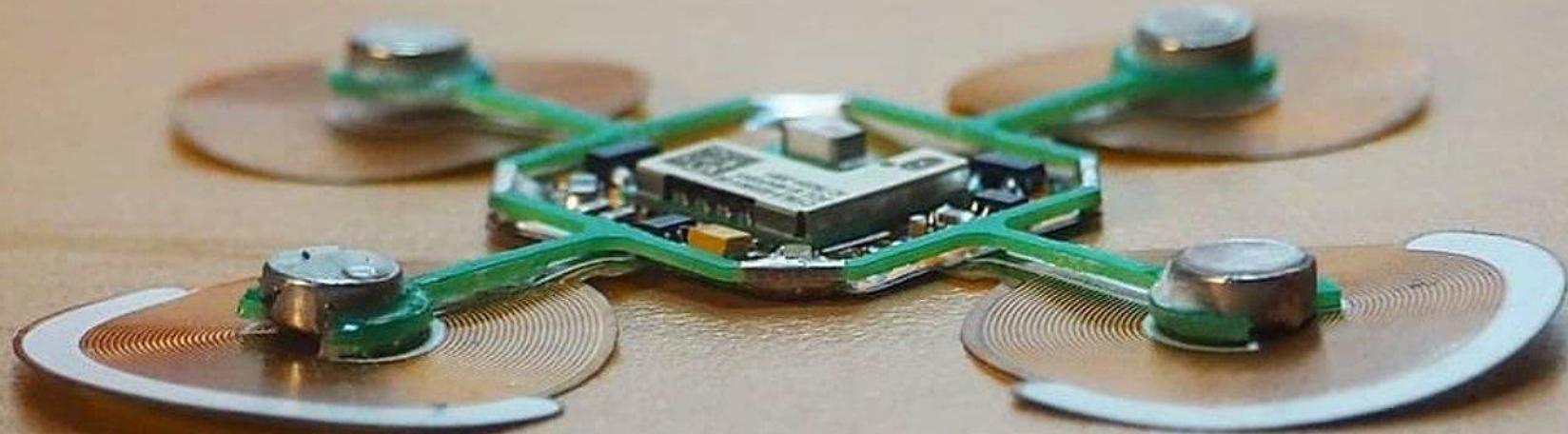
flexible
circuits



@BujegaCarl

@JoseCastillo Sensor Watch



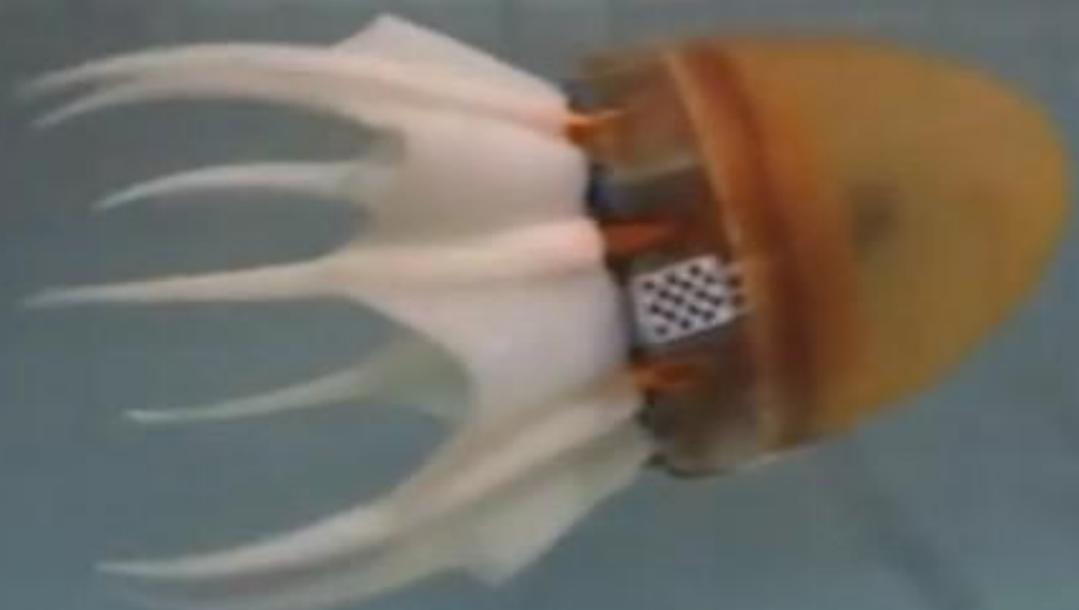






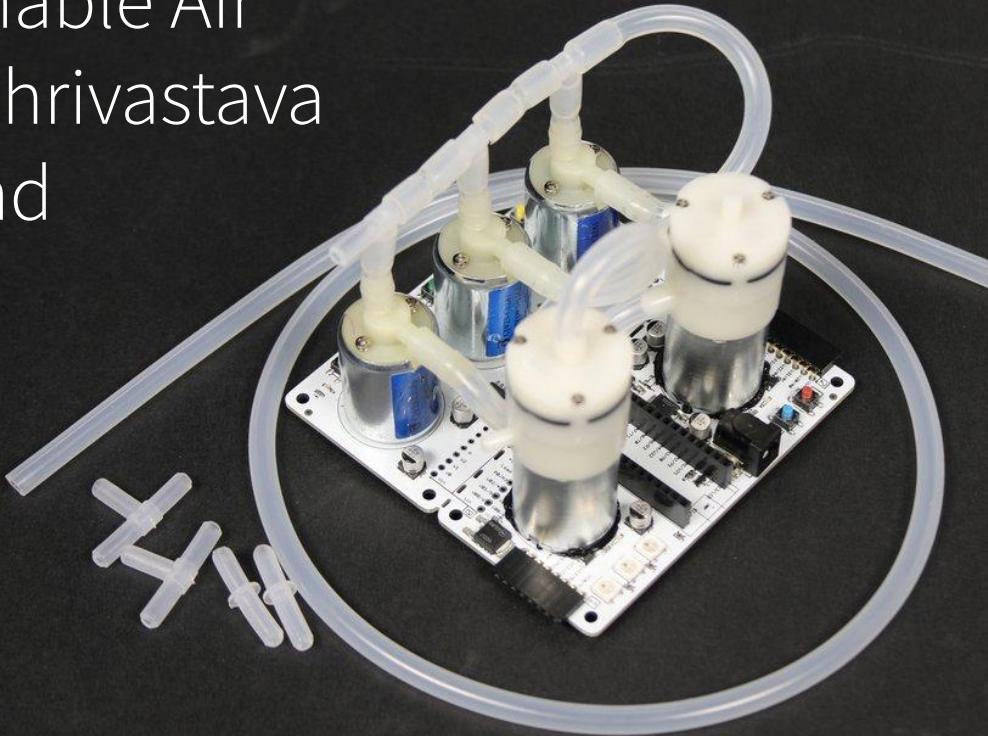
soft
robotics

@AirGiantsHQ



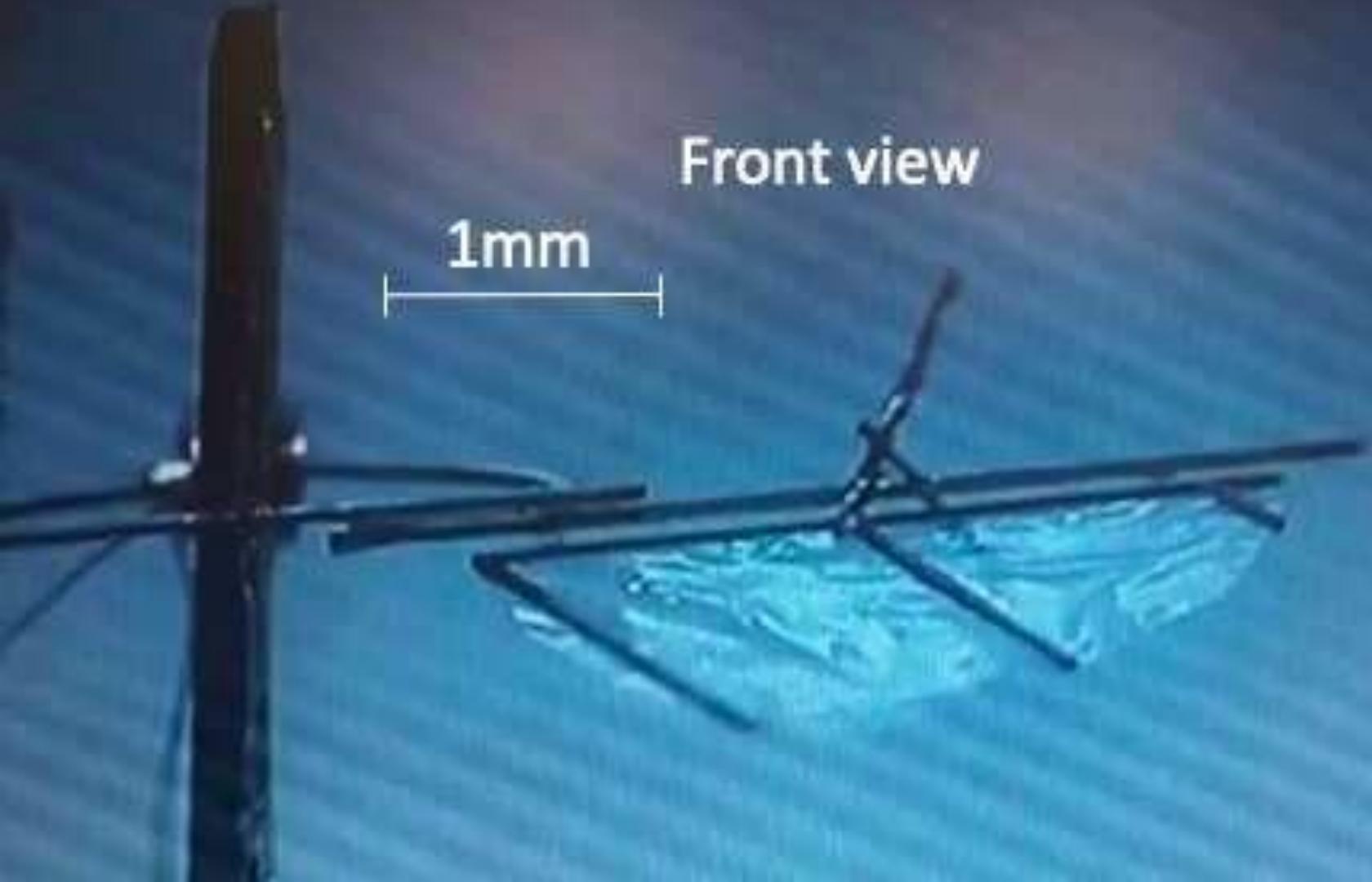
Programmable Air

Amitabh Shrivastava
@tinkrmind



Front view

1mm



softness in electronics







bonus slide: my favourite microcontrollers and SBCs

Adafruit Circuit Playground Express
Micro:bit

BELA + beagleboard (Becky Stewart leadingzero)
Solder Party boards with castellated edges (esp RP2040 stamp)

Make Fashion boards + stretchy plaited cables!
LilyPad range from Leah Buechley

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