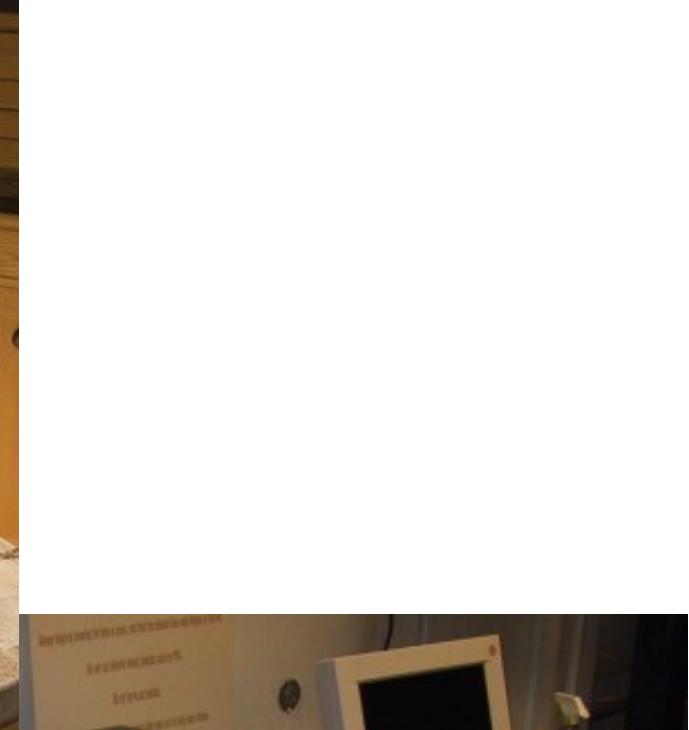


Soft Digital Fabrication

Mar Canet Sola
Varvara & Mar – <http://var-mar.info>



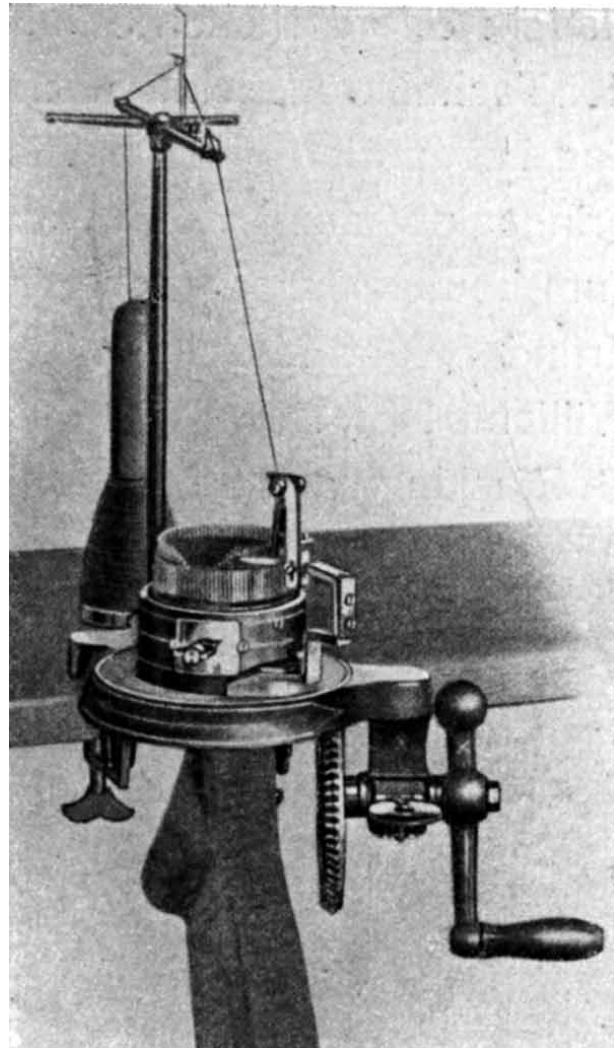
What about knitting and craft in general?

- Knitting is very old craft.
- The origins of knitting go back to 400-500BC



Source: <http://maryhanna.net/wp-content/uploads/2010/08/KnittingOldLady.jpg>

Circular knitting machine



Hand-powered circular knitting machine of the Chemnitz-Based "Strumpfmaschinenfabrik" (Stocking Machine Factory) for the production of stockings with toes and heels, 1880.

When did a knitting machine appear at home?



The first simple hand-powered flat-bed Knitting Machines were constructed for home use by the cottage industry in 1890. As well small-size factories were using these machines.

Source:

http://www.german-hosiery-museum.de/technik/06flachstrickmaschinen/Bild_flach

Brother knitting machines' models

MODEL	YEAR
KH-500	1955
KH-511	1960
KH-561	1964
KH-581	1966
KH-588	1969
KH-800	1971
KH-810	1973
KH-820	1974
KH-830	1976
KH-840	1978
KH-890	1979
KH-910	1976
KH-930	1980
KH-940	1988
KH-965	1992
KH-970	1996

Non punch-card machines

Punch-card machines

Electronic knitting machines

-> although Brother knitting machines have been discontinued, they are still the ones that people have at home!
The two most popular knitting machine lines in the market, namely Brother and Silver Reed/Studio



FAB LABS

- Started in 2005 in the Center for Bits and Atoms, MIT by Neil Gershenfeld
 - Today there is a significant and growing number of FAB LABS around the world -> at the beginning of 2011, the international Fab Lab network consisted of over 50 Fab Labs in 16 countries.
- > The real impact of digital communications and computation came in giving ordinary people control over the information in their lives; digital fabrication will likewise give individuals control over their physical world by allowing them to personally program its construction.

Electronic/computerized knitting machines



- 200 stitches can be used for a pattern
 - has about 600 preprogrammed patterns in internal memory
 - pattern input ways:
 - mylar paper
 - INPUT mode (manual)
 - Floppy drive
- The PPD110 and PPD120 allows you to create your own stitch pattern designs or to input stitch patterns from knitting patterns, magazines or books, using a TV as your screen, and then to transfer your stitch patterns to your knitting machine.



Welcome, varsike (Sign in to bid or buy)

Go

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Community

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CATEGORIES

ELECTRONICS

FASHION

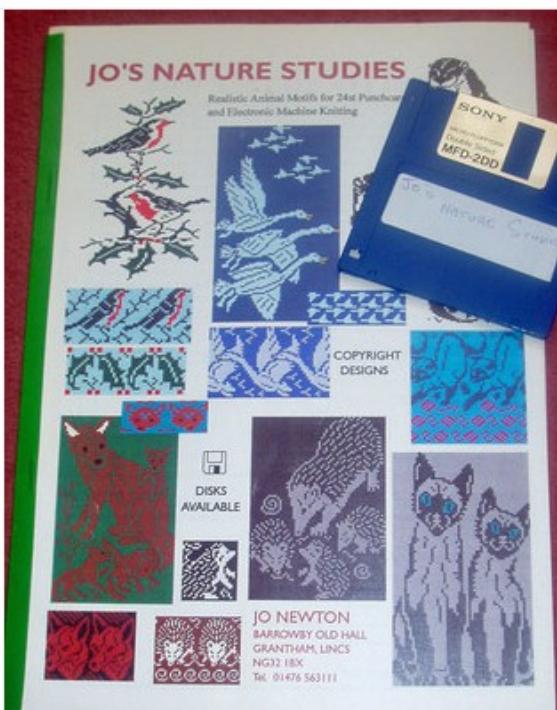
MOTORS

DAILY DEALS

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Back to search results | Crafts > Knitting > Machines



Enlarge

Have one to sell? Sell it yourself

Realistic Animal Motifs - 24st Designs + Floppy Disc

Item condition: --

Time left: 1h 34m 0s (14 Sep, 2012 17:14:36 BST)

Current bid: £0.99

[1 bid]

Place bid

Enter £1.04 or more

Add to Watch list

Share: | Add to watch list

Seller information

stian1996 (831 ★)

99.8% Positive Feedback

Save this seller

See other items

Postage: £4.15 - Royal Mail Airmail (Small Packets) | [See all details](#)

See details about International postage here.

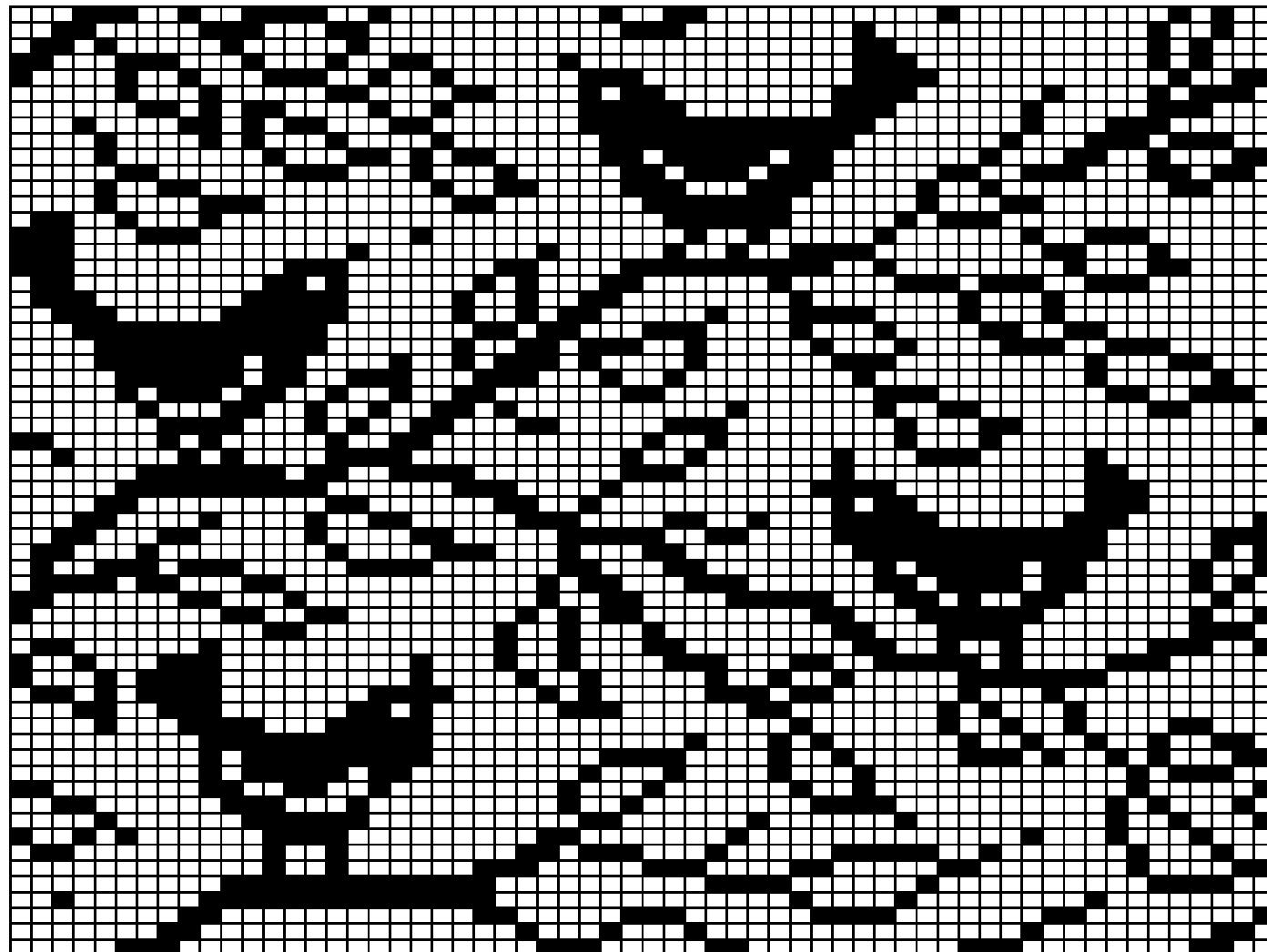
Item location: South Yorkshire, United Kingdom

Post to: Worldwide

Delivery: Varies for items sent from an international location
Seller posts within 4 days after receiving cleared payment.Payments: **PayPal**, Postal order/Banker's draft | [See payment information](#)Returns: Returns accepted | [Read details](#)You're in safe hands when
you shop on eBayeBay Buyer
Protection

Find out more

Stitch = pixel



=> knitting machine is a 1st personal
manufacturing tool at home

Knitting with C64



Nintendo Knitting Machine (1987)

NEW!

NOW YOU'RE KNITTING WITH POWER.



You're looking at the Nintendo® Knitting Machine.

It's not a game; not a toy; not something a young girl can outgrow in three or six months or even a year.

It's a machine that interacts with the powerful Nintendo® Entertainment System™ to actually knit sweaters; and not just one or two patterns but a multitude of different and unique designs.

more example of the innovative thinking that keeps Nintendo on the cutting edge of video technology. And your customers on the edge of their seats.

Of course we should probably mention that no other video game system offers anything even remotely similar. But why needle the competition?

Now You're Playing Power

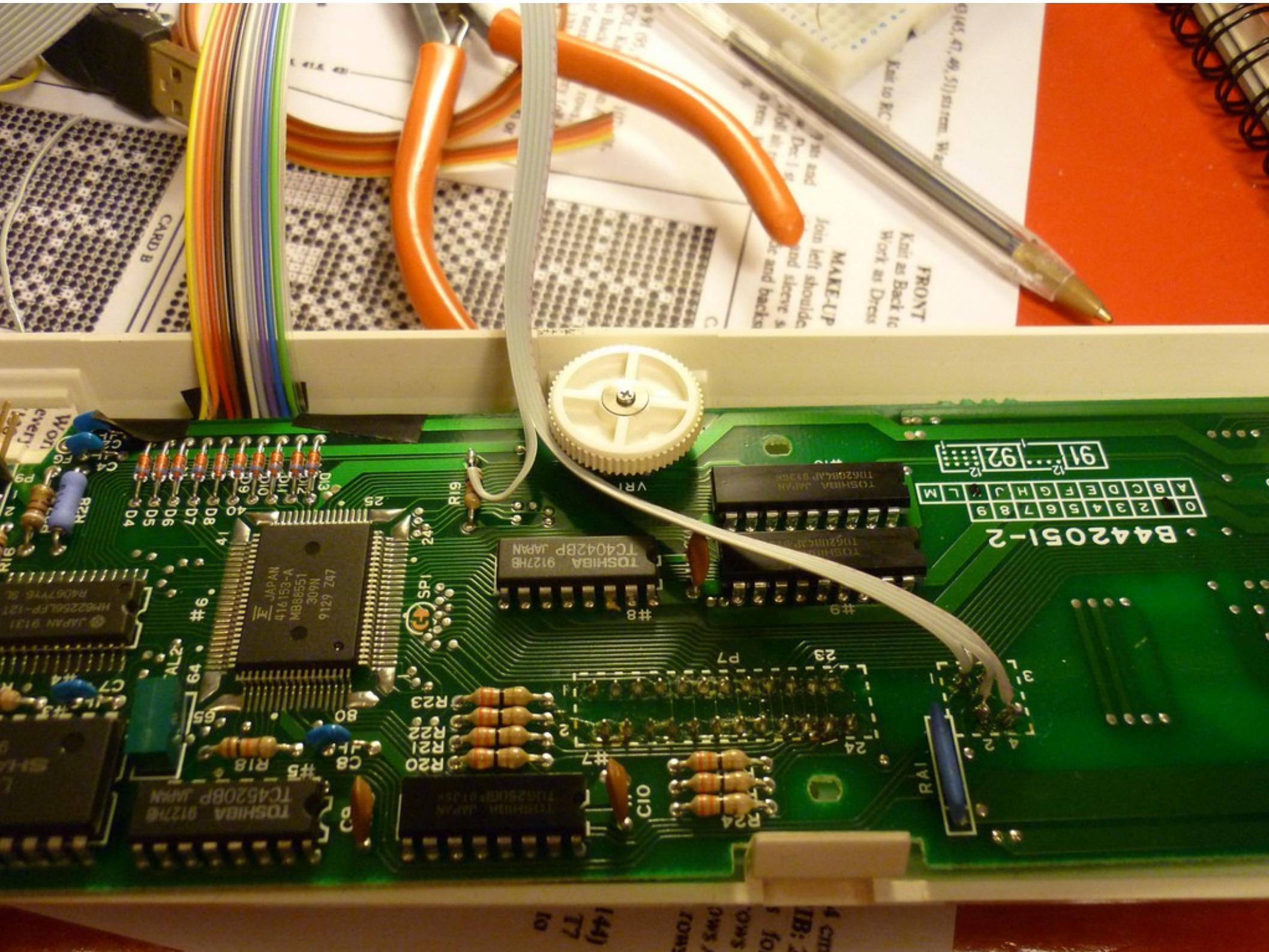
Nintendo

How did we start knitting?

Hacking KH930



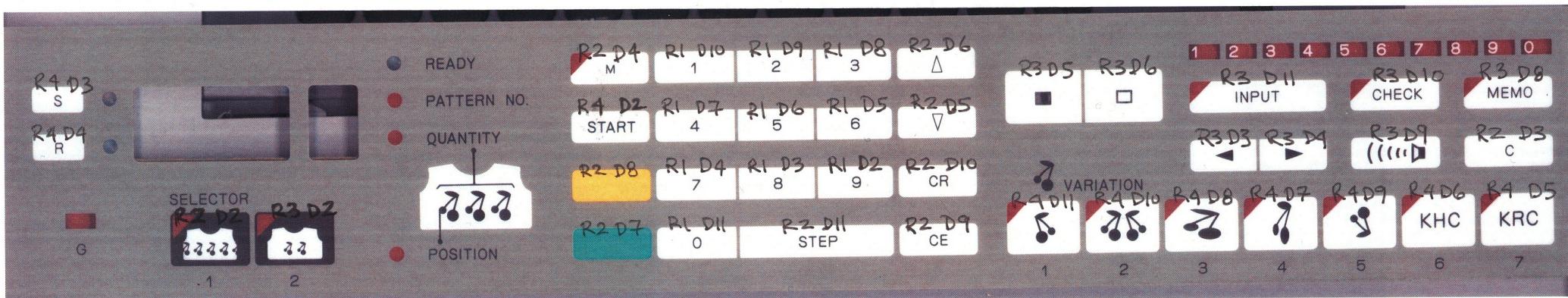
The hack of Becky Stern from MAKE magazine
Floppy emulation script in Python by Steve Conklin



Physical hack

Inspired by Travis Goodspeed and Fabienne Serriere

Button Matrix Encoding KH-930 Knitting Machine



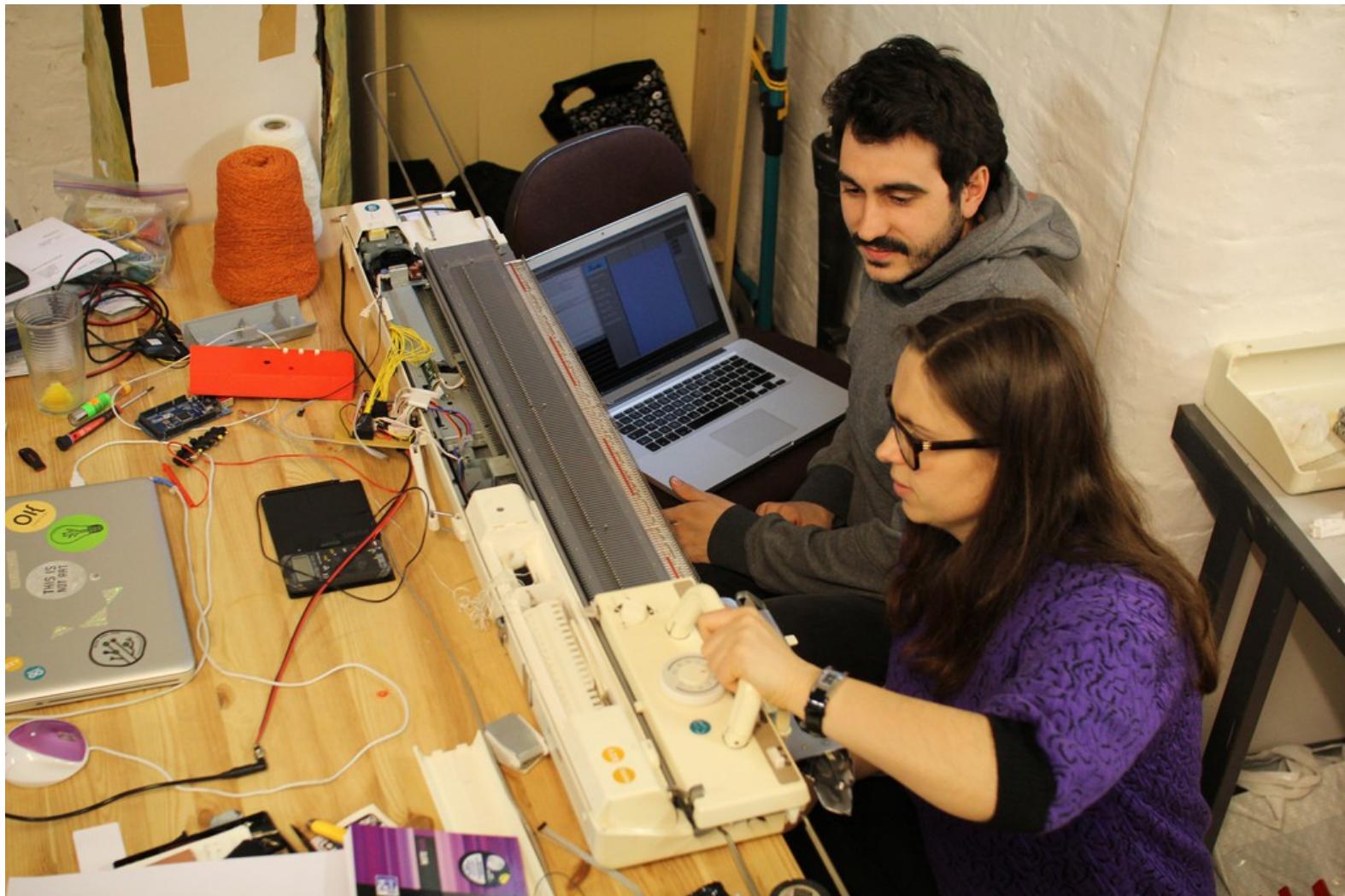
on the board rows are in
4 pin ribbon cable, on mainboard
denoted on P8 as 1,2,34.

On the board columns are
diodes D2 - D11 on mainboard,
and pins 7-16 on large ribbon
cable between boards.

rows	columns
0	R1
1	R2
2	R3
3	R4
4	D2
5	D3
6	D4
7	D5
8	D6
9	D7
	D8
	D9
	D10
	D11

unused: R3D7

Knitic – open source knitting machine



Knitic pattern manager v.01 F:15

Knitic

USB: connected

Row: 0

Stitch: 200

Direction: none

Width: 53

Height: 23

Left Stick: 27

Right Stick: 28



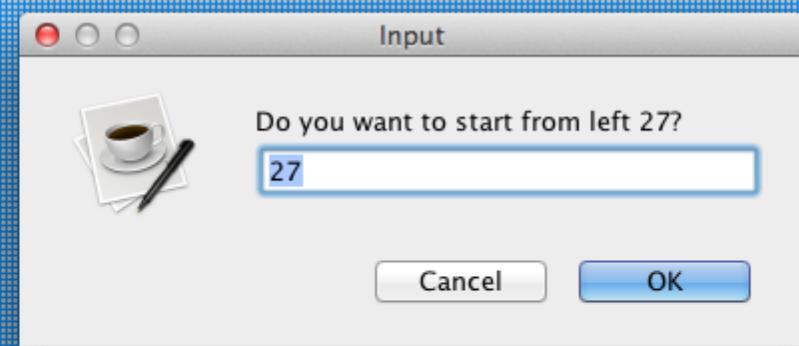
OPEN

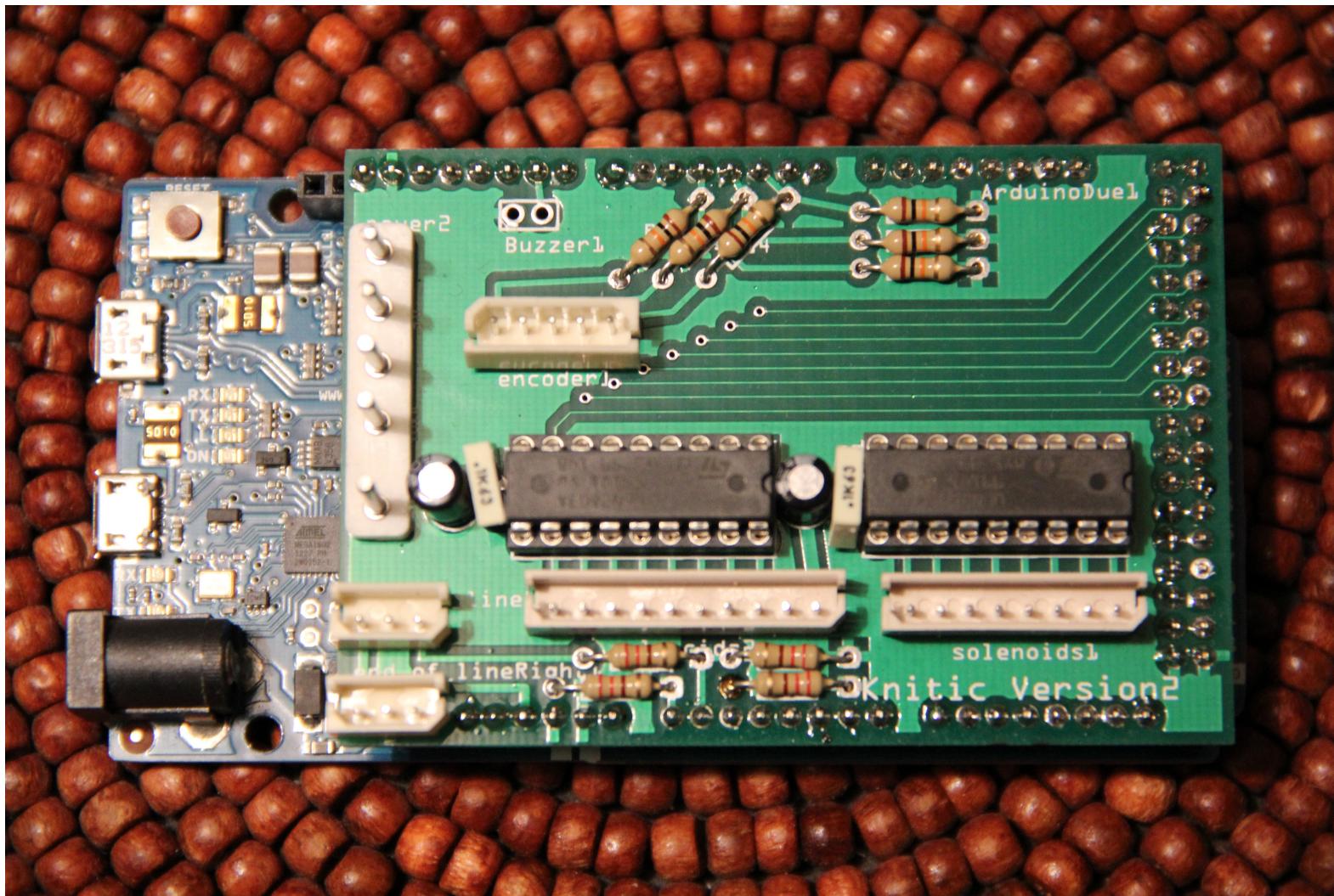
GO TO ROW

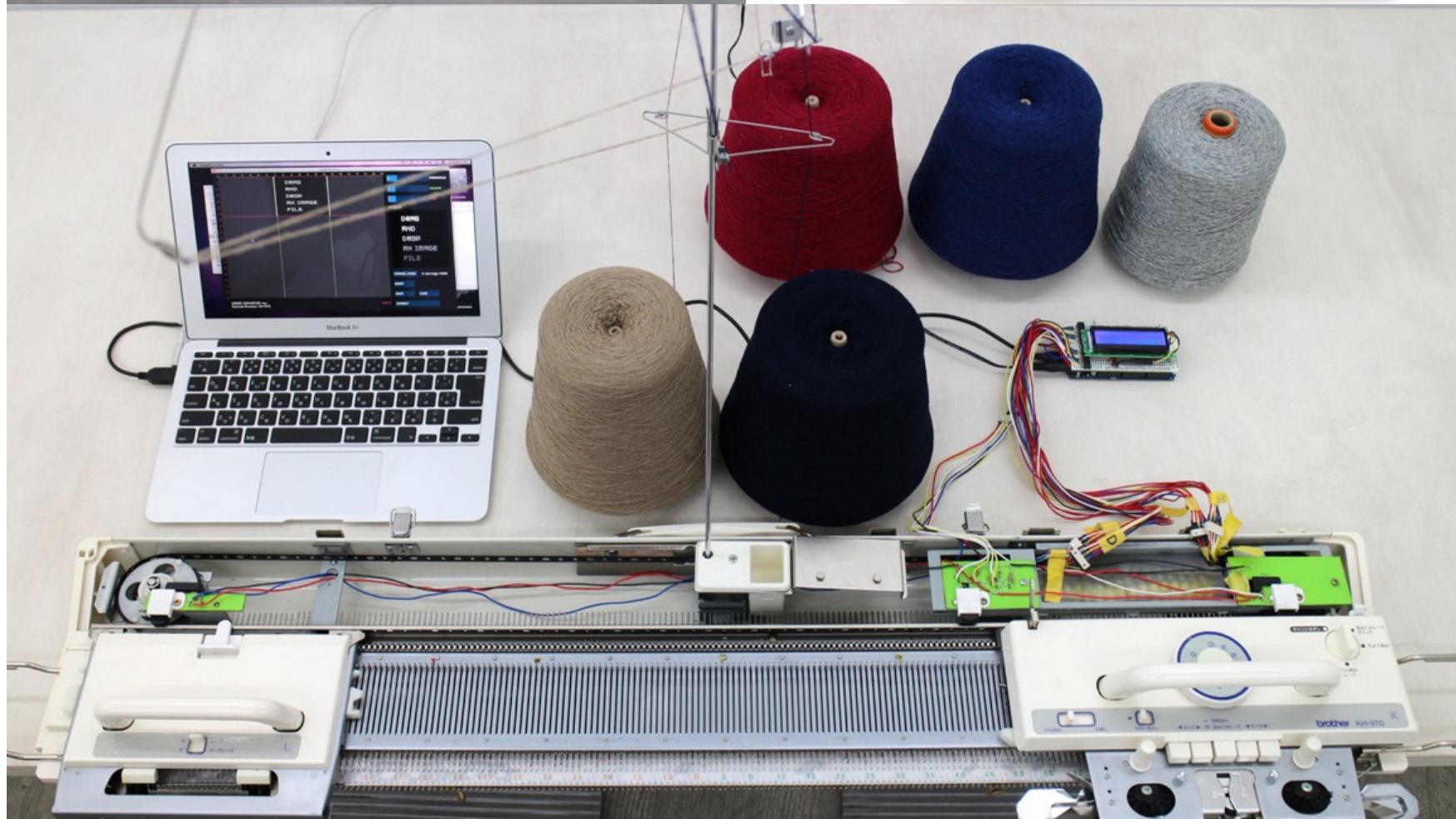
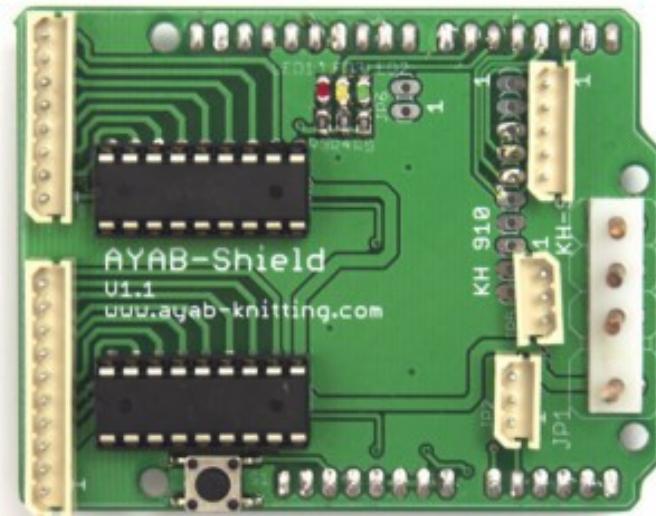
MOVE PATTERN

START EDIT IMAGE

REPEATING PATTERN MODE

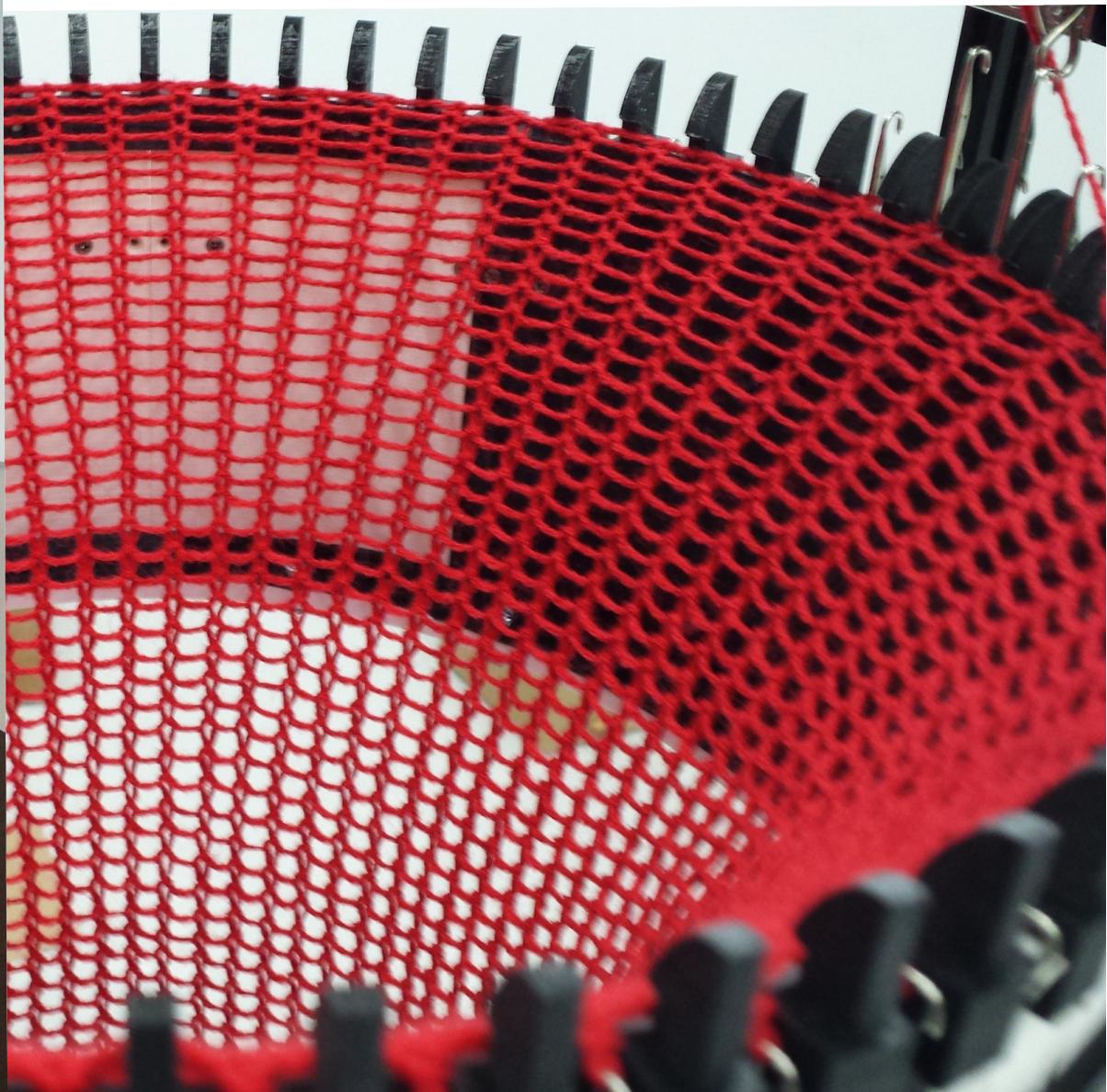


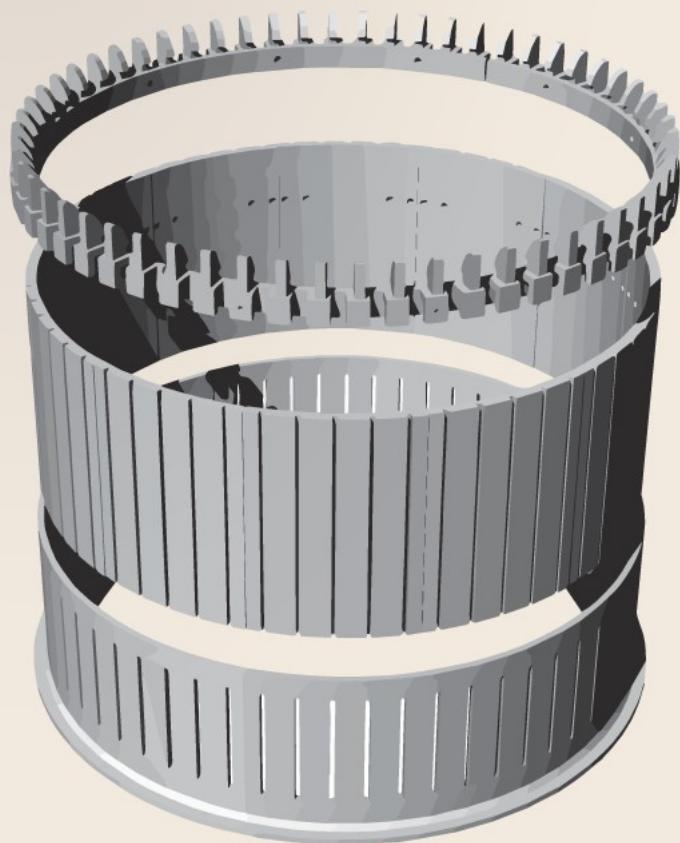
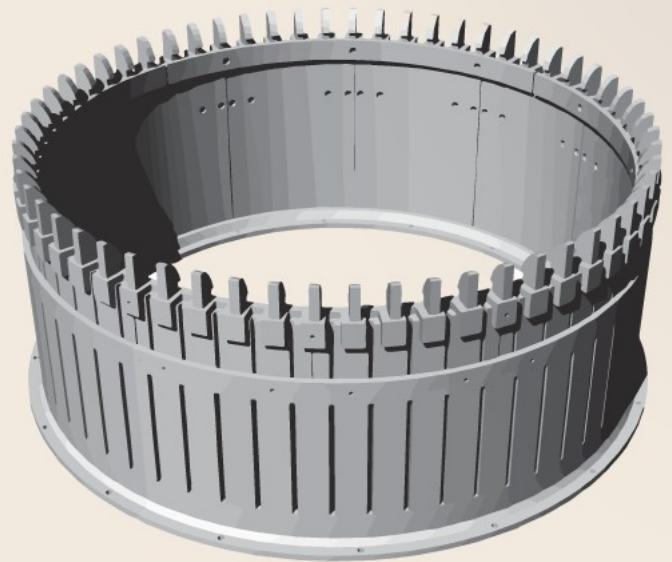




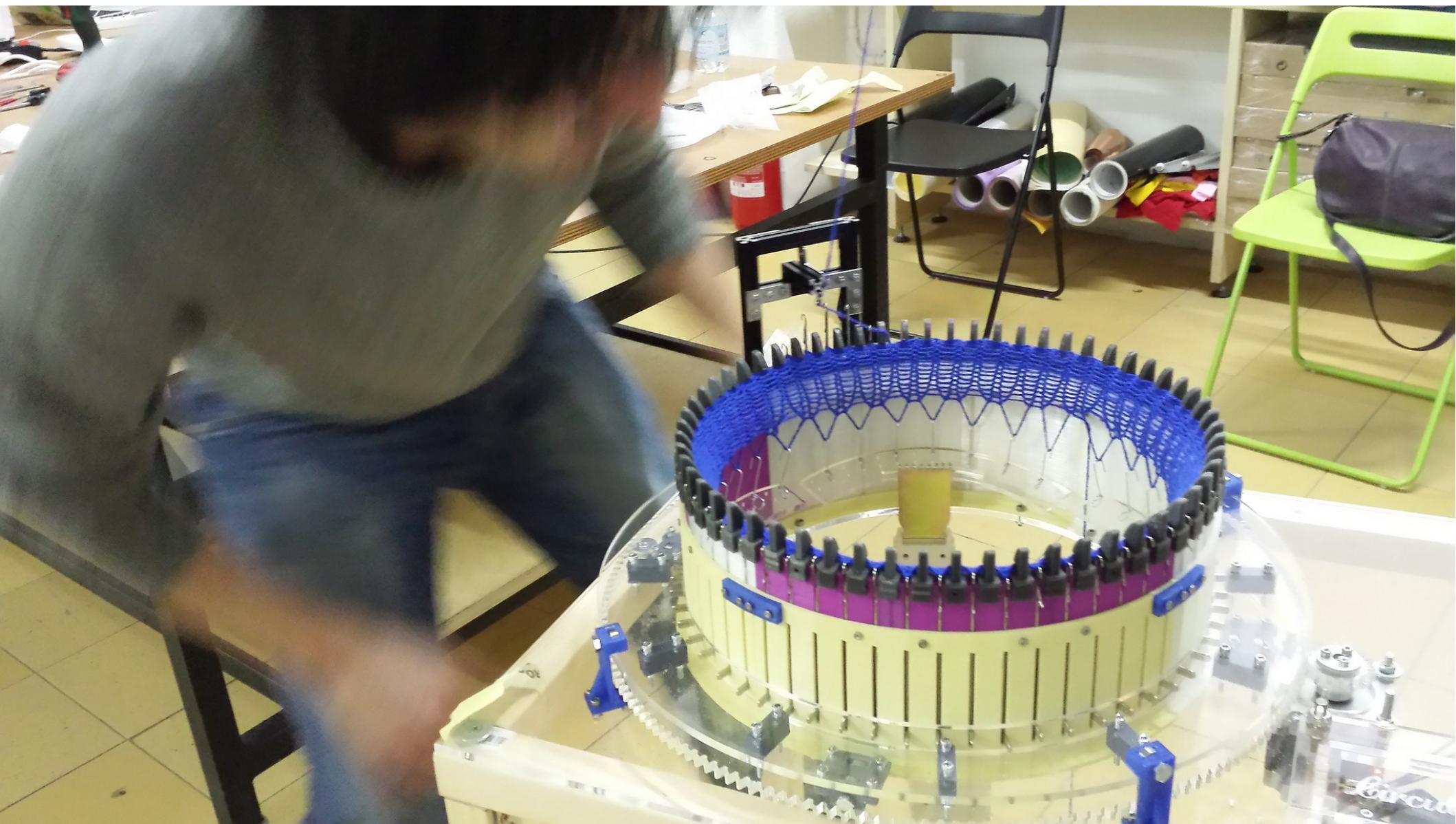
Circular Knitic

<http://knitic.org>



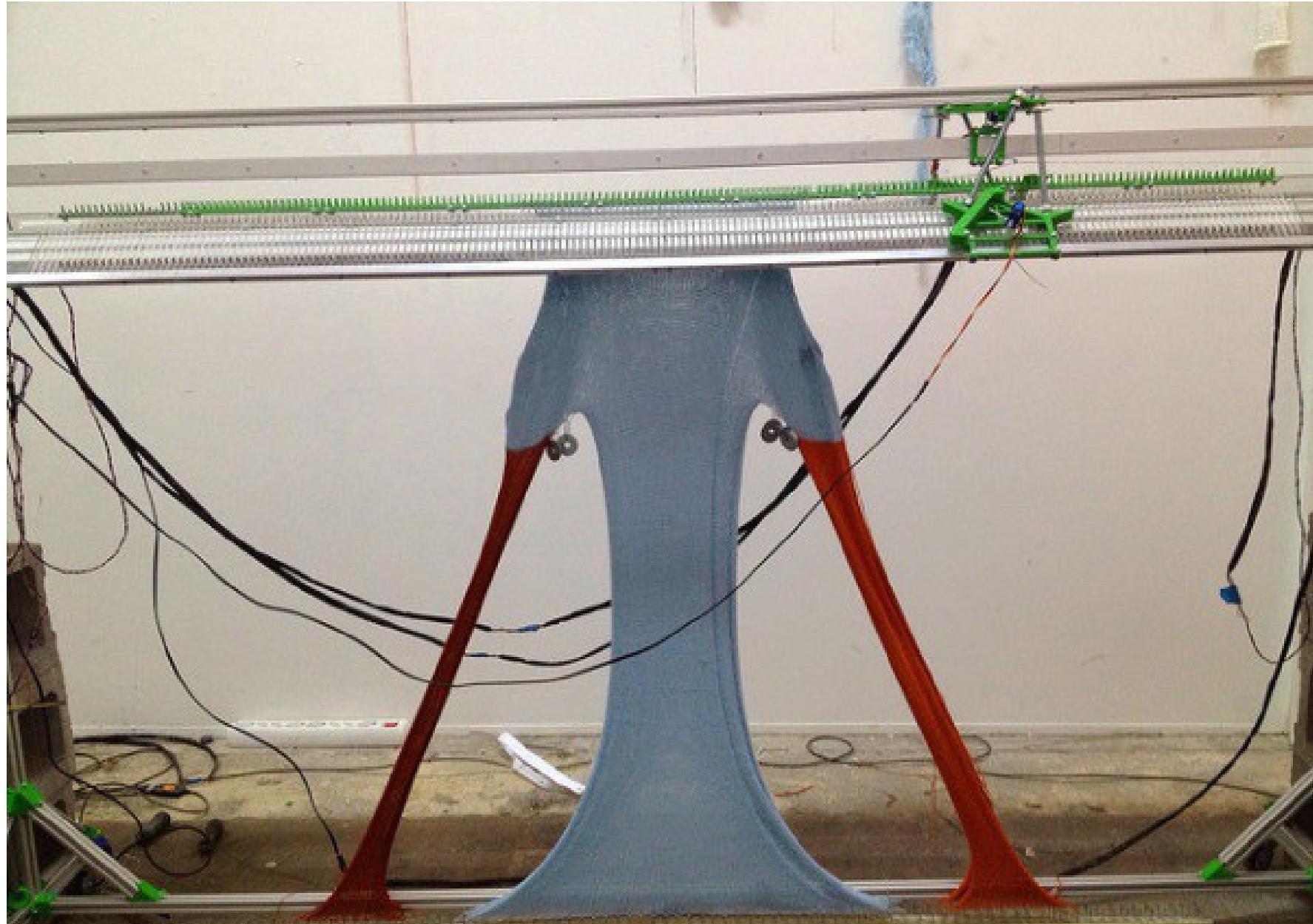


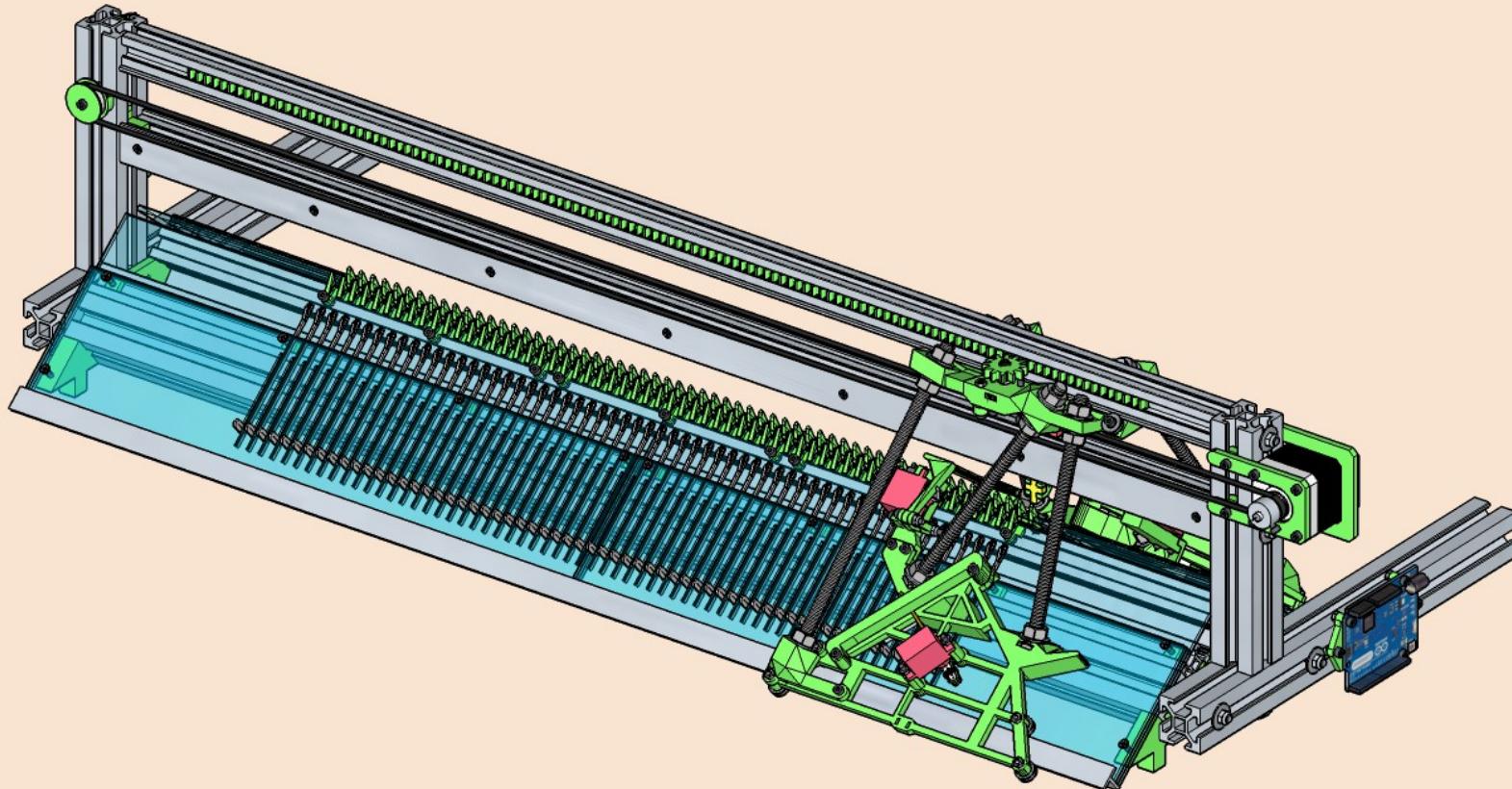
WeMake Milano Makerspace



OpenKnit – <http://openknit.org>

Gerard Rubio



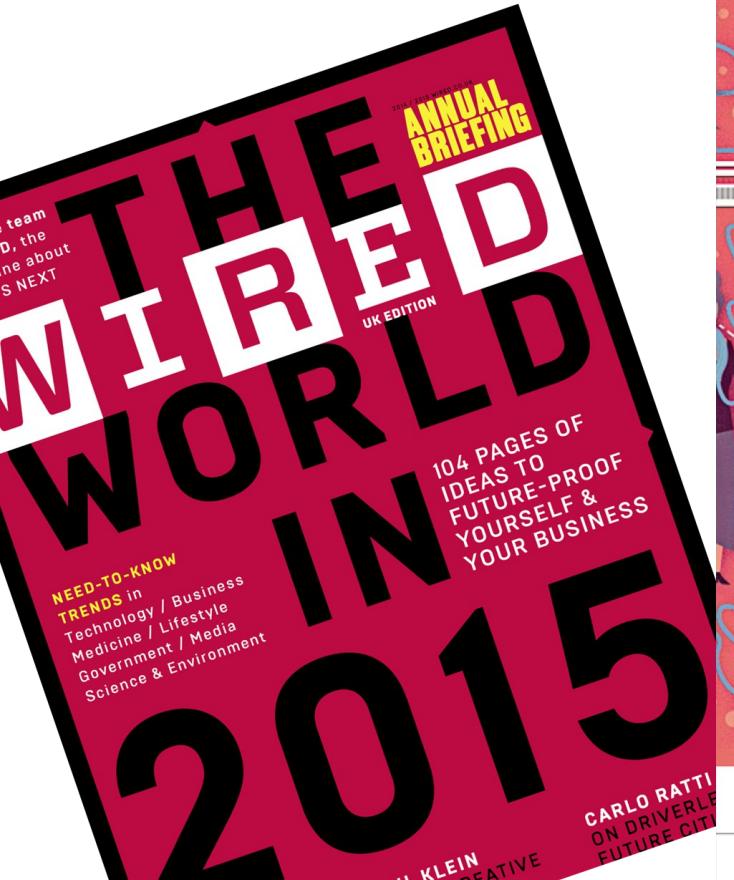


<http://knyttan.com>

(London)

Top layer in software from Stoll





M

NITTING WAS ONCE THE PRESERVE of grannies. Then it got adopted by hipsters, who made it cool for a while. Now it's gone high-tech and will become the next big thing in the maker world.

3D knitting, as the tech version is called, was inspired by the 3D-printing revolution and aspires to a similar goal: to be the one piece of manufacturing technology in everyone's home. It doesn't make objects, it makes clothes – and for this reason

it has a big advantage over 3D printing because it has a much more obvious use. Everyone wears clothes – and we are constantly replacing and updating them because they wear out or become unfashionable. Another advantage over 3D printing is reusability. For the coarser knits at least, garments can be "unknitted" should you not like the way they make you look, or if you just get bored with them, leaving you with yarn to turn into something else.

Three-dimensional knitting machines are already available and growth is on the up. OpenKnit is one open-source example – it can be built from a kit and is part of a manufacturing ecosystem that includes a software interface and a digital hub to share designs. OpenKnit already has a large global community, developing the platform and iterating both the hardware and software. As with all successful open-source projects, this will grow and spawn new and unexpected versions in 2015.

Commercial 3D-knitting machines have been in operation for more than 20 years, but they are designed for established mass production. In contrast, the open-source knitting community will change the way clothes are designed and made, and create new forms of clothing – in particular by integrating different types of fibres into the knit, such as electrically conducting threads. By doing

3D KNITTING BEGINS TO CLICK

Just as the sewing machine brought clothes-making into the 20th-century home, a new generation of low-cost knitting tools is about to open up fashion

By **Mark Miodownik**

**Lets democratize the production with
open source tools and open hardware.**

Thank you for attention!

Questions!?

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mar.canet@gmail.com