

# Today's workshop, computer lab & design lab ...



# Hominid (social) Toolmaking Transformed the Species

'choppers'



'hand-axes'



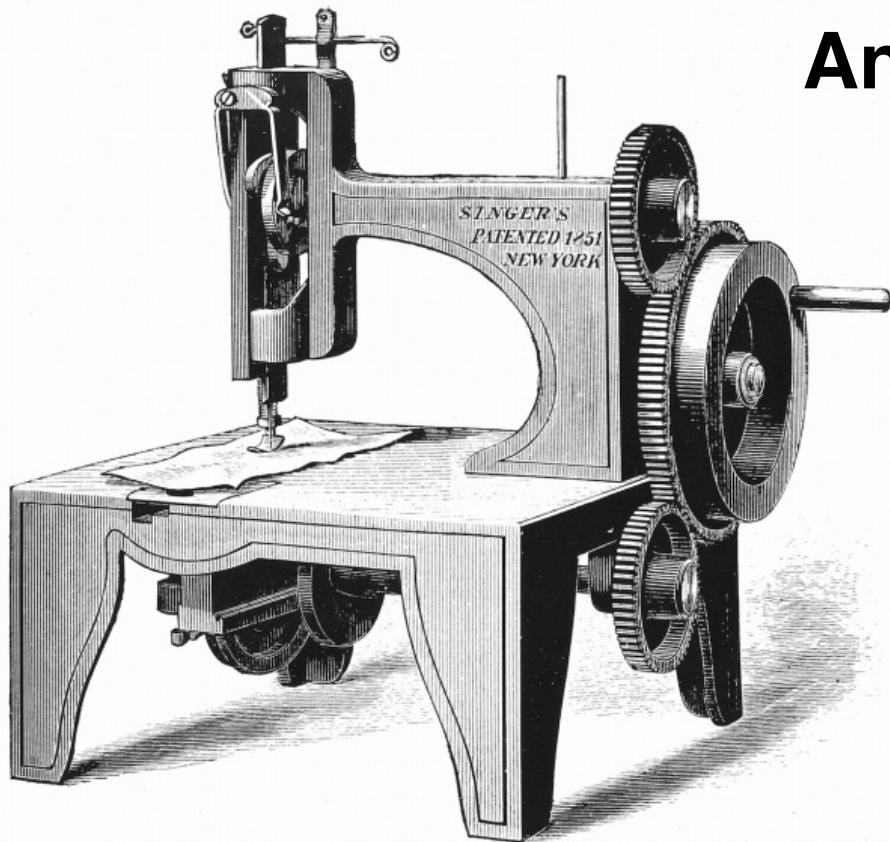
<http://www.lithiccastinglab.com>

Oldowan  
2.6-1.7 million years  
(*Australopithecus garhi* -> *Homo erectus*)

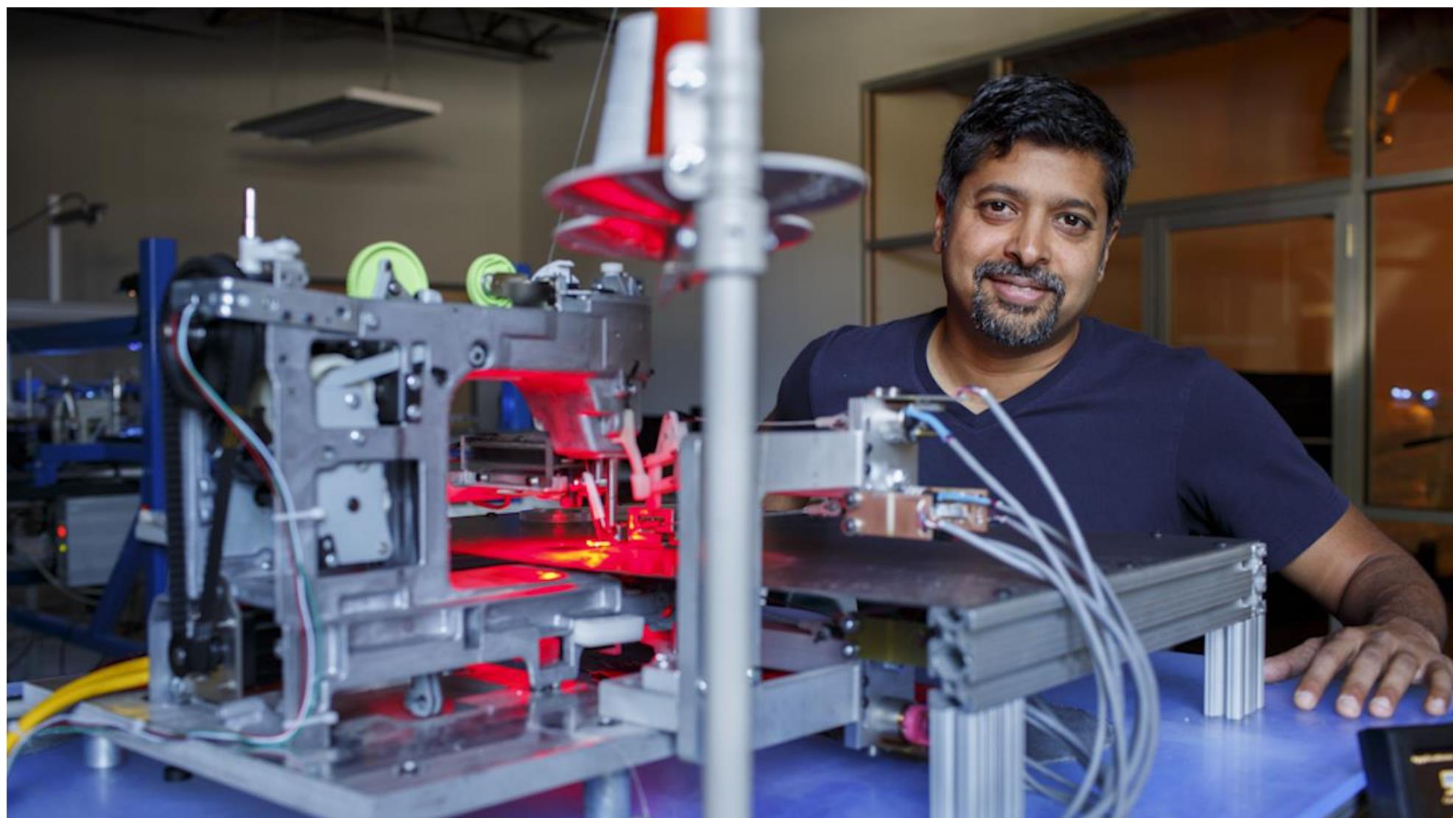
Acheulian  
1.7 million  
(*Homo habilis*)

<https://youtu.be/L87Wdt044b0>

# And Continues to Transform ...

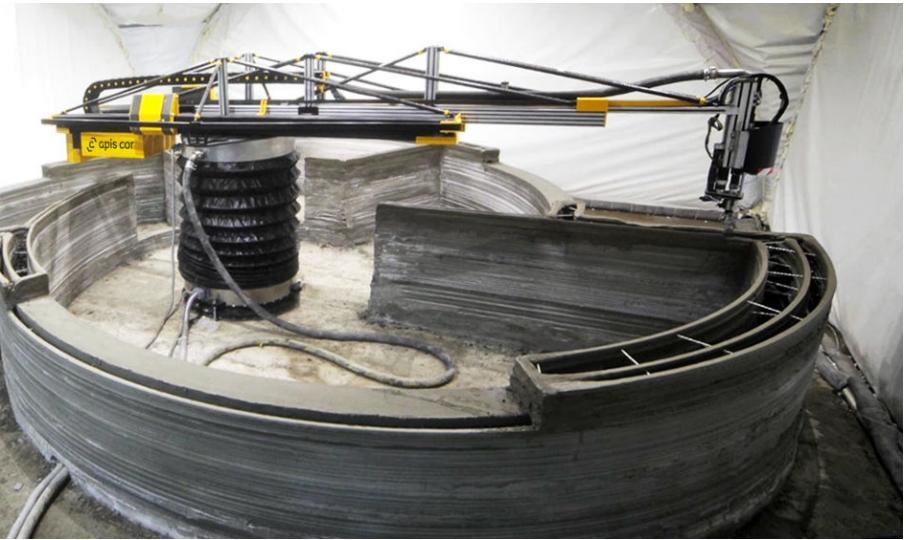


# Now, Sewing Robots: Example, Softwear Automation



<http://www.wsj.com/video/can-robots-transform-the-garment-industry/5ED56BB6-0BE4-48A2-B2F7-C2509583DCB8.html>

# Nearly Autonomous Home Construction:



<http://apis-cor.com/en/about/news/first-house>

# ***Intrinsic Human Motivations:***



Make

Socialize

Progress

# ***Modern Context:***

Open-Source  
Software

Open-Source  
Hardware

Moore's  
Law

Internet &  
Social Media

Global  
Manufacturing

July 2, 1991

PERSONAL COMPUTERS

## PERSONAL COMPUTERS; What Intel's New Chip Foretells

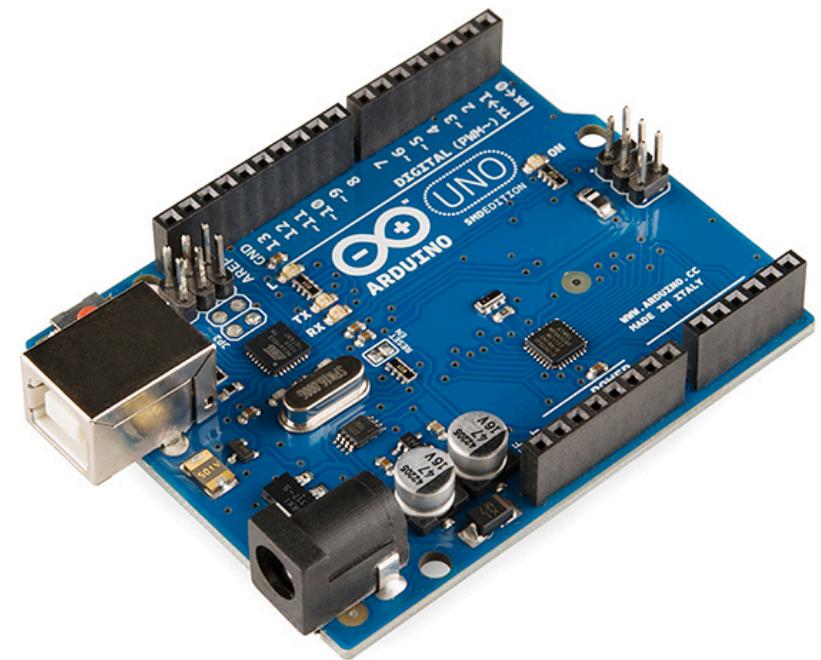
By PETER H. LEWIS

THE Intel Corporation, confirming what some of its customers have already announced, last week formally introduced a 50-megahertz version of the i486 DX microprocessor. The new chip becomes the fastest and most powerful microprocessor available for personal computers, and it moves us one step closer to the day when the average PC user will have access to the computing power of a mainframe computer.

Of course, not everyone needs a mainframe on a chip, especially since computers built around it are expected to cost \$10,000 or more when they become widely available later this year. The first customers will be software designers, scientists, engineers, graphic designers and businesses that need fast machines to serve as hubs for computer networks.

Even those of us who putter along in the slow lane might find the i486/50 chip interesting from a technical perspective, however, since it is the best evidence yet that the pace of progress in the personal computer industry, already rapid, is accelerating.

In 2006 even scientists and engineers started turning to ‘hobbyist’ options to sense and react to the world.



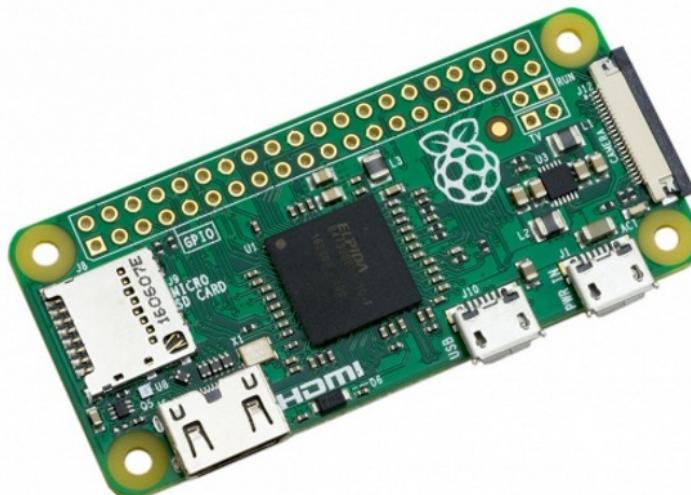
\$30 Analog/Digital IO  
(Standalone)

\$2-10K Analog/Digital IO  
(PC required)

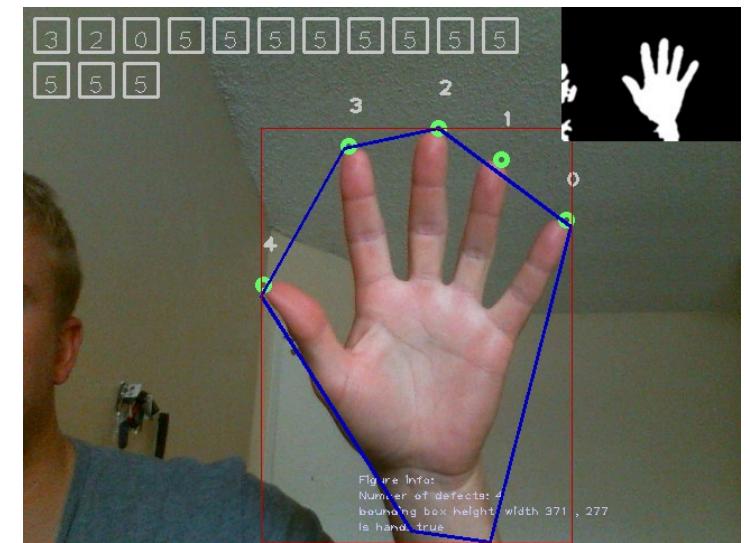
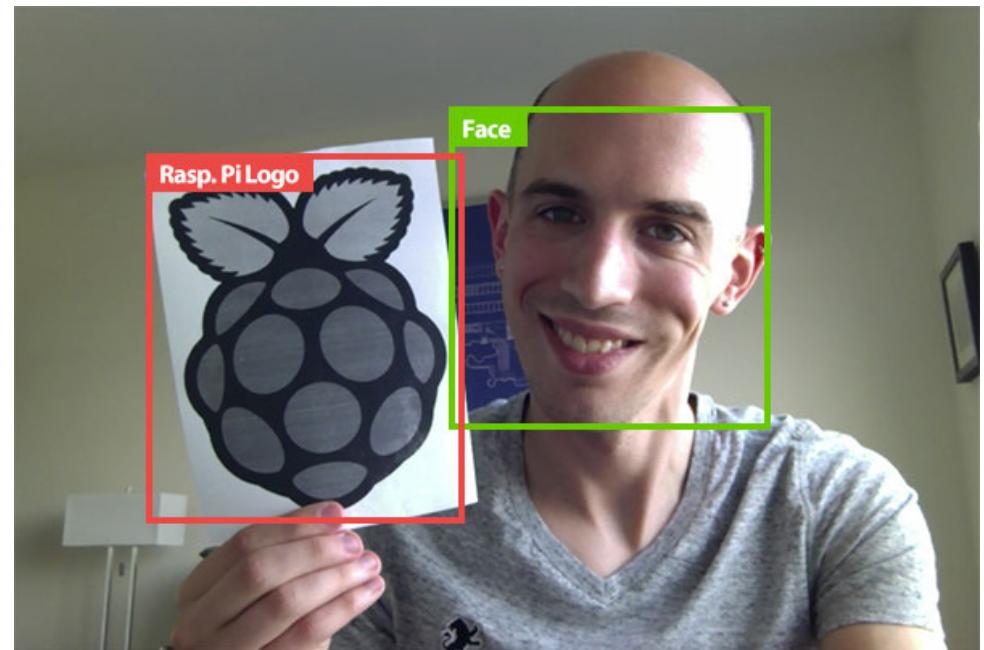
1995: Power Mac 7100  
66-80 MHz  
~\$3300  
8-136 MB RAM



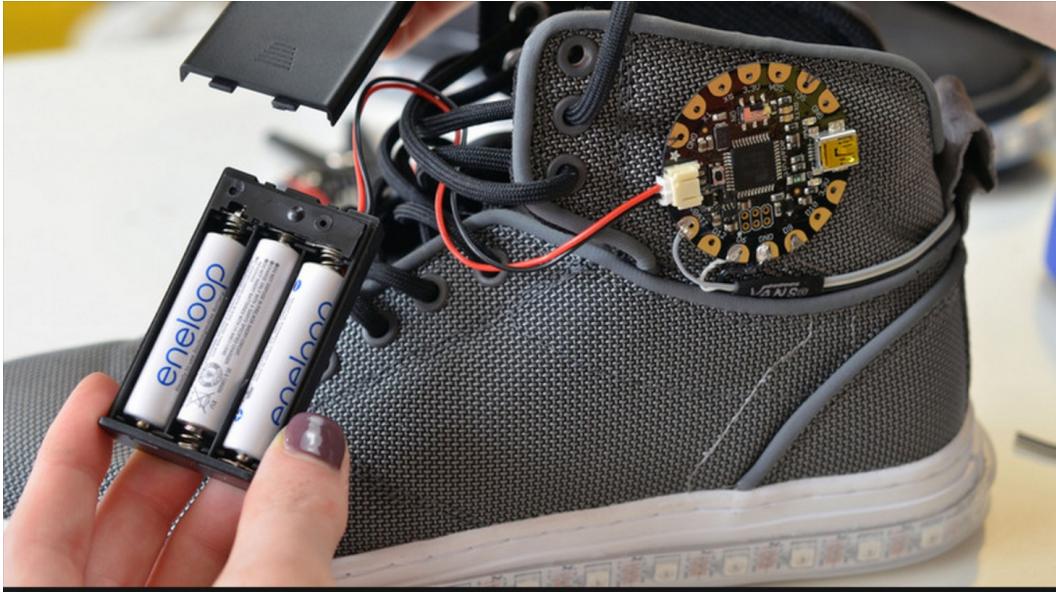
2017:Raspberry Pi Zero  
1 GHz; 512 MB RAM  
(wifi+bluetooth)  
\$10 (!!!!!!!)



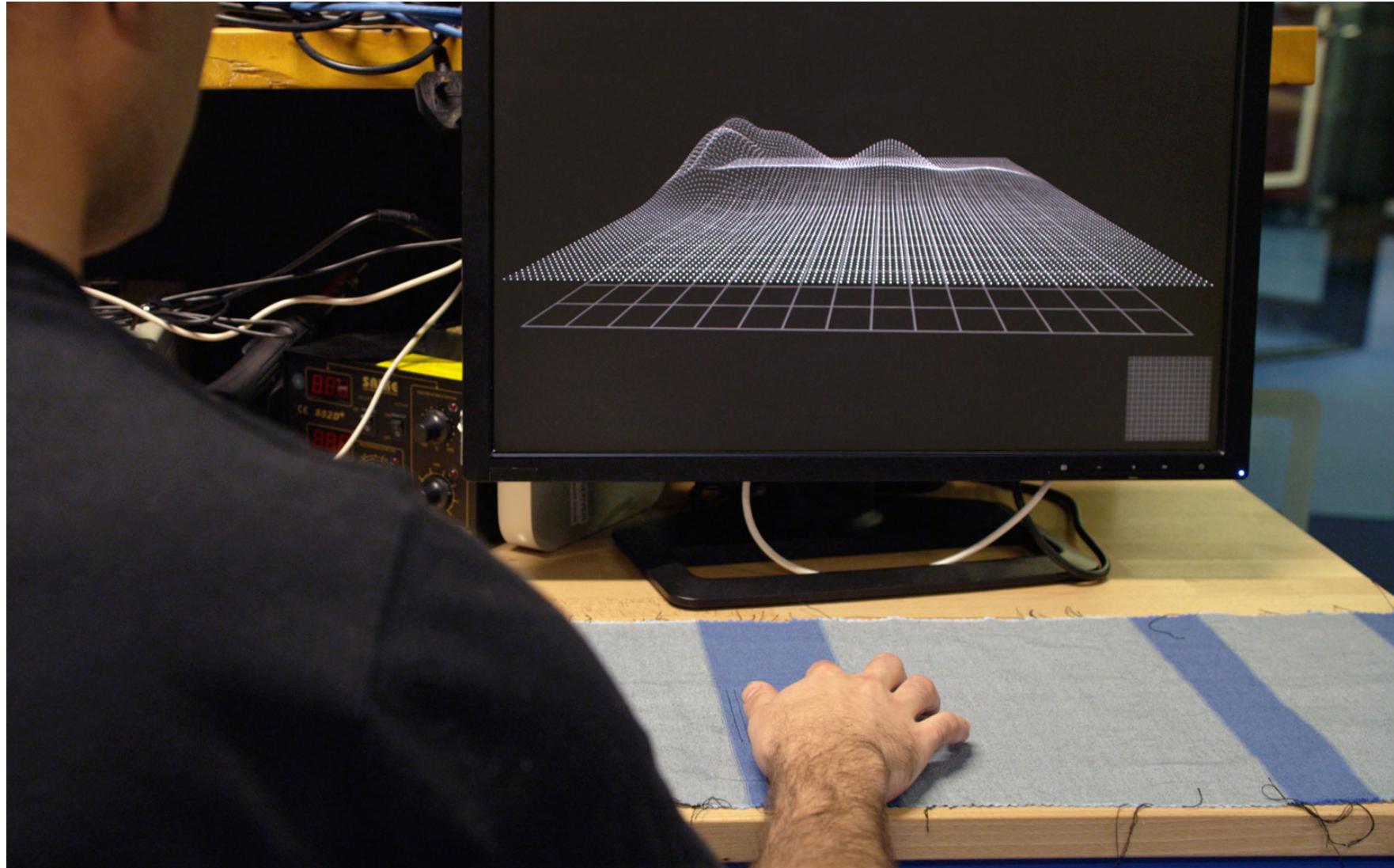
**\$30 and an afternoon = CV expert**



check out: <https://www.intorobotics.com/20-hand-picked-raspberry-pi-tutorials-in-computer-vision/>



<https://learn.adafruit.com/firewalker-led-sneakers/overview>



<https://atap.google.com/jacquard/>

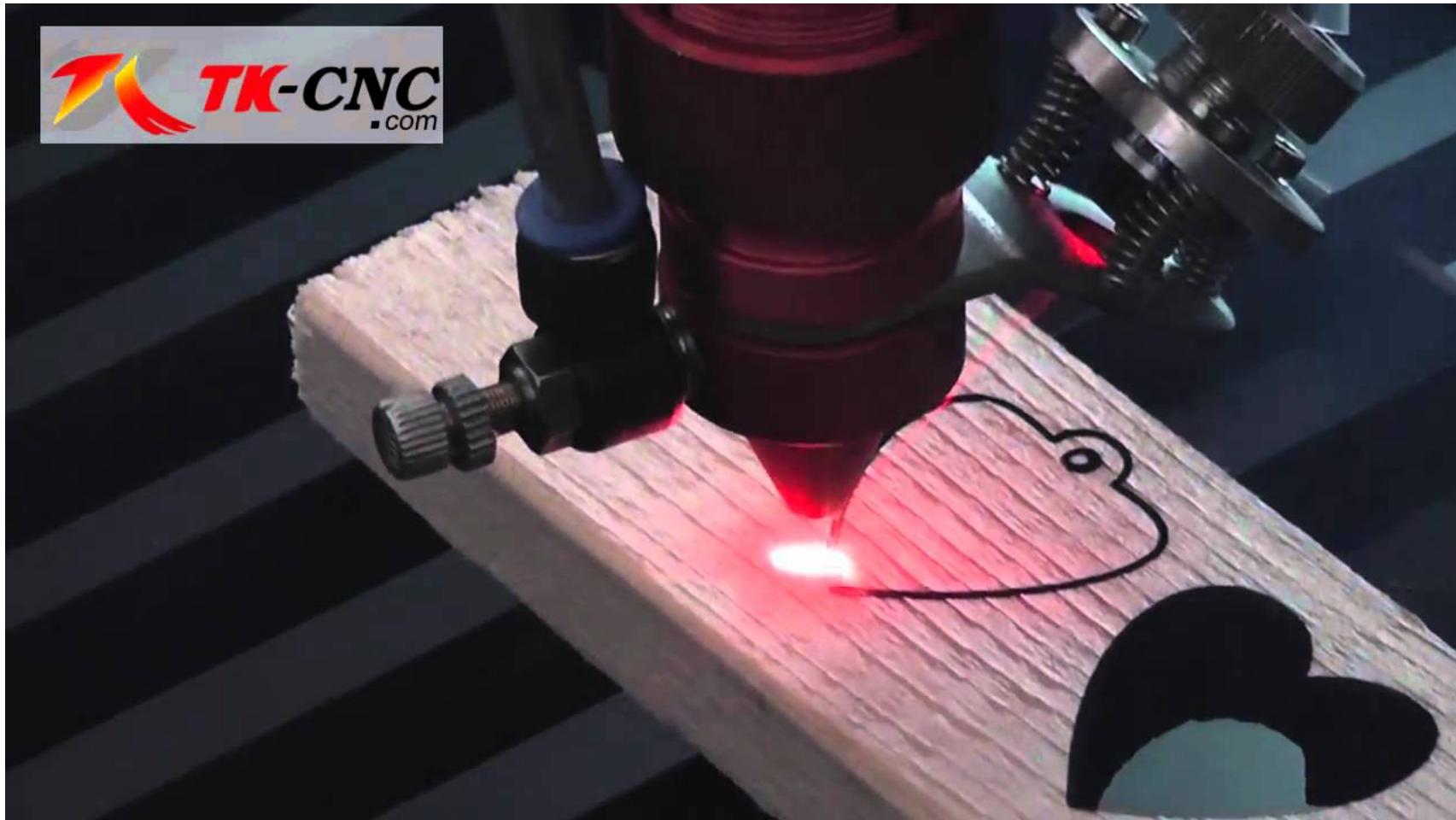
\$100-400  
Can buy a quality printer.



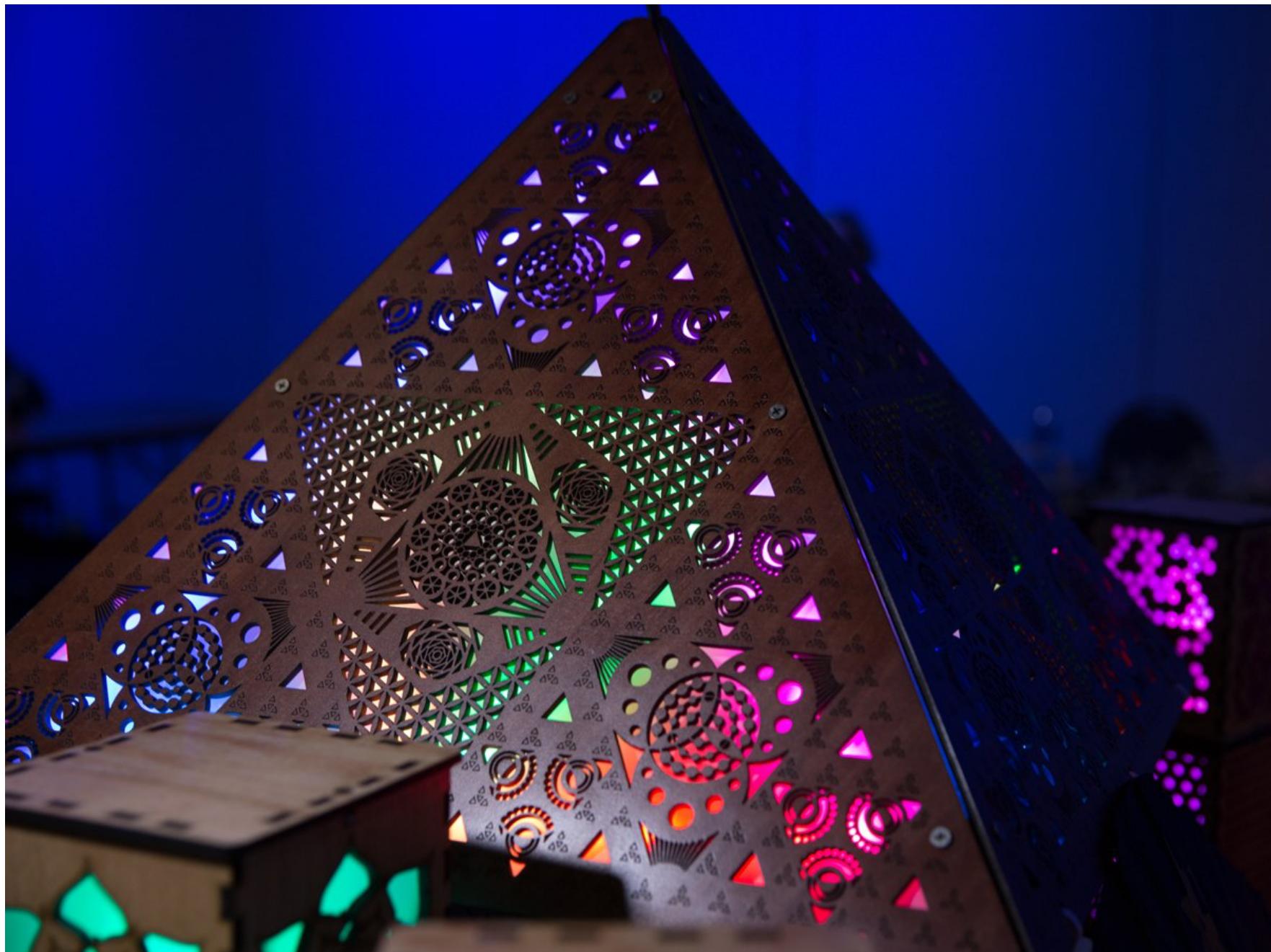
[https://www.monoprice.com/category?c\\_id=107&cp\\_id=10724](https://www.monoprice.com/category?c_id=107&cp_id=10724)

I like the “MP Select Mini for the value (amazon has them too)”

# Laser cutters & CNC mills range from 1-5K



Once were a \$50-100K prospect

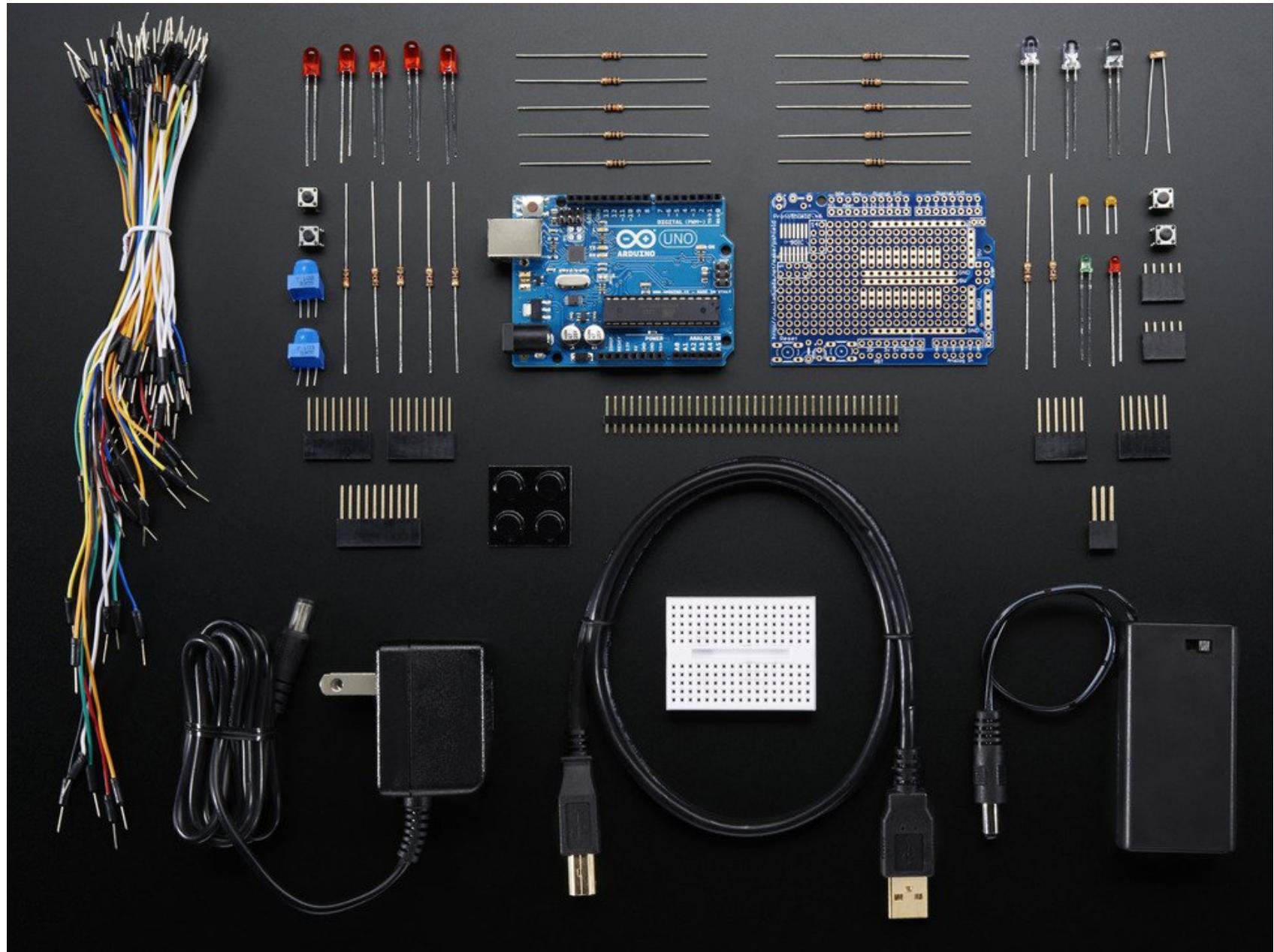






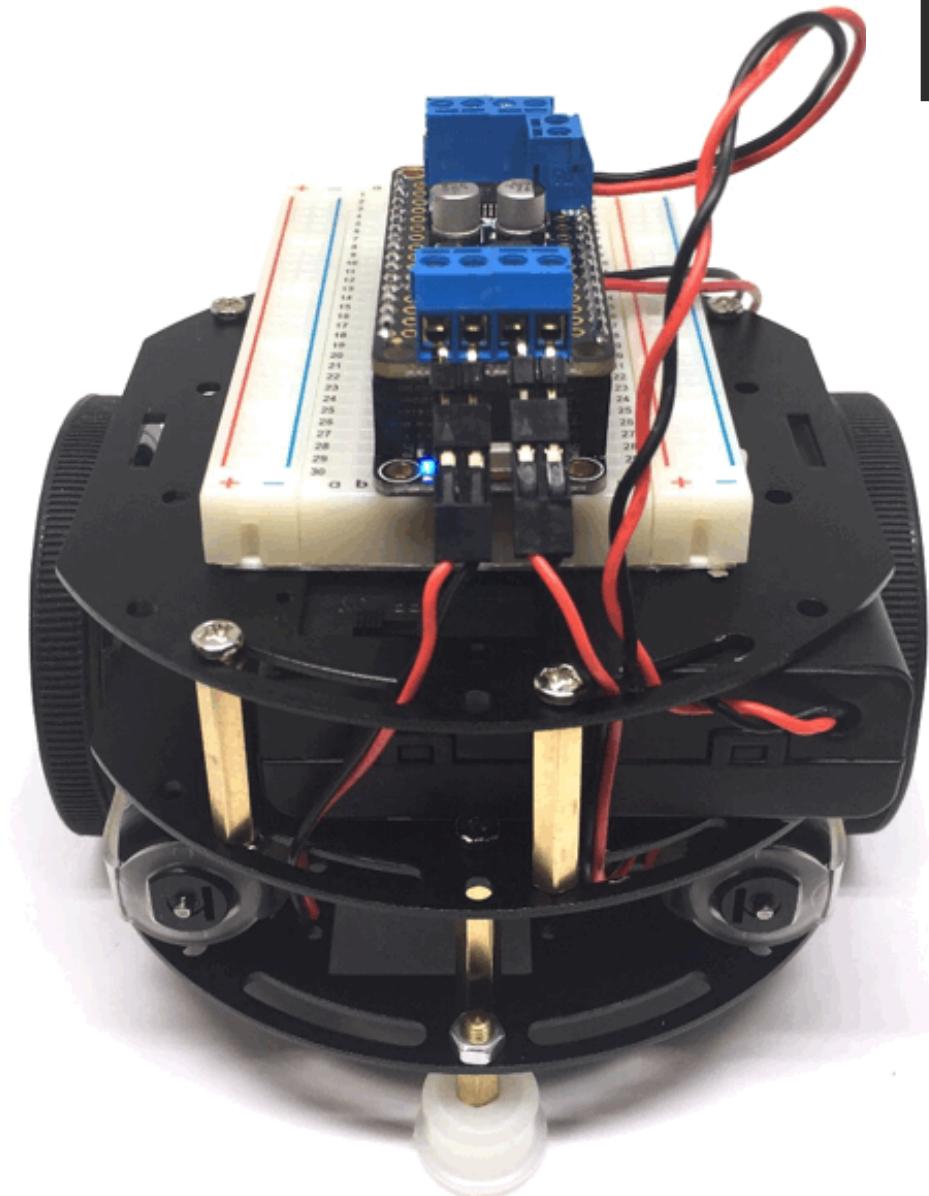


# Today's Hobby Electronic Kits



<https://www.adafruit.com/product/68>

# Today's Hobby Electronic Kits



```
// speed up the motors
for (int speed=0; speed < maxspeed; speed+=5) {
    L_MOTOR->setSpeed(speed);
    R_MOTOR->setSpeed(speed);
    delay(5); // 250ms total to speed up
}
```

# ***Lawrence Makerspace: A nascent concept, but real.***

- \* Space considerations
- \* Some initial investment from ECS/District.
- \* Working group and goals overlap with Visual Art Council membership and interests.
- \* Expansion of Visual Arts (& STEAM) Council to:
  - \* Plan and execute year of Maker events & talks.
  - \* Organize, plan and coordinate PTO support.
  - \* Work with PTO to design and plan new fundraising initiatives (long-term).
  - \* Work with teachers and new Principal to identify ways to enhance their curriculum.
  - \* Attract district and community investment.
  - \* Work to coordinate efforts across schools (progress being made).

**Leslie Fagen** has spearheaded the efforts, along with  
**Matthew Rosenthal.** (Our ECS & District ECS gurus)

Initial Advisory Work:

Jin Suk

Pat Scanlon

Chris Deister

Ivey Bueno

Ezra Shales

Meghna Chakrabarti

Harold Price

Website and more info to come.

Please email me (Chris Deister) at [cdeister@gmail.com](mailto:cdeister@gmail.com) for info about anything related.

Presentation & evolving link list live on GitHub for now: <https://github.com/cdeister/LawrenceMaker>