

Robotik



Av Peter Lehnér

Vad är en robot ?

- En robot är en teknisk anordning, oftast en elektromekanisk maskin som styrs av elektronisk programmering, som utför fysiska uppgifter. (Wikipedia)
- D.v.s en robot kan va massa olika saker

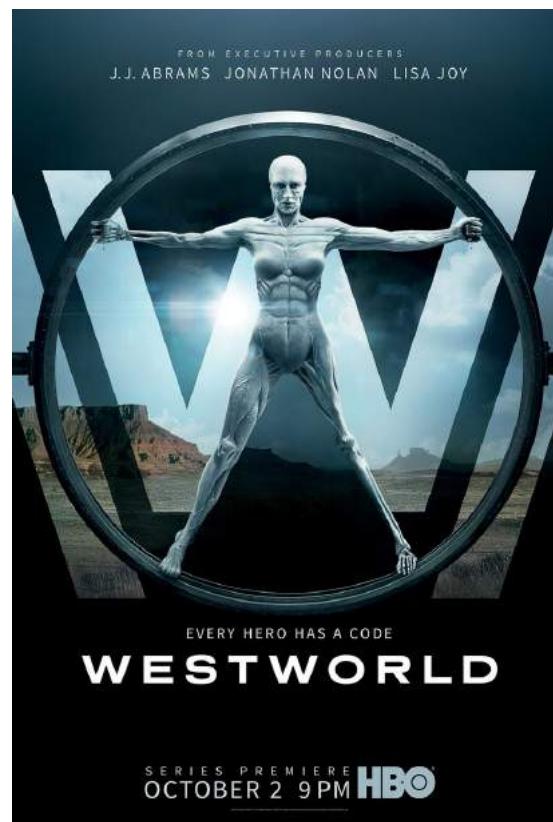
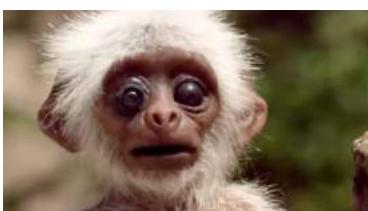


Robotar från filmer



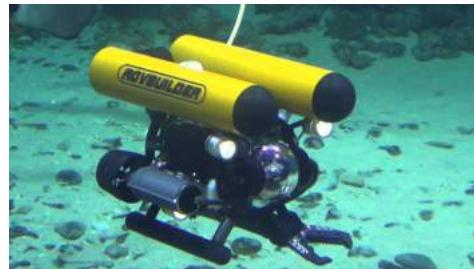
Några bra “robot” filmer / serier

- Klassikerna: Blade Runner, Terminator, Robotcop, Johnny 5, osv..
- Battlestar Gallactica, Caprica
- I robot
- AI
- Ex Machina
- Automata
- Äkta mäniskor, Humans
- Chappie
- Westworld
- Kill Command
- Ghost in the shell
- Wall-e
- Big hero 6
- BBC Spy in the wild



Riktiga robotar

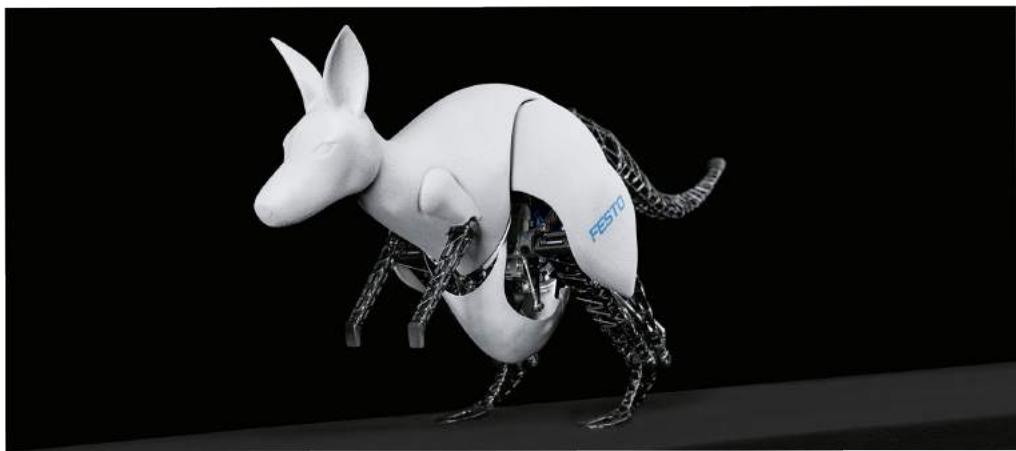
Industri robotar



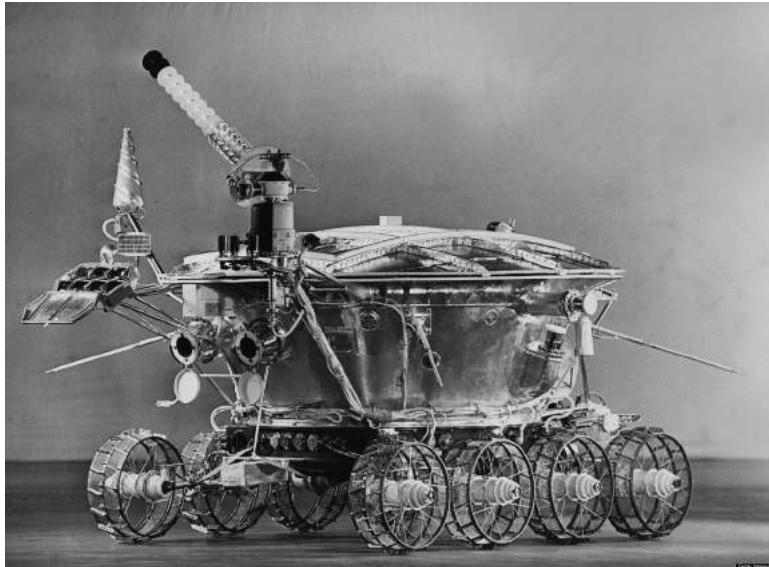
Hemma robotar



“Coola” robotar

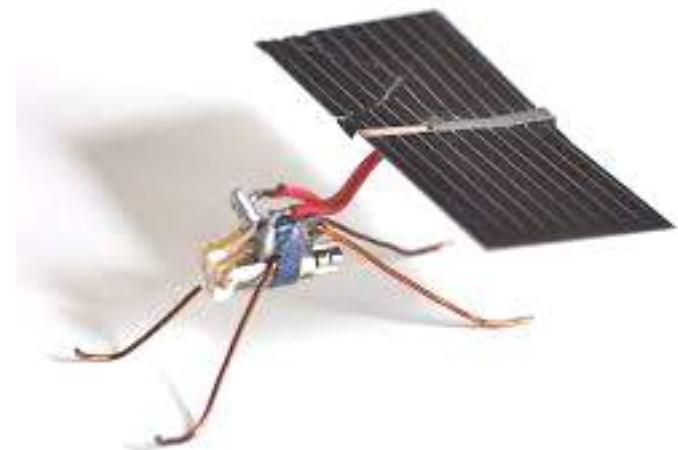


Rymd Robotar

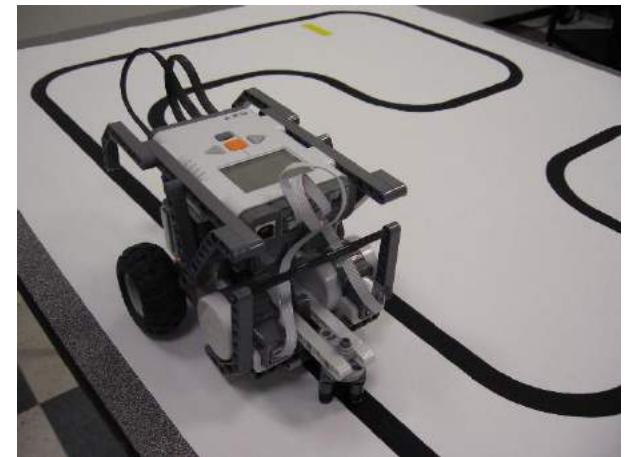
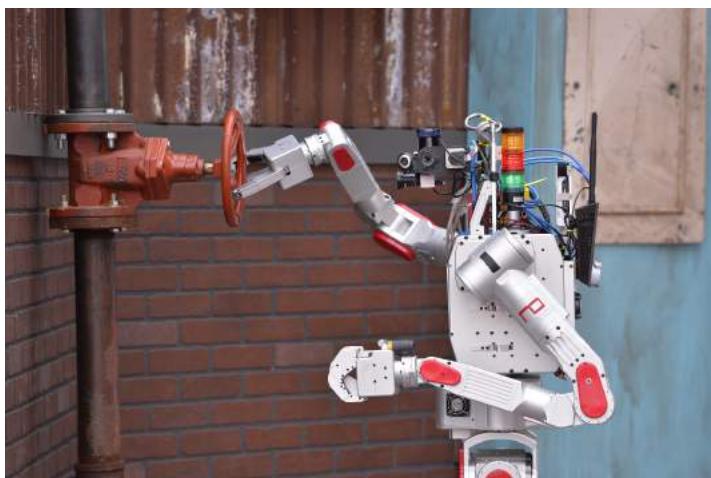
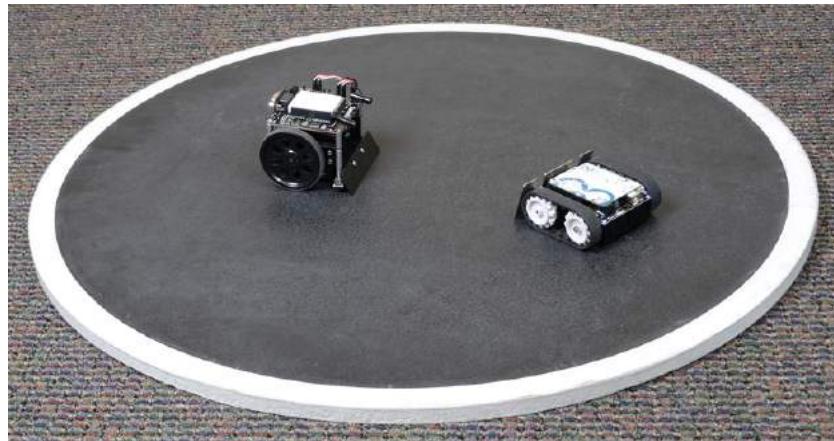


Boktips: Mars Rover Curiosity: An Inside Account from Curiosity's Chief Engineer
Av: Rob Manning

Hobby robotar



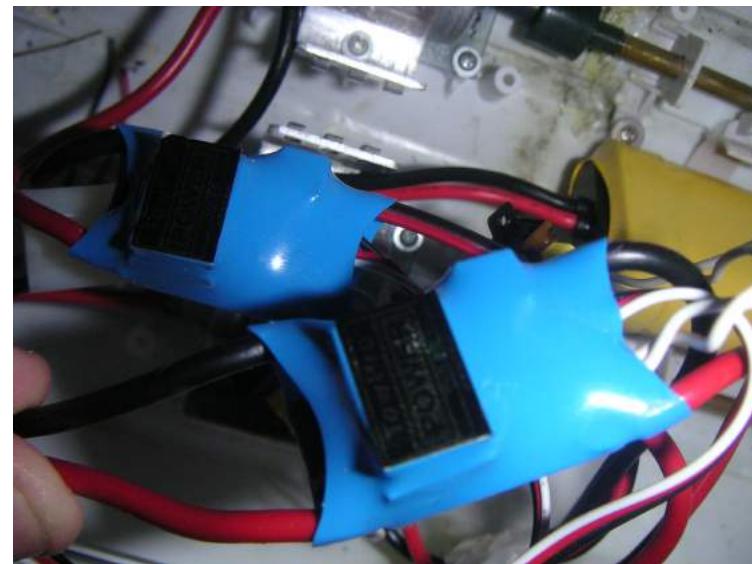
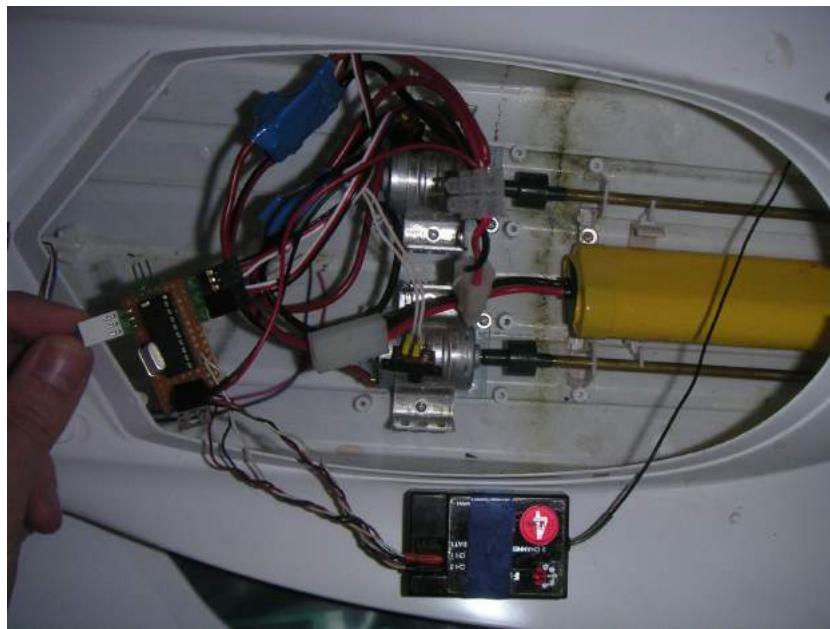
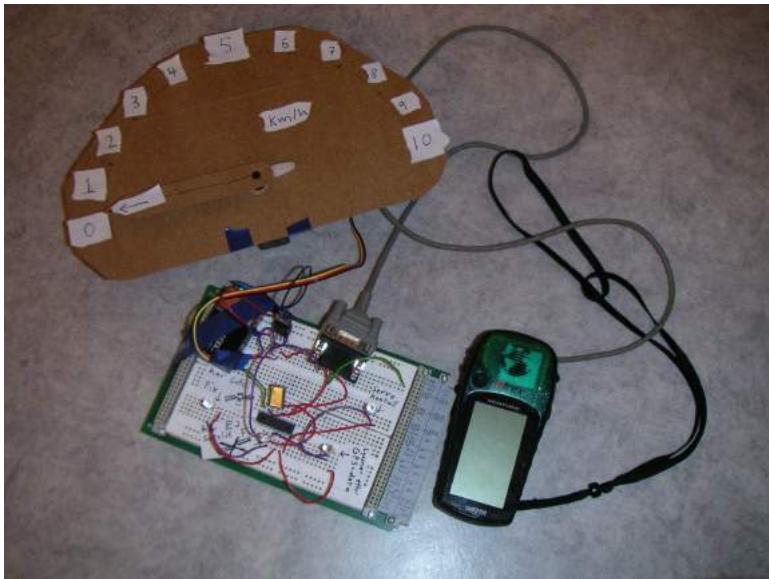
Robot-tävlingar



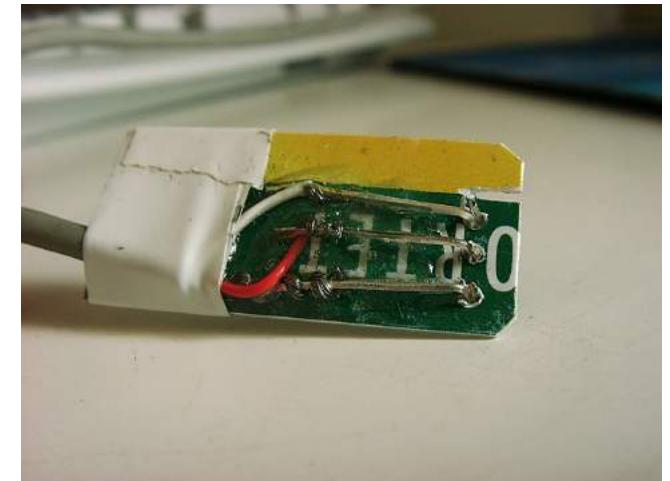
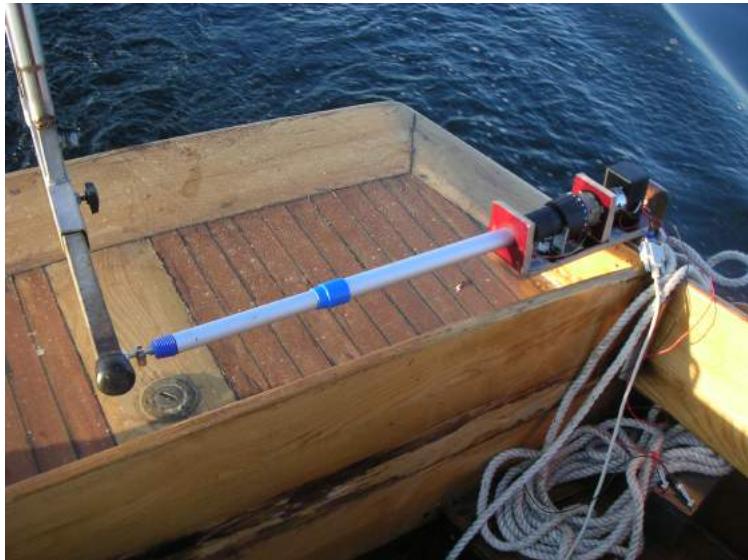
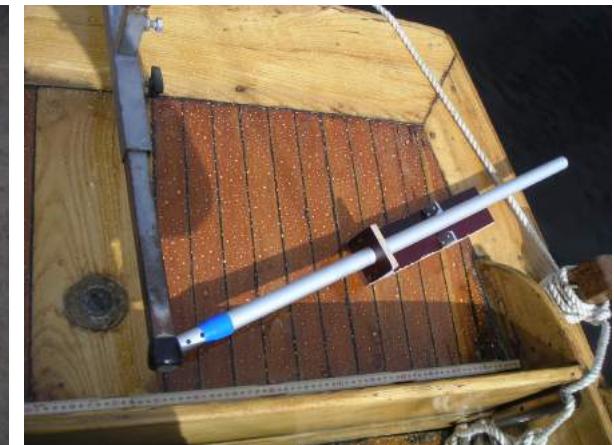
Några av mina robotar / robotliknande project



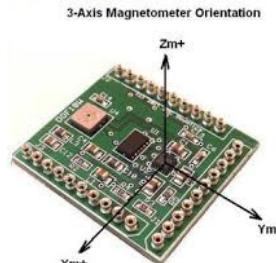
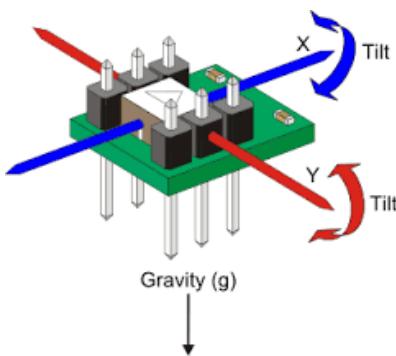
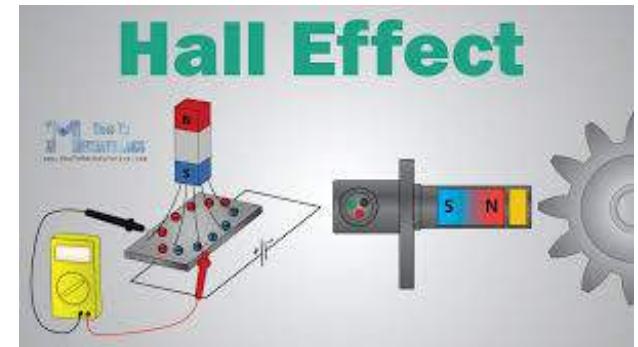
Robot båt project



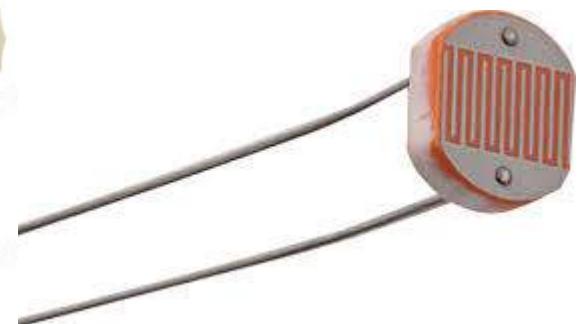
Båt autopilot



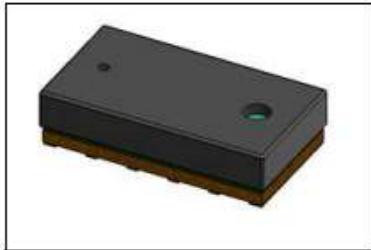
Robot delar: Sensorer



Ambient-light
and proximity sensor



VL53L0X



Features

- Fully integrated miniature module
 - 940nm Laser VCSEL
 - VCSEL driver
 - Ranging sensor with advanced embedded micro controller
 - 4.4 x 2.4 x 1.0mm
- Fast, accurate distance ranging
 - Measures absolute range up to 2m
 - Reported range is independent of the target reflectance
 - Operates in high infrared ambient light levels
 - Advanced embedded optical cross-talk compensation to simplify cover glass selection
- Eye safe
 - Class 1 laser device compliant with latest standard IEC 60825-1:2014 - 3rd edition
- Easy integration
 - Single reflowable component
 - No additional optics
 - Single power supply
 - I2C interface for device control and data transfer
 - Xshutdown (Reset) and interrupt GPIO
 - Programmable I2C address

Applications

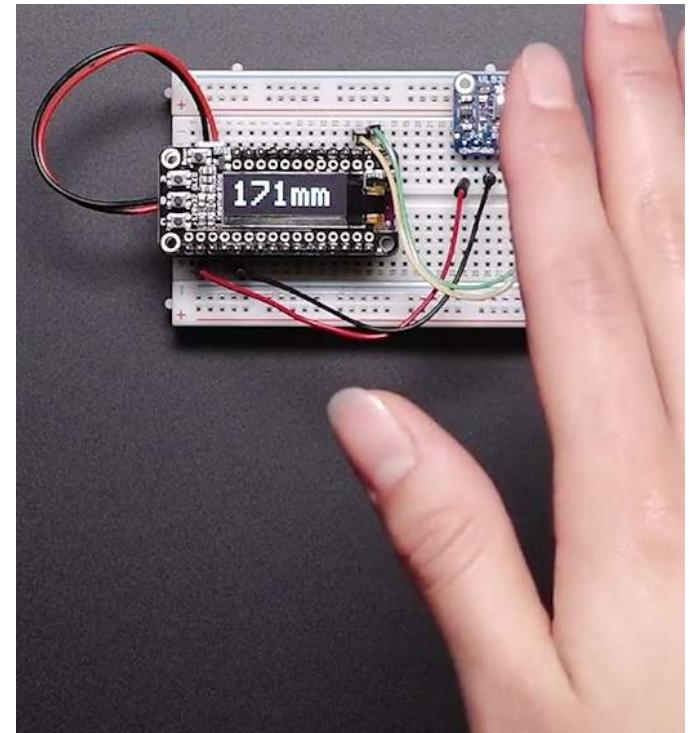
- User detection for Personal Computers/ Laptops/Tablets and IoT (Energy saving).
- Robotics (obstacle detection).
- White goods (hand detection in automatic faucets, soap dispensers etc...)
- 1D gesture recognition.
- Laser assisted Auto-Focus. Enhances and speeds-up camera AF system performance, especially in difficult scenes (low light levels, low contrast) or fast moving video mode.

Description

The VL53L0X is a new generation Time-of-Flight (ToF) laser-ranging module housed in the smallest package on the market today, providing accurate distance measurement whatever the target reflectances unlike conventional technologies. It can measure absolute distances up to 2m, setting a new benchmark in ranging performance levels, opening the door to various new applications.

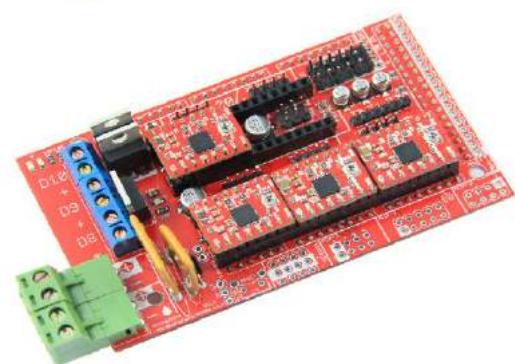
The VL53L0X integrates a leading-edge SPAD array (Single Photon Avalanche Diodes) and embeds ST's second generation FlightSense™ patented technology.

The VL53L0X's 940nm VCSEL emitter (Vertical Cavity Surface-Emitting Laser), is totally invisible to the human eye, coupled with internal physical infrared filters, it enables longer ranging distance, higher immunity to ambient light and better robustness to cover-glass optical cross-talk.

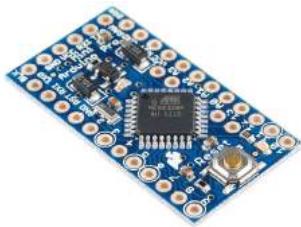


Adafruit bland andra säljer moduler med detta chip..

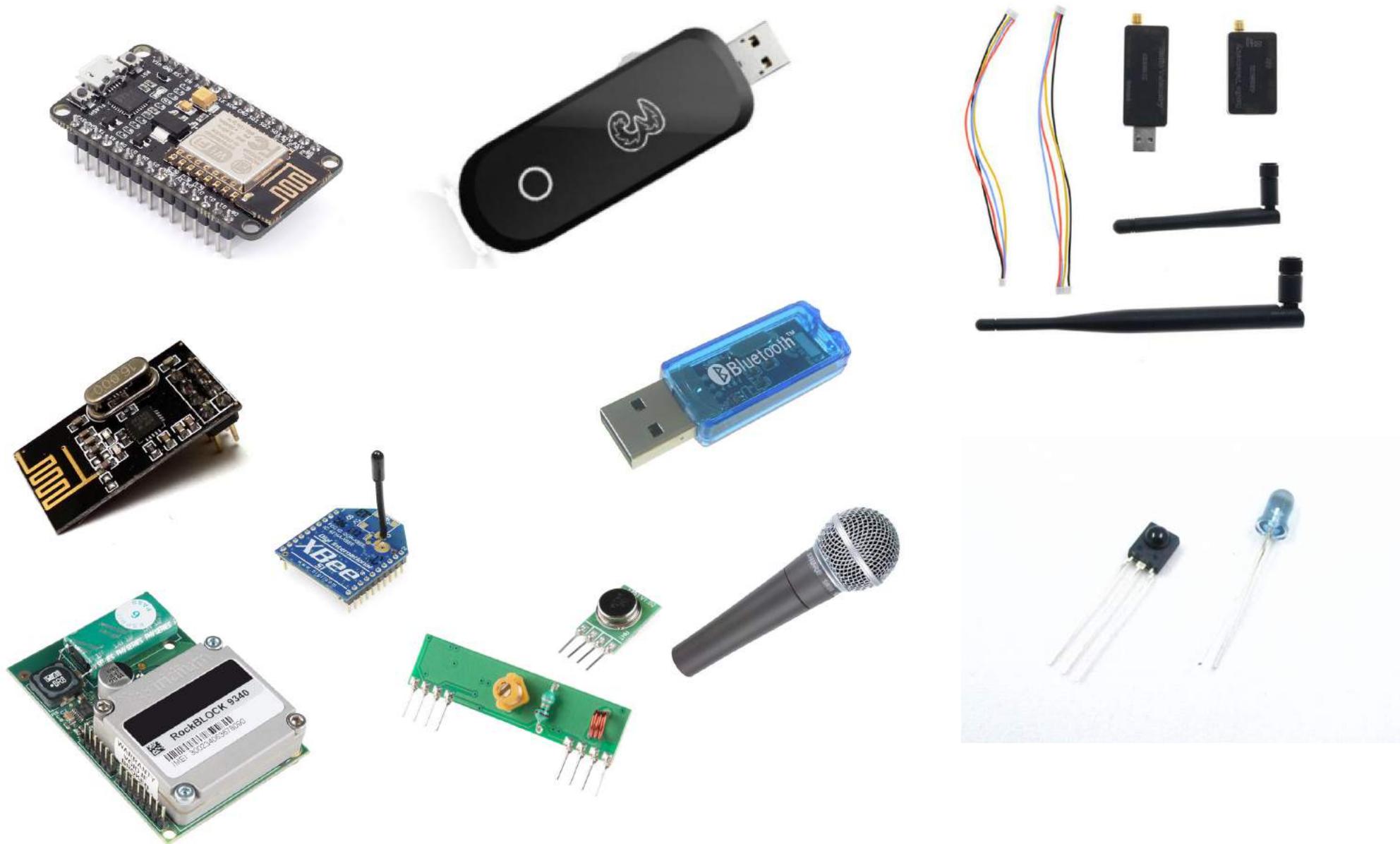
Rörelse



Hjärna



Kommunikation



Var köper man robot delar?

Sverige

Robotshopen

<https://www.robotshopen.se>

Har bland annat en robotkattlåda

Lawicel

<http://www.lawicel-shop.se/>

Har mycket elektronik och robot delar

Hobbytronik

<http://www.hobbytronik.se/sv/>

Har makerbeams, larvband etc

Elektro:kit

<https://www.electrokit.com>

Lite allt möjligt

Kjell & Company

<https://www.kjell.com>

Kjell har en del robot saker

Utlandet / Kina

Ebay

<http://www.ebay.com/>

Här kam man hitta det mästa

Banggood

<http://www.banggood.com/>

Har väldigt mycket, ofta billigare än ebay

Hobbyking

<https://hobbyking.com/>

Radiostyrt, servo, motorer, batteri etc

Adafruit Industries

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

Mycket bra kod bibliotek till det mästa.

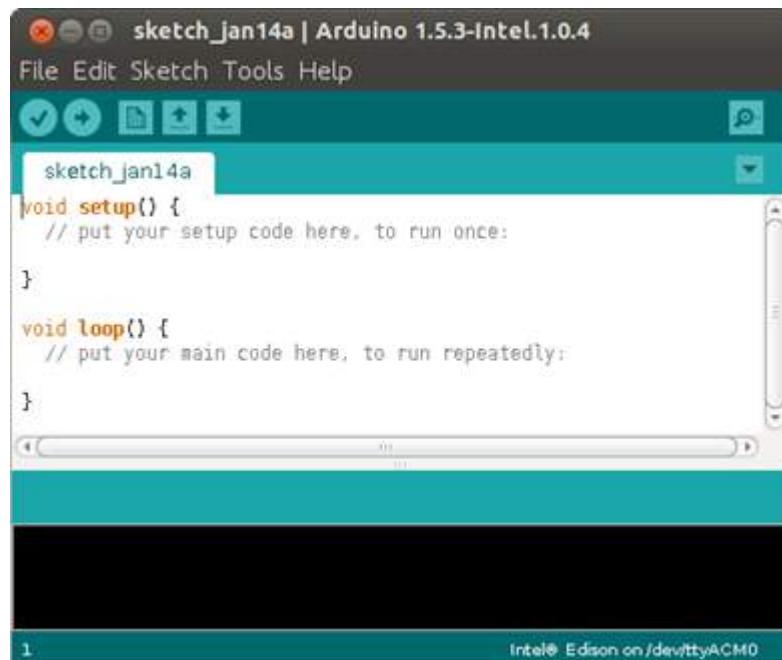
Sparkfun

<https://www.sparkfun.com/>

Elektronik, delar, och annat..

Program

C, C++, C#, Python, Java, LUA, osv..



A screenshot of the Arduino IDE interface. The title bar reads "sketch_jan14a | Arduino 1.5.3-Intel.1.0.4". The menu bar includes File, Edit, Sketch, Tools, and Help. Below the menu is a toolbar with various icons. The main area contains the following code:

```
void setup() {
  // put your setup code here, to run once:
}

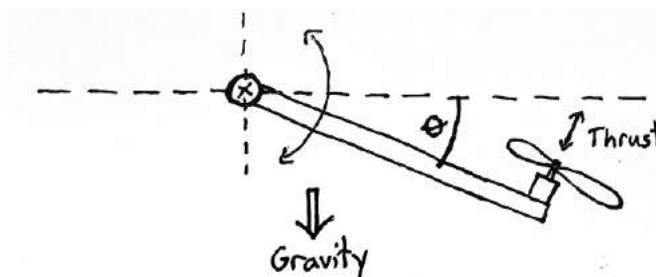
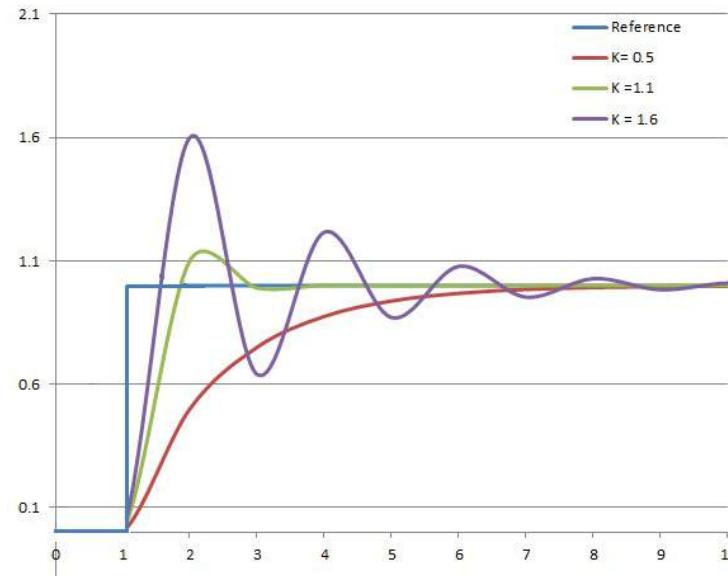
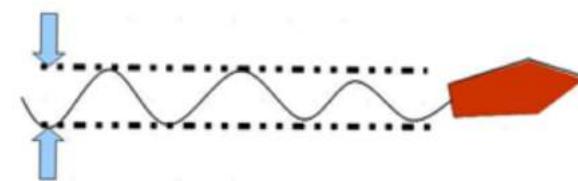
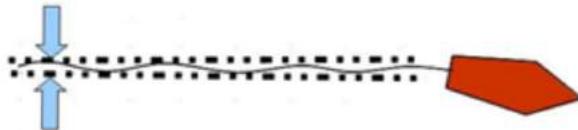
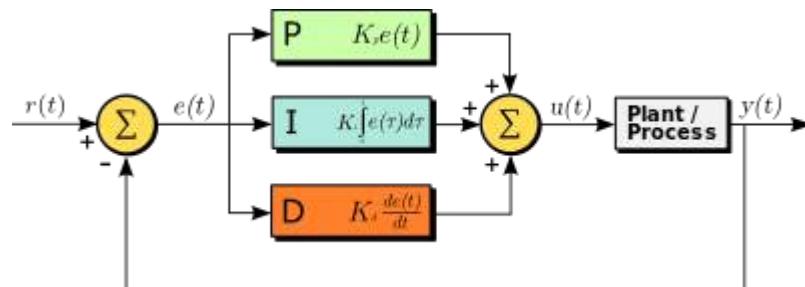
void loop() {
  // put your main code here, to run repeatedly:
}
```

The status bar at the bottom shows "1" and "Intel® Edison on /dev/ttyACM0".

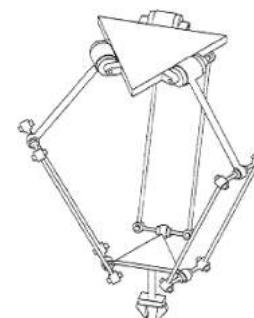
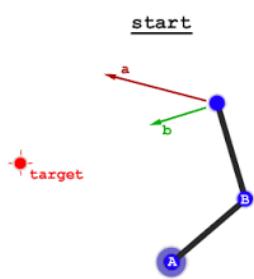


Algorithmer

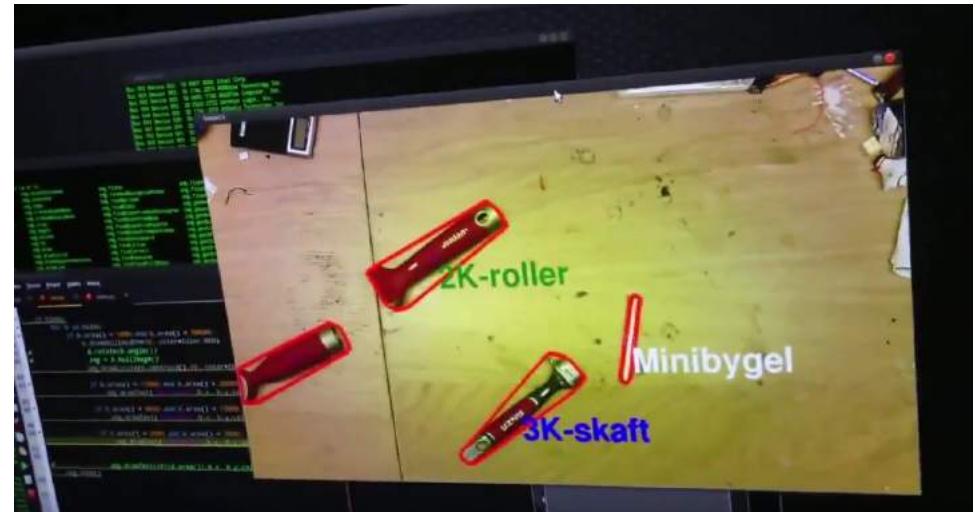
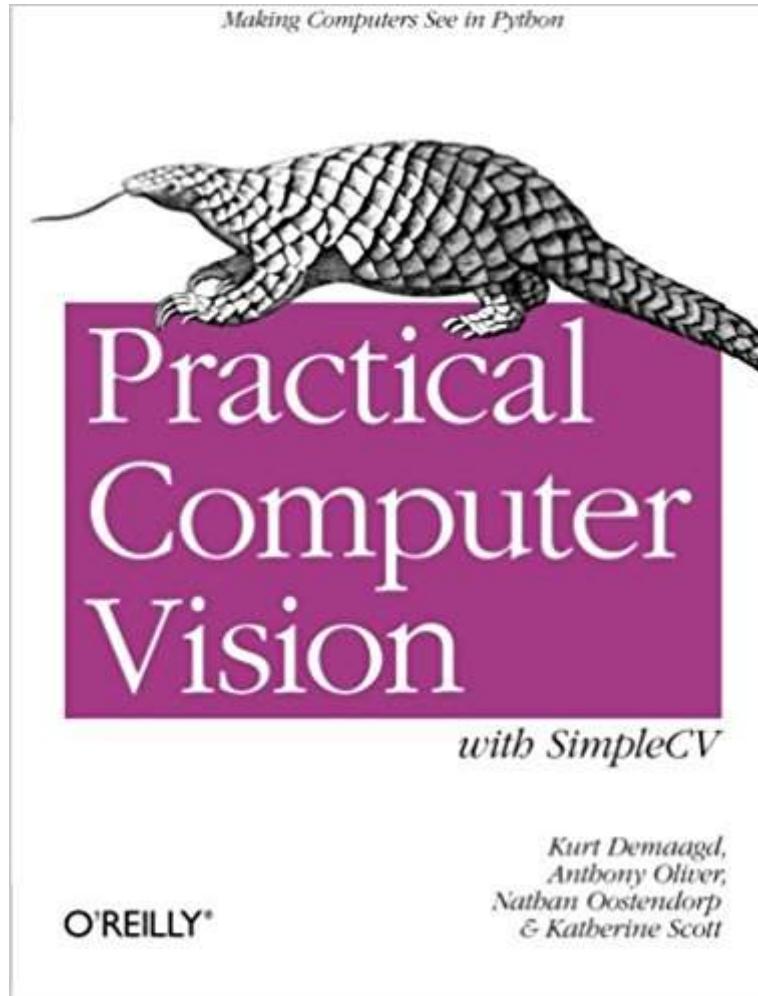
PID kontroller
proportional–integral–derivative



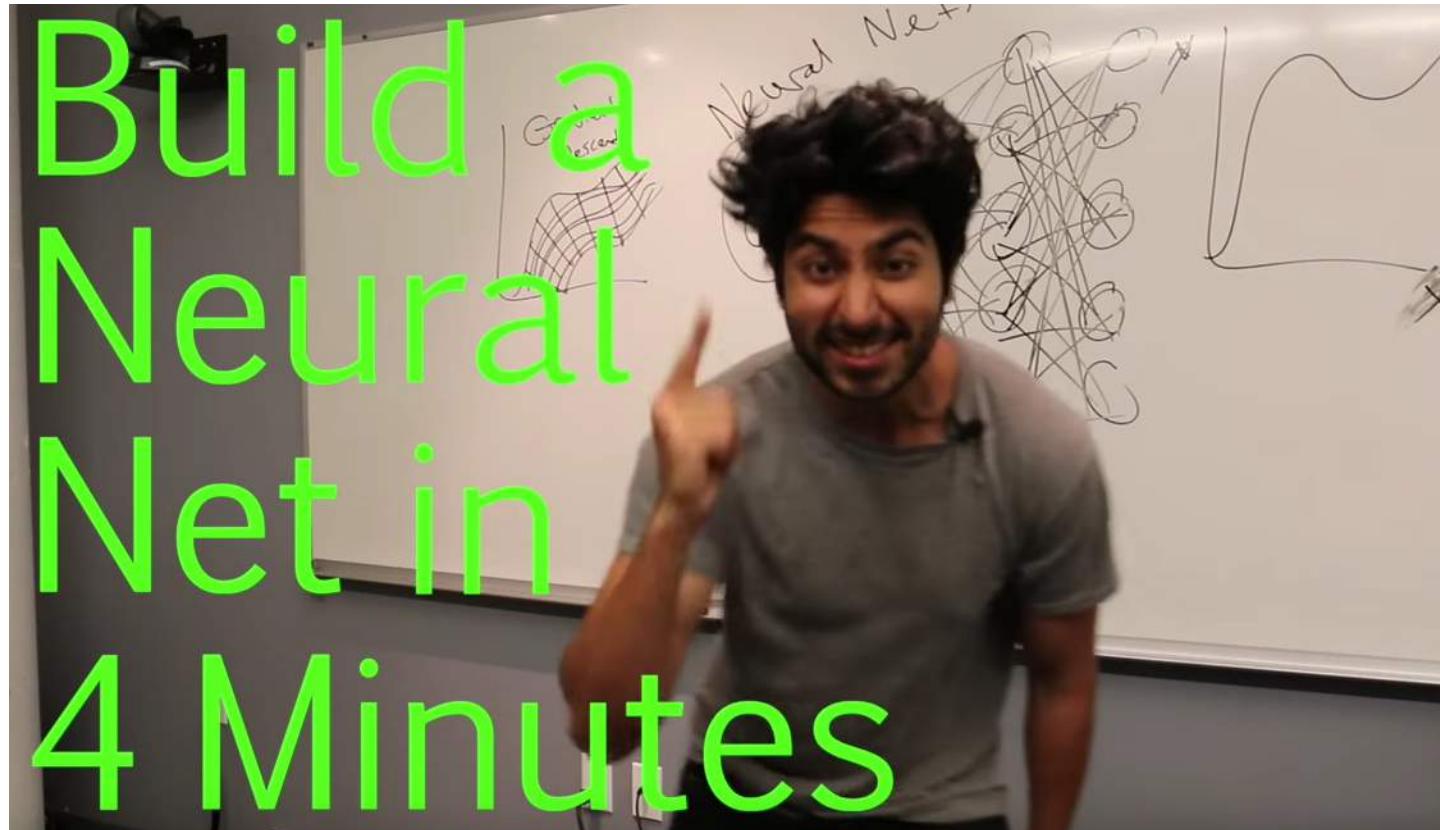
Inverse kinematics



Syn



Neural Networks



Youtube: Siraj Raval

En annan bra youtube kanal med mycket AI är:
Two Minute Papers

Några youtube länkar

Boston Dynamics

<https://www.youtube.com/user/BostonDynamics>

Företag som bygger fräna robotar

Festo

<https://www.youtube.com/user/FestoHQ>

Automationsföretag som bygger en del djurliknande robotar

Steelsquid

<https://www.youtube.com/user/steelsquid1>

En youtubare som mygger marsrover liknande robotar

Dokumentär om Curiosity rover

<https://www.youtube.com/watch?v=nZqyJfbKfHo>

Rymdrobot på planeten mars

Robot Arm project

<https://www.youtube.com/watch?v=H8zJjWfZWLE>

Andreas Hölldorfer bygger bland annat 3D printade robot armar.

HariFun #149 - 3D-Printed Arduino Spider Robot

<https://www.youtube.com/watch?v=9Pos9pE8xwU>

Hari Wiguna bygger en 3D printad spindelrobot väldigt billigt

Zero Robotics/SPHERES

<https://www.youtube.com/watch?v=GKMj1Rs0sjo>

Robotbollar på internationella rymdstationen

The 2015 DARPA Robotics Challenge Finals

<https://www.youtube.com/watch?v=8P9geWwi9e0>

DARPA håller avancerade robottävlingar

2016 All America Micromouse Competition Practice

https://www.youtube.com/watch?v=dxCZ6q_IXL8

Små robotar tävlar i labyrinter

Using the Phoenix Code on the Hexapod Crawler

<https://www.youtube.com/watch?v=9IY9sHToaqM>

Hexapod robot, insektsliknande robot med 6 ben

Cruise missile

<https://www.youtube.com/watch?v=AD8Kr0f1tEY>

Dokumentär av en annan typ av robot, navigeringen innan det fanns gps är ganska intressant

THE END

- Dags för deltagarna att berätta om sina robotar / robot project
- Allmänt robot prat, tips och ideér

