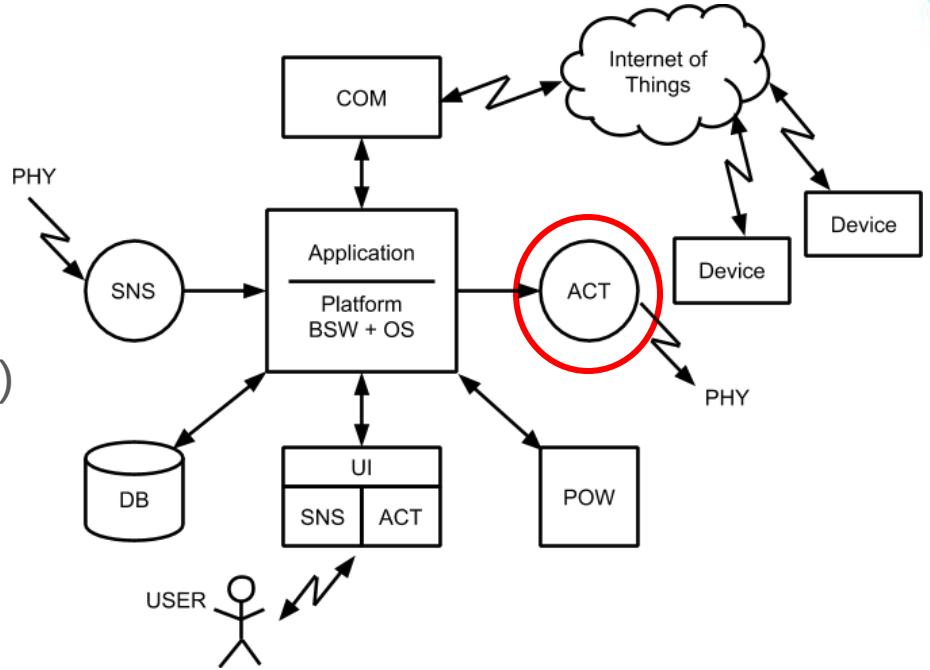
Actuatori

Andrei Bragarenco

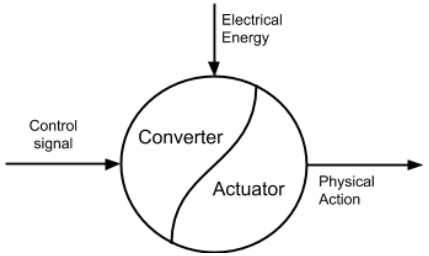
Tipuri de interacțiuni

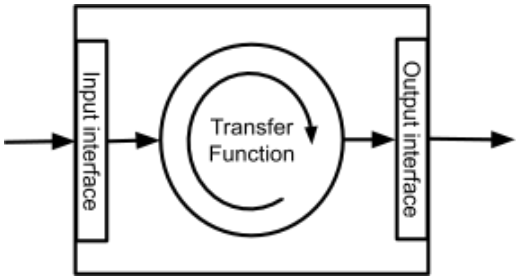
- Interacțiuni cu Utilizatorul
- **Interacțiuni cu Mediul**
- Interacțiuni cu Dispozitive (IoT)



Senzor

Transformă semnal intern al sistemului într-o acțiune asupra mediului fizic



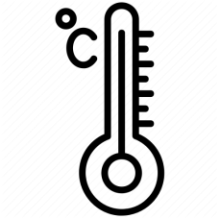


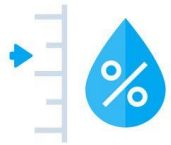
- Convertor – semnal electric de control in energie electrica aplicată actuatorului
- Actuator – energie electrica într-o acțiune

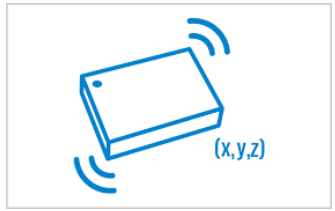
Actuatori – Clasificari

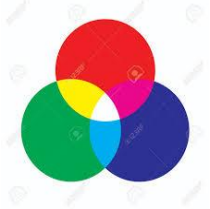
- Natura parametrului
- Interfața actuatorului
- Destinația acțiunii
- Poziționare
- Feedback

Clasificare - Natura parametrului

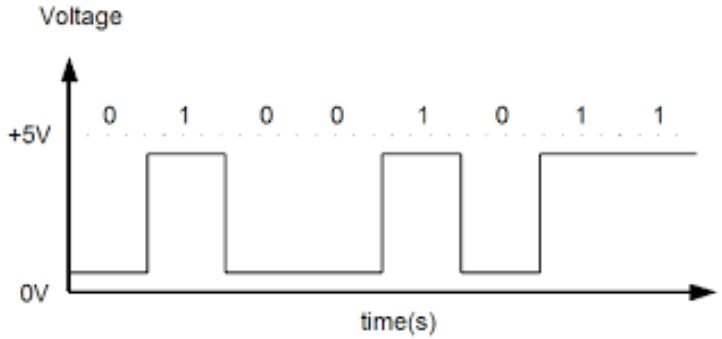


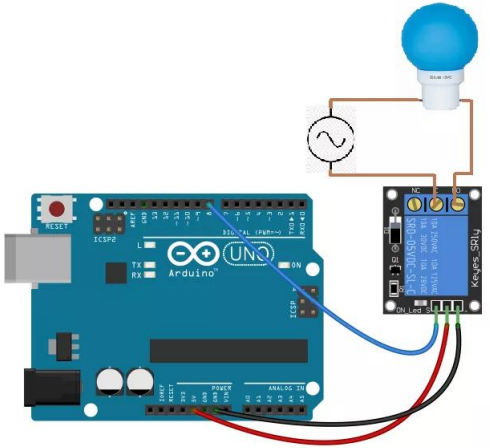




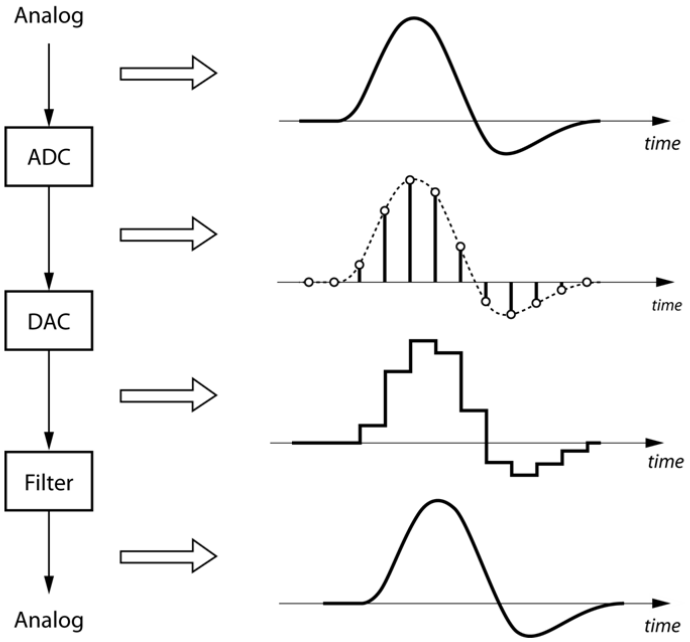


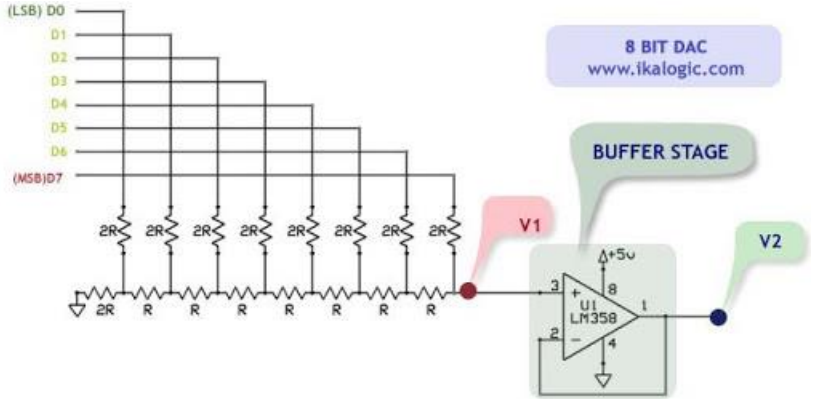
Interfață - Binară

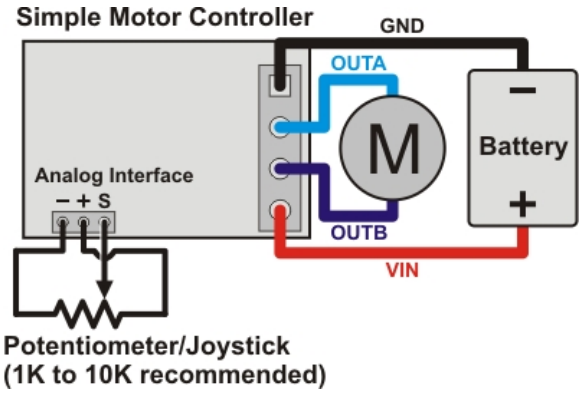




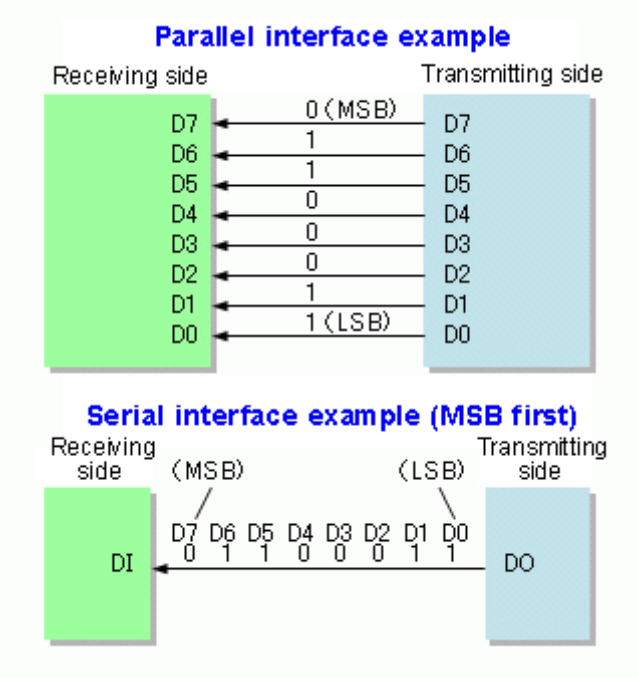
Clasificare Interfață - Analogică



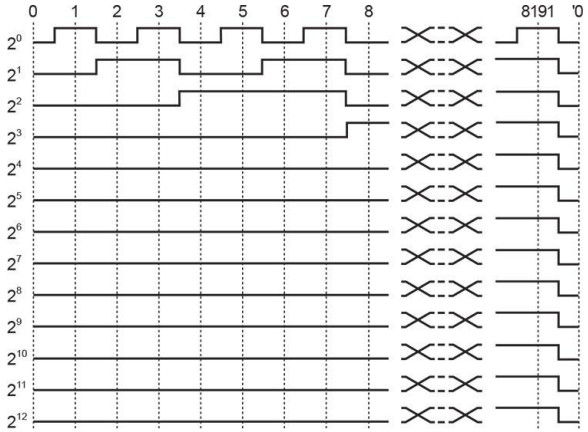




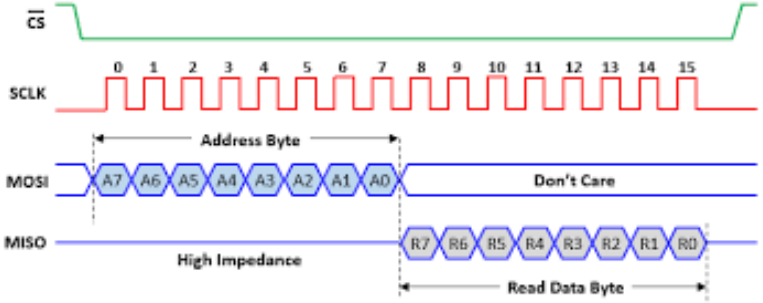
Clasificare Interfață - Digitală



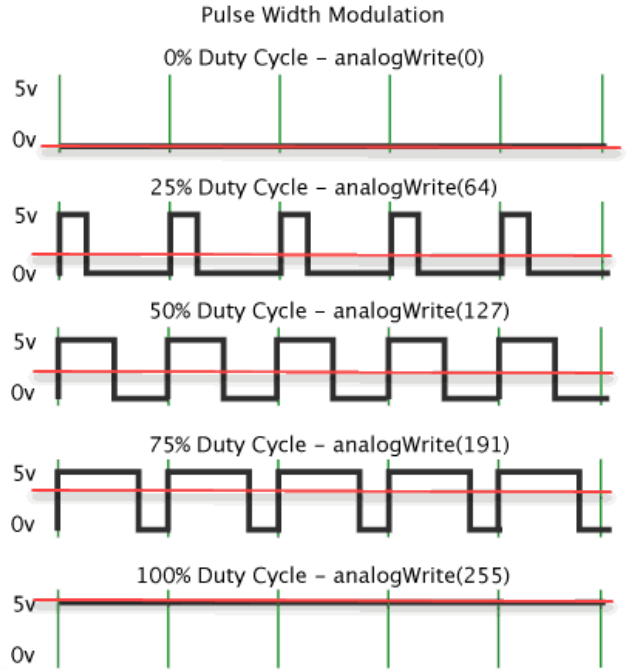
PATA, LPT, PORTA, BORTB, LCD

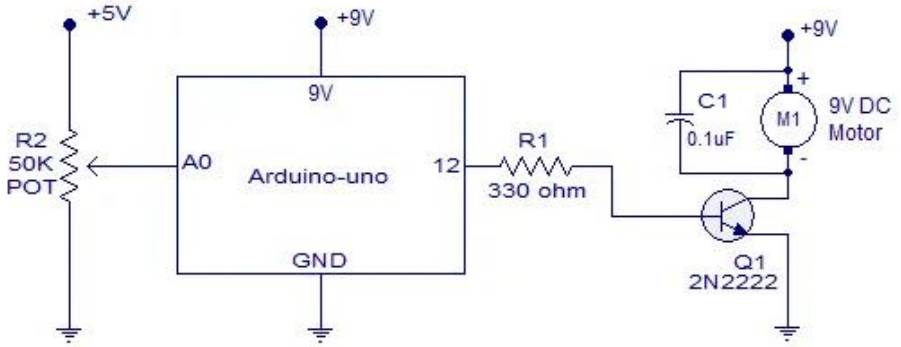


USB. SATA. I2C. SPI

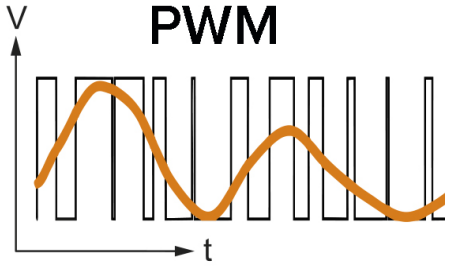


Clasificare Interfață - Temporizata

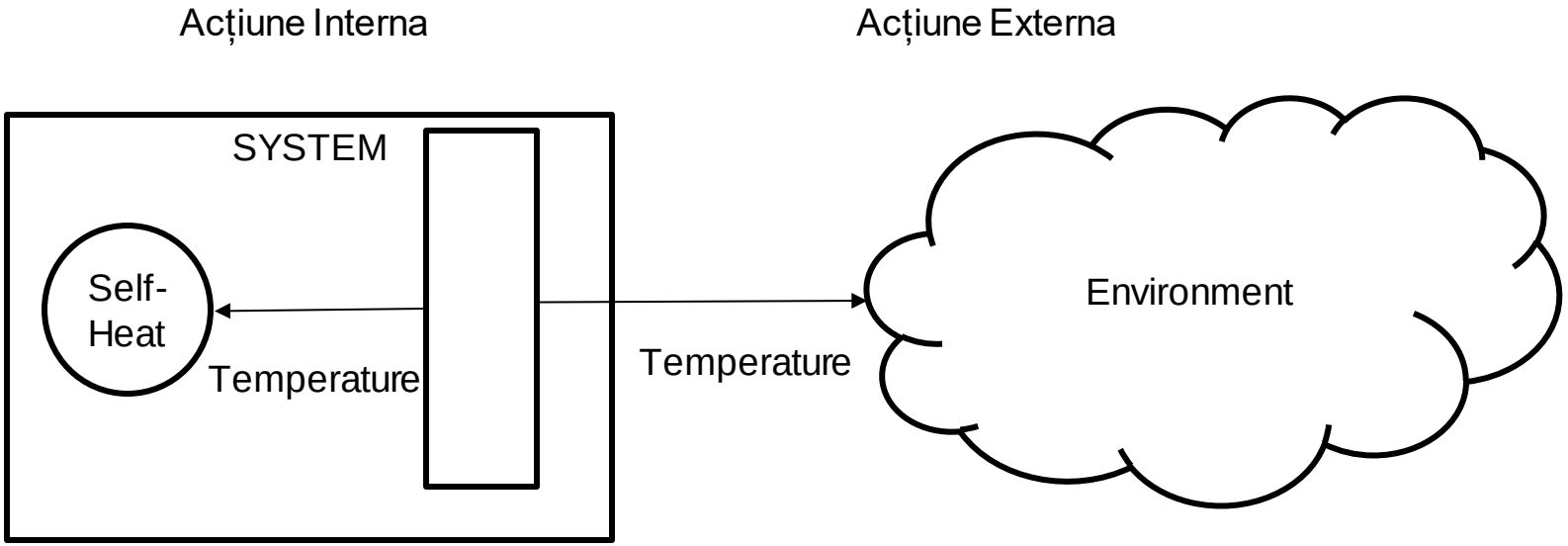




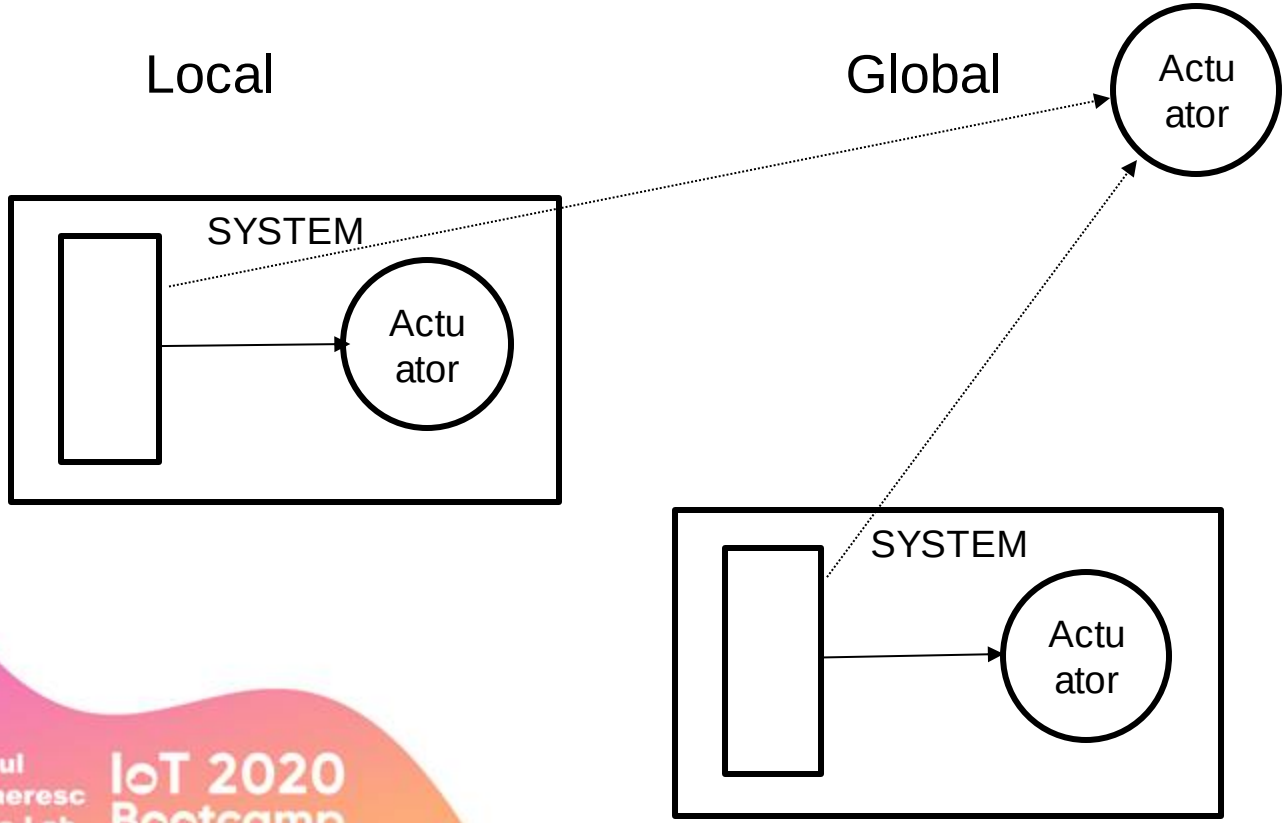
PWM motor speed control using Arduino www.circuitstoday.com



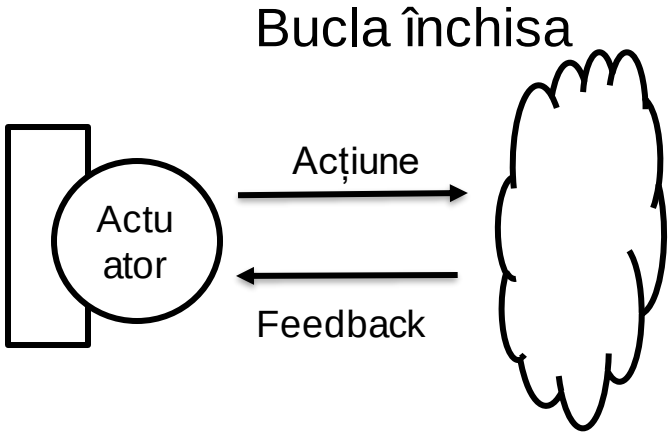
Clasificare – Destinație Acțiune

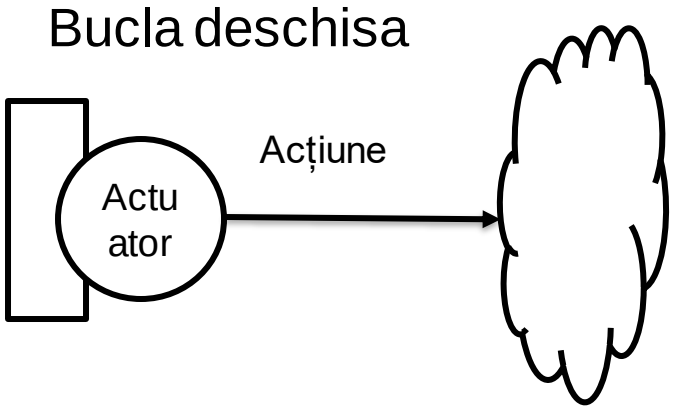


Clasificare - Poziționare

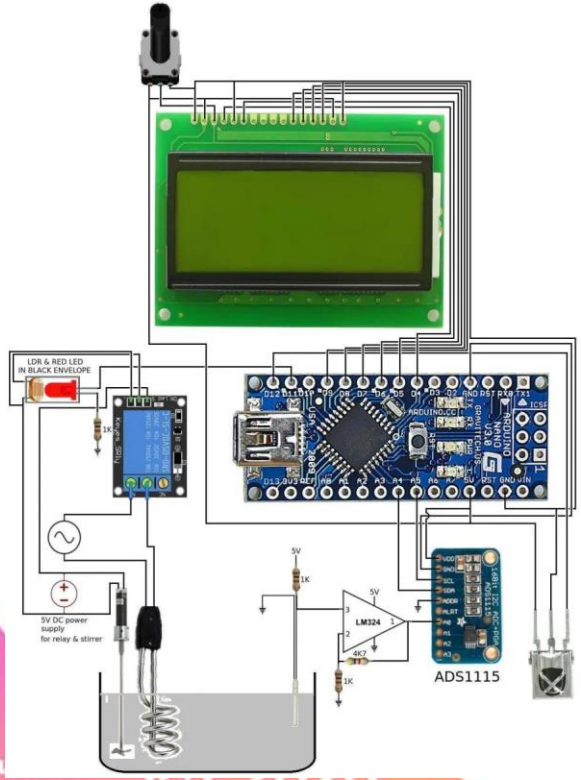


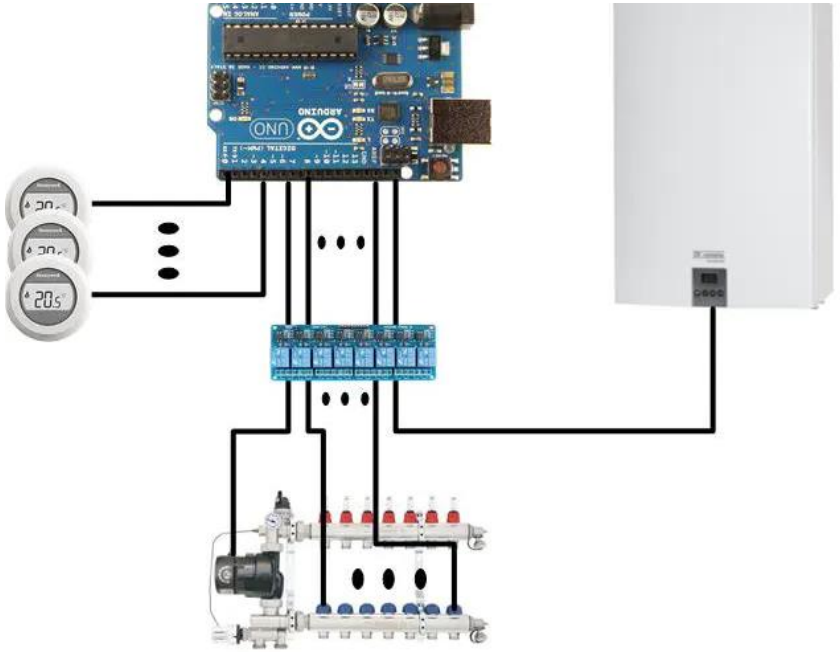
Clasificare - Feedback



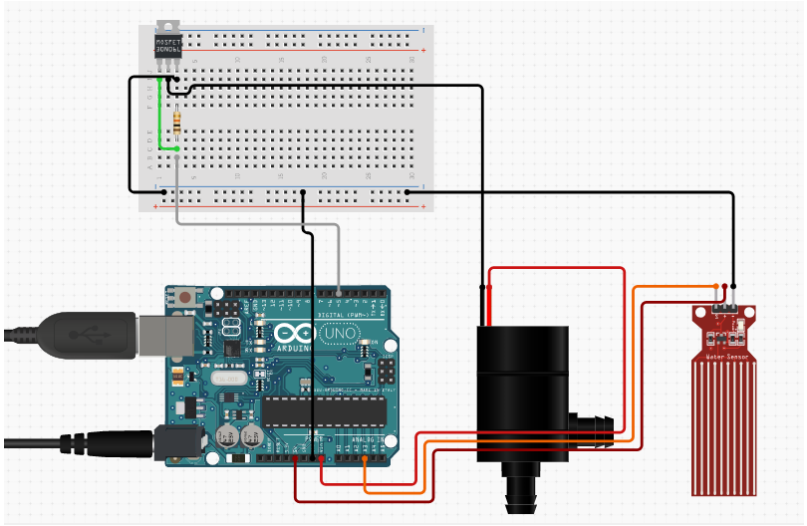


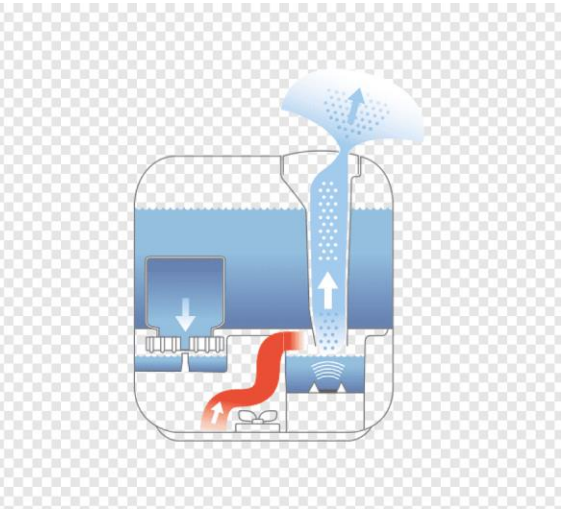
Acțiune - Temperatura



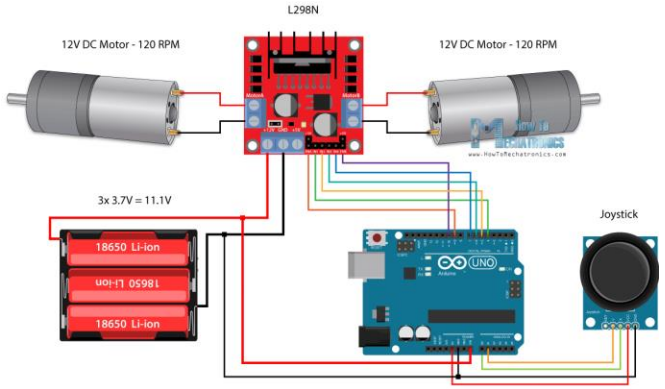


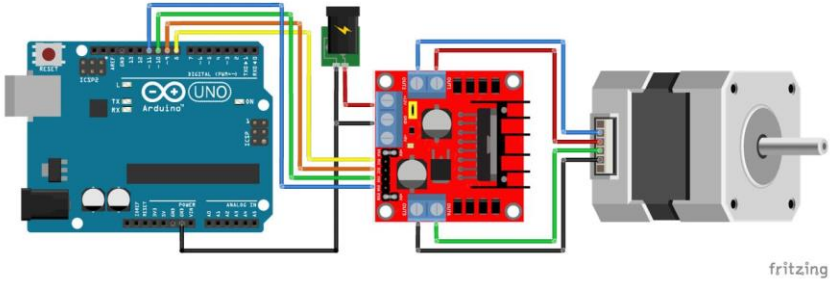
Acțiune - Umiditate





Acțiune - Mișcare



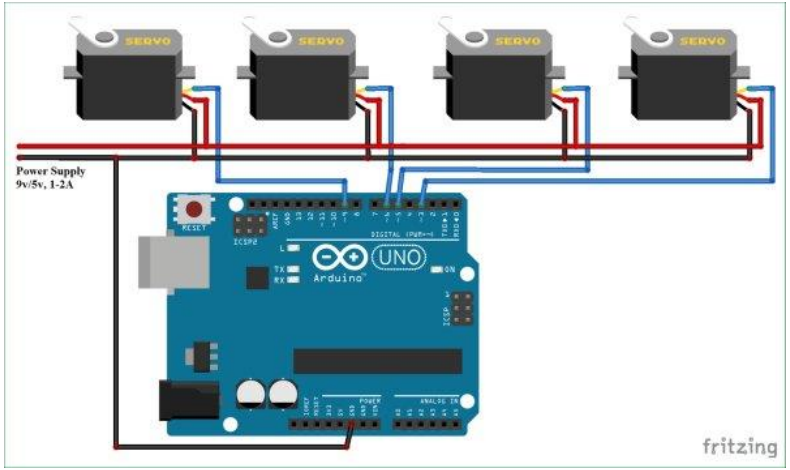


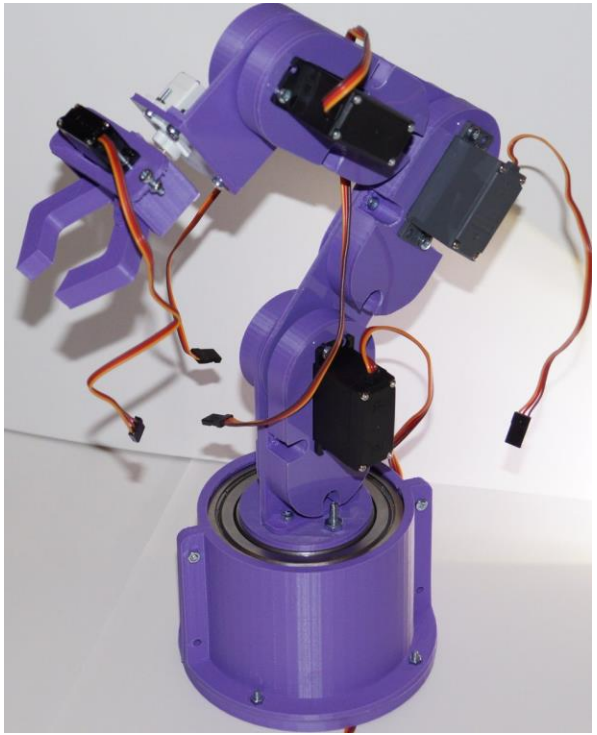
Acțiune - Presiune

Supapa

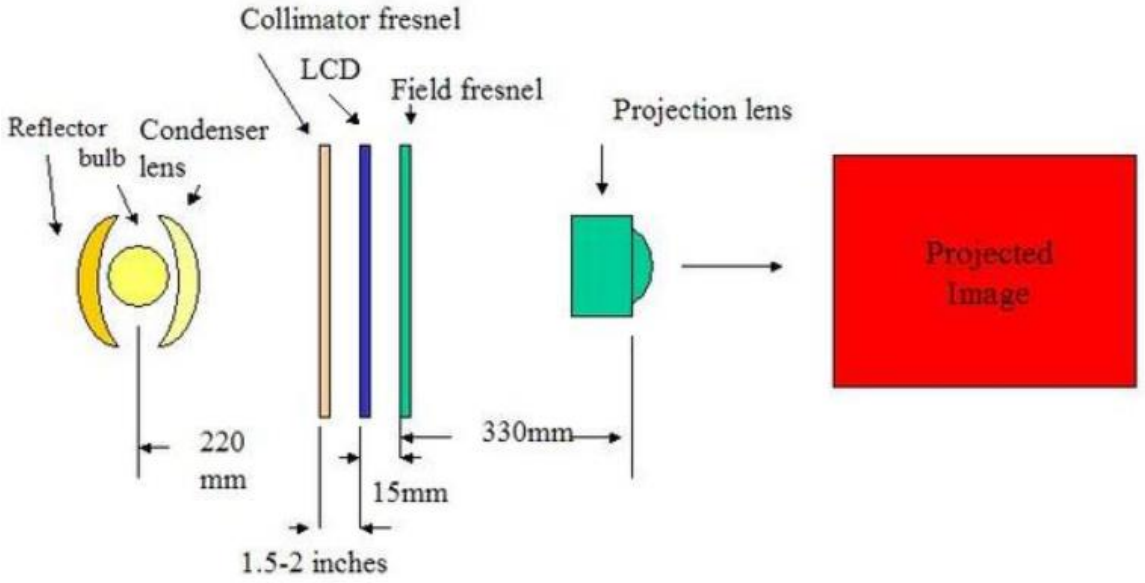
Pompa

Acțiune - Poziție

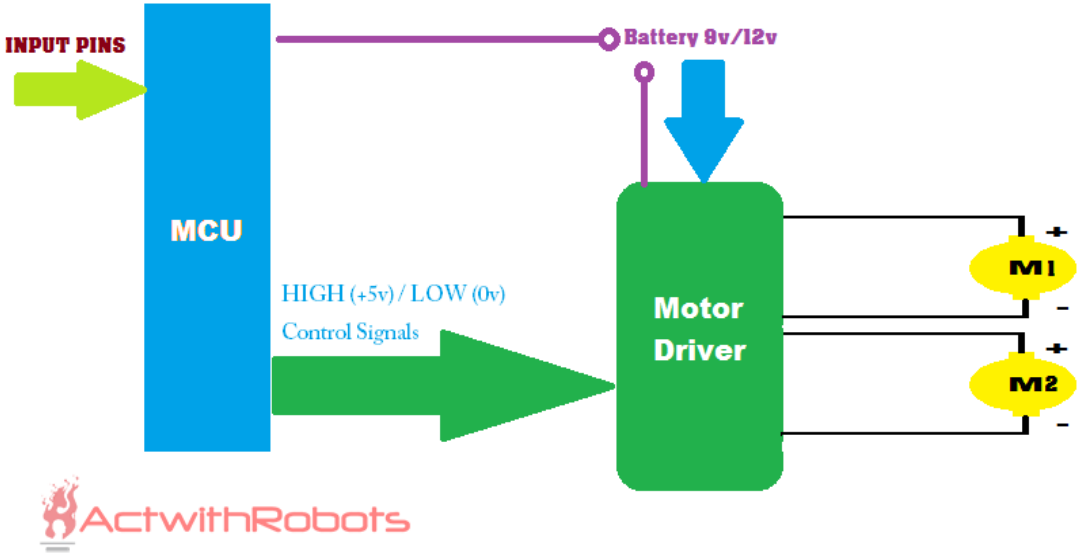




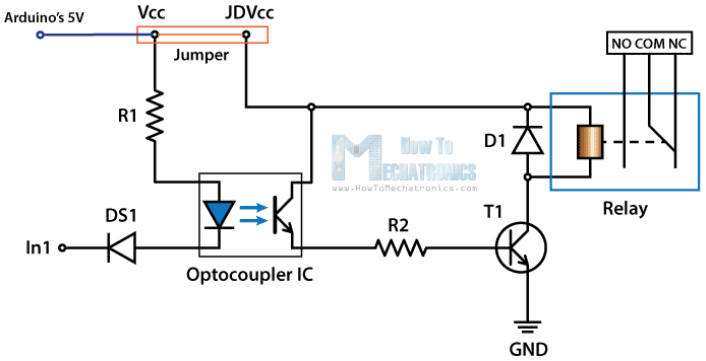
Acțiune - Imagine

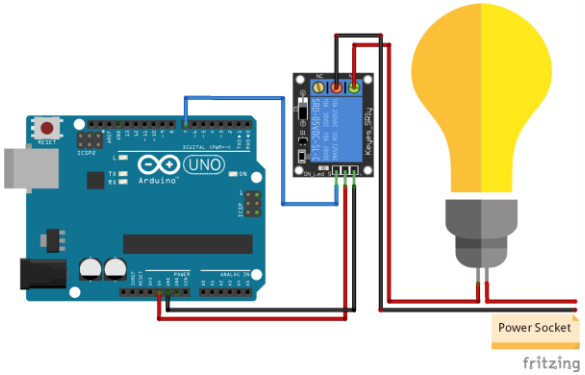


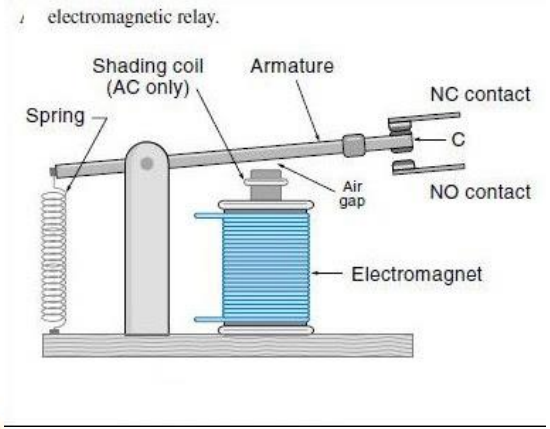
Converoare de putere



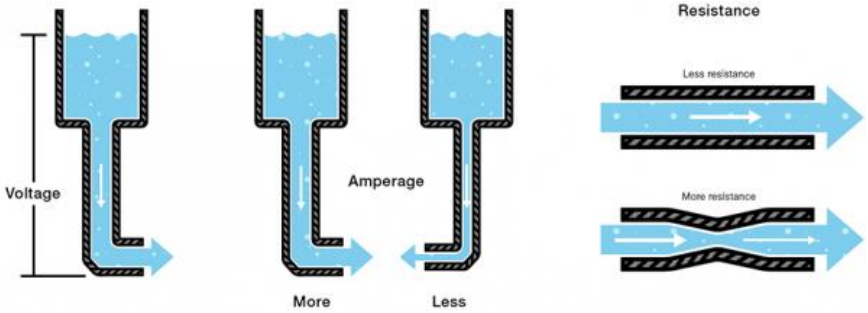
Convertor de putere - Releu

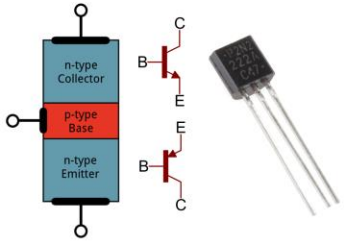


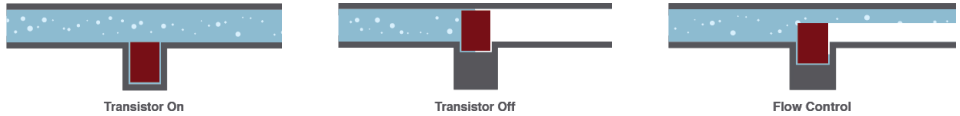


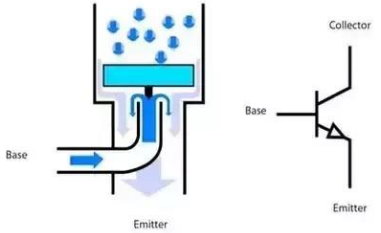


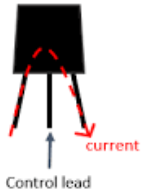
Tranzistor - Analogii

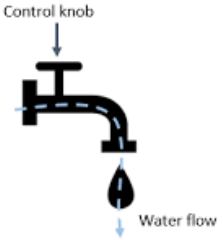


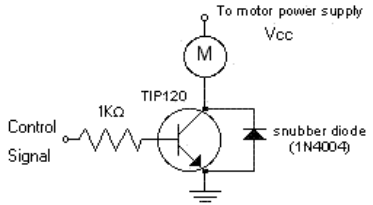




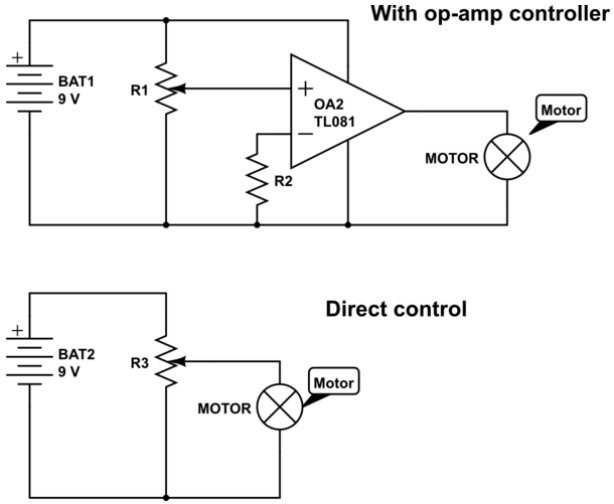


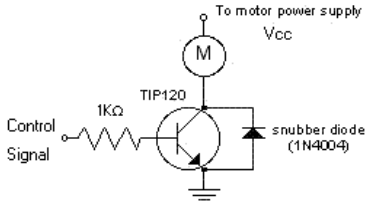


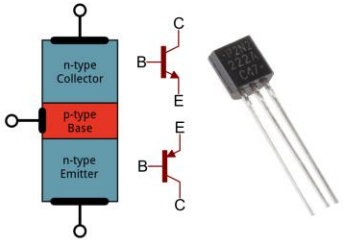


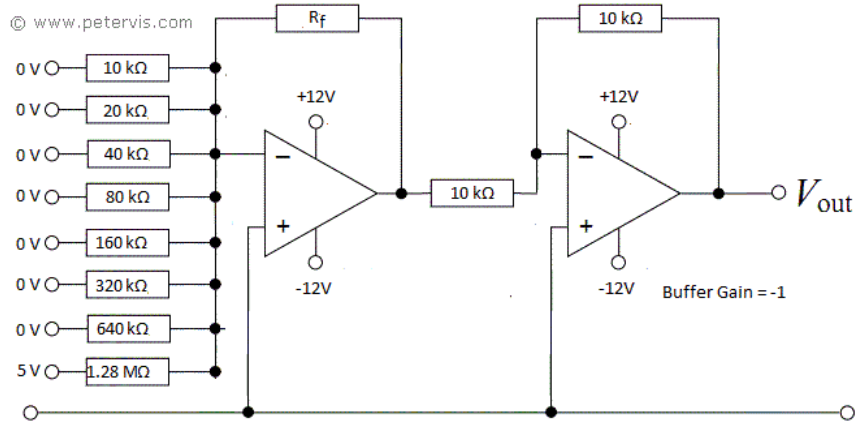


Convertor putere - control analogic

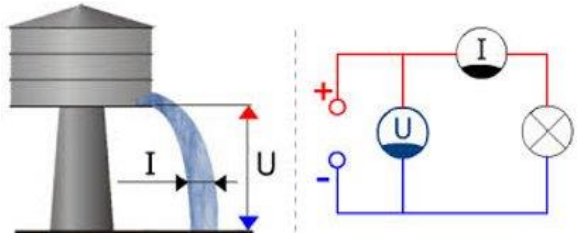


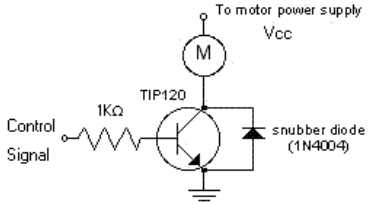


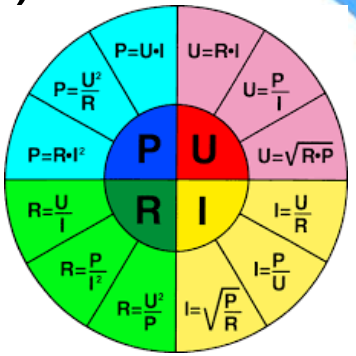


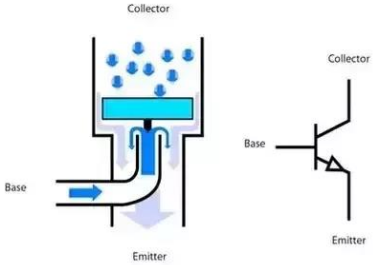


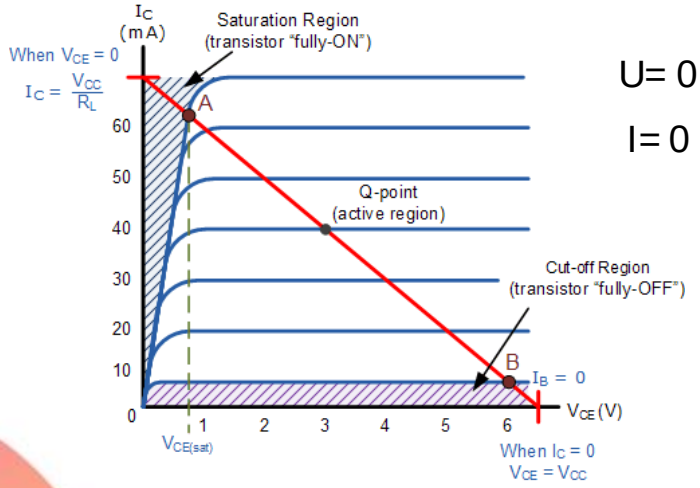
Tranzistor – putere de disipare (căldura)











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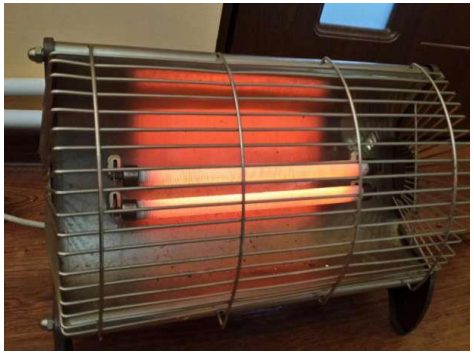
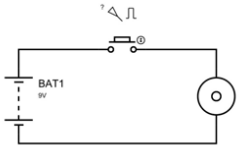
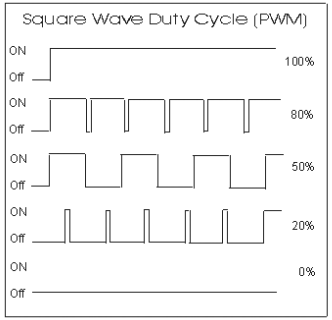
I= 0 -> P=0

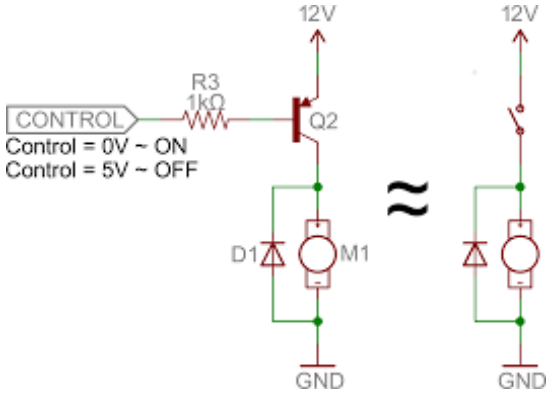


https://www.pitt.edu/~qiw4/Academic/ME2082/Transistor%20Basics.pdf

Convertor putere – in comutatie



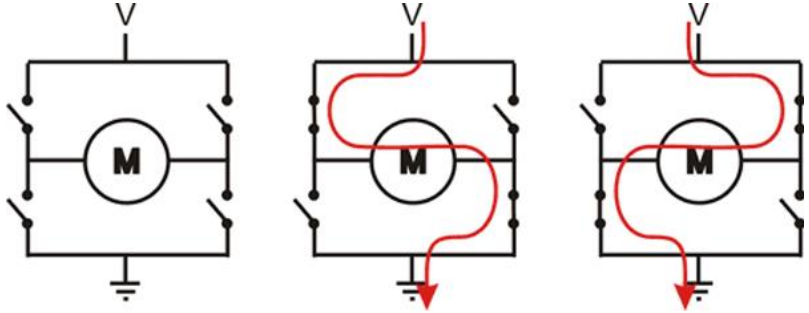


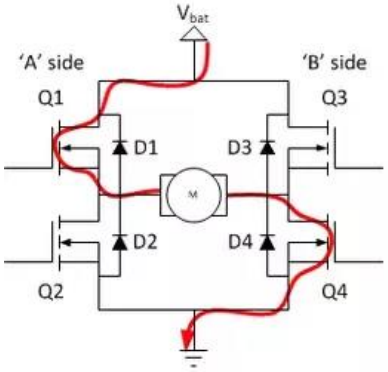


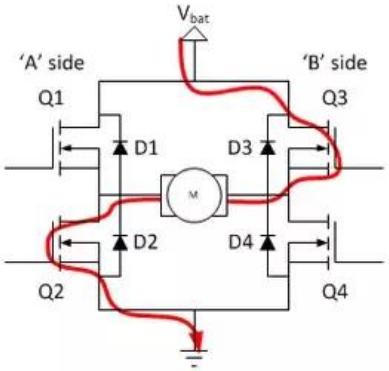
U= 0 -> P=0

I = 0 -> P=0

Convertor putere - Puntea H







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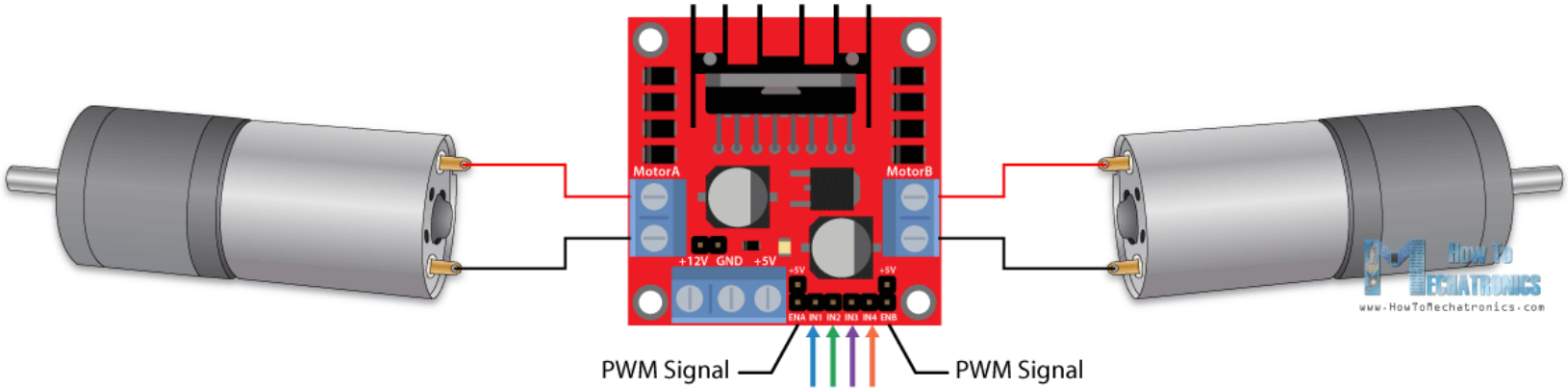

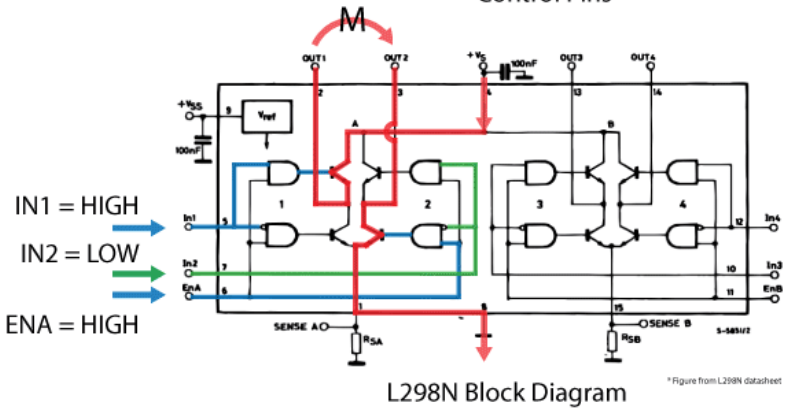

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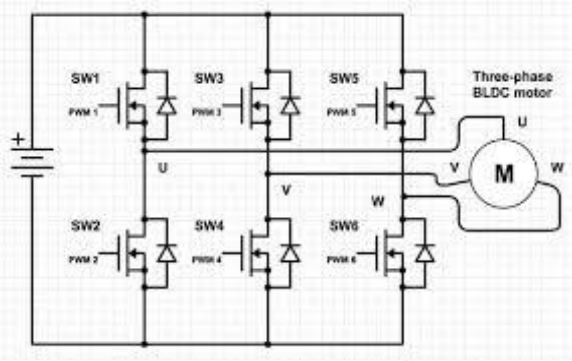
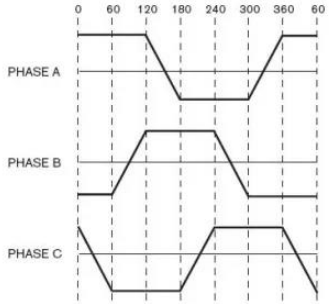
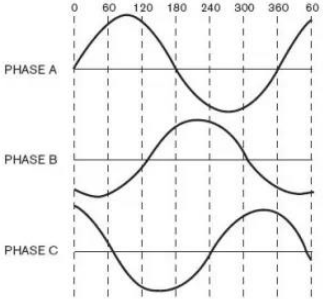
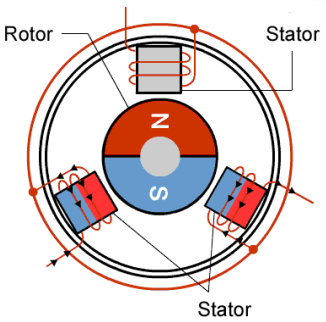
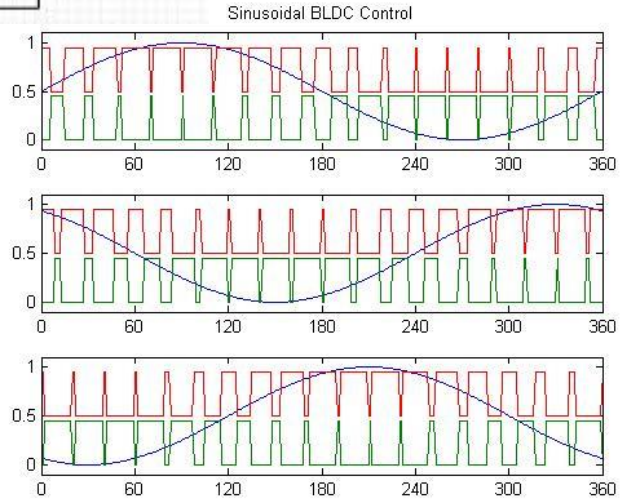
Convertor putere - Puntea H BLDC

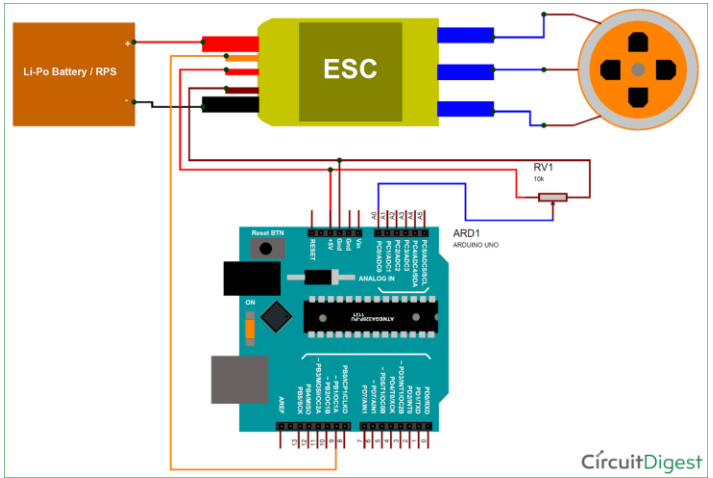












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Convertor putere - Puntea H Stepper

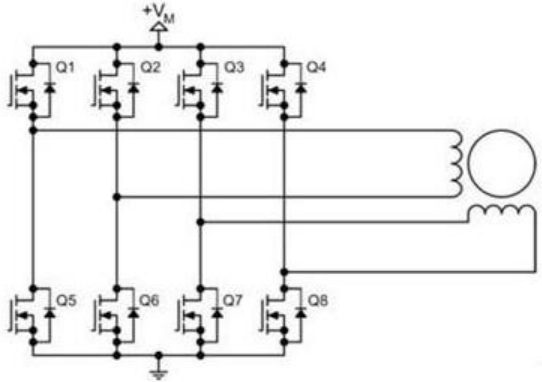
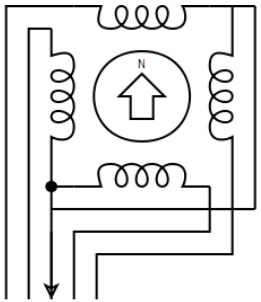
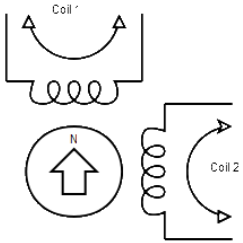


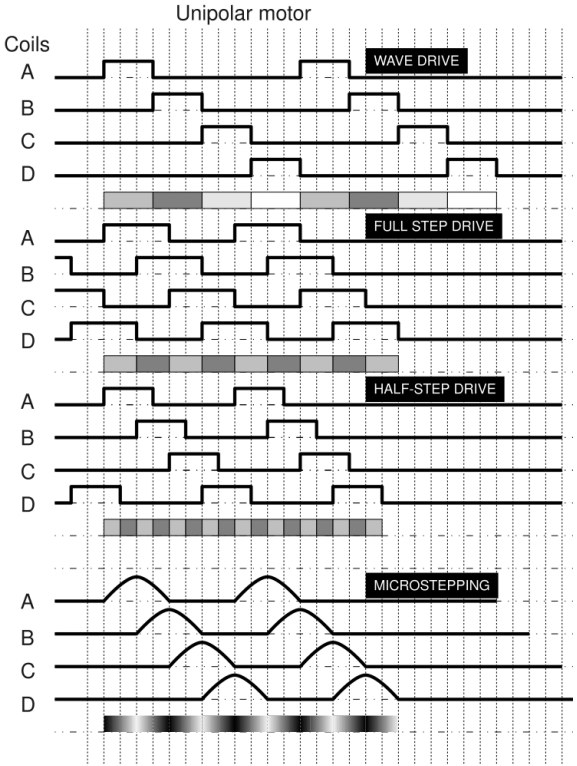
Figure 2

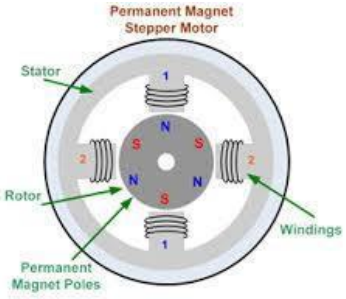


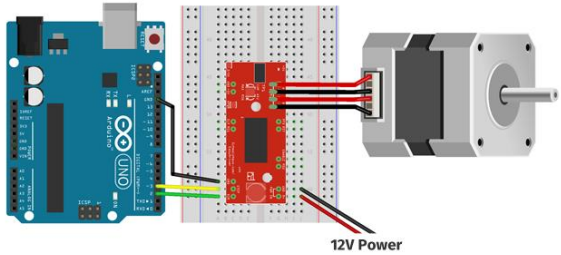
Unipolar Design
(Common connection -
current always one way)



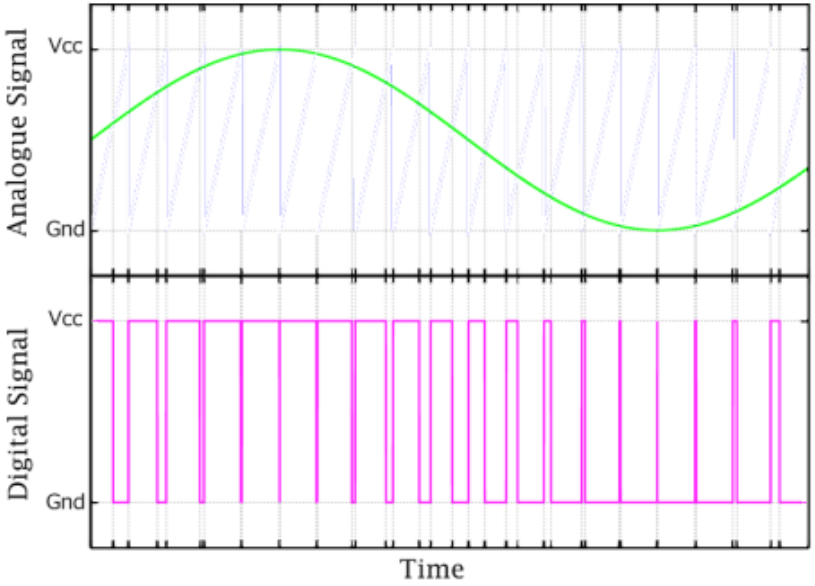
Bipolar Design
(Distinct coils -
current goes either way)







Generare semnal PWM



AnalogInOutSerial | Arduino 1.8.12 (Windows Store 1.8.33.0)

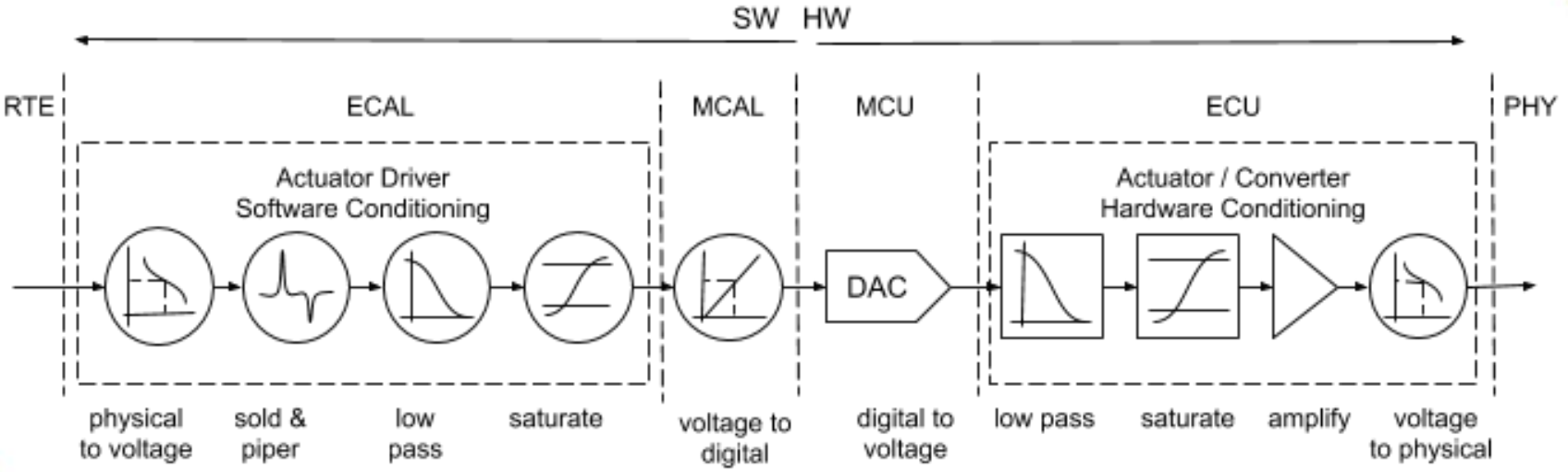
File Edit Sketch Tools Help

AnalogInOutSerial

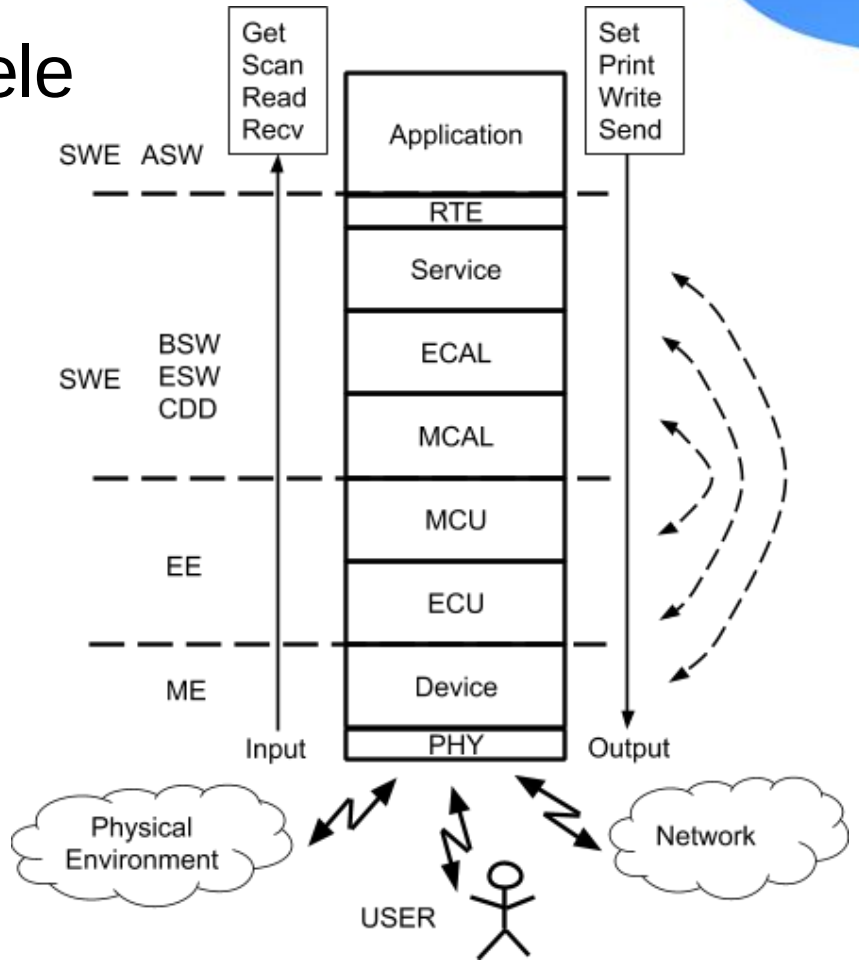
```
void setup() {
  // initialize serial communications at 9600 bps:
  Serial.begin(9600);
}

void loop() {
  // read the analog in value:
  sensorValue = analogRead(analogInPin);
  // map it to the range of the analog out:
  outputValue = map(sensorValue, 0, 1023, 0, 255);
  // change the analog out value:
  analogWrite(analogOutPin, outputValue);

  // print the results to the Serial Monitor:
  Serial.print("sensor = ");
  Serial.print(sensorValue);
  Serial.print("\t output = ");
  Serial.println(outputValue);

  // wait 2 milliseconds before the next loop for the anal
  // converter to settle after the last reading:
  delay(2);
}
```

1 Arduino Uno on COM5

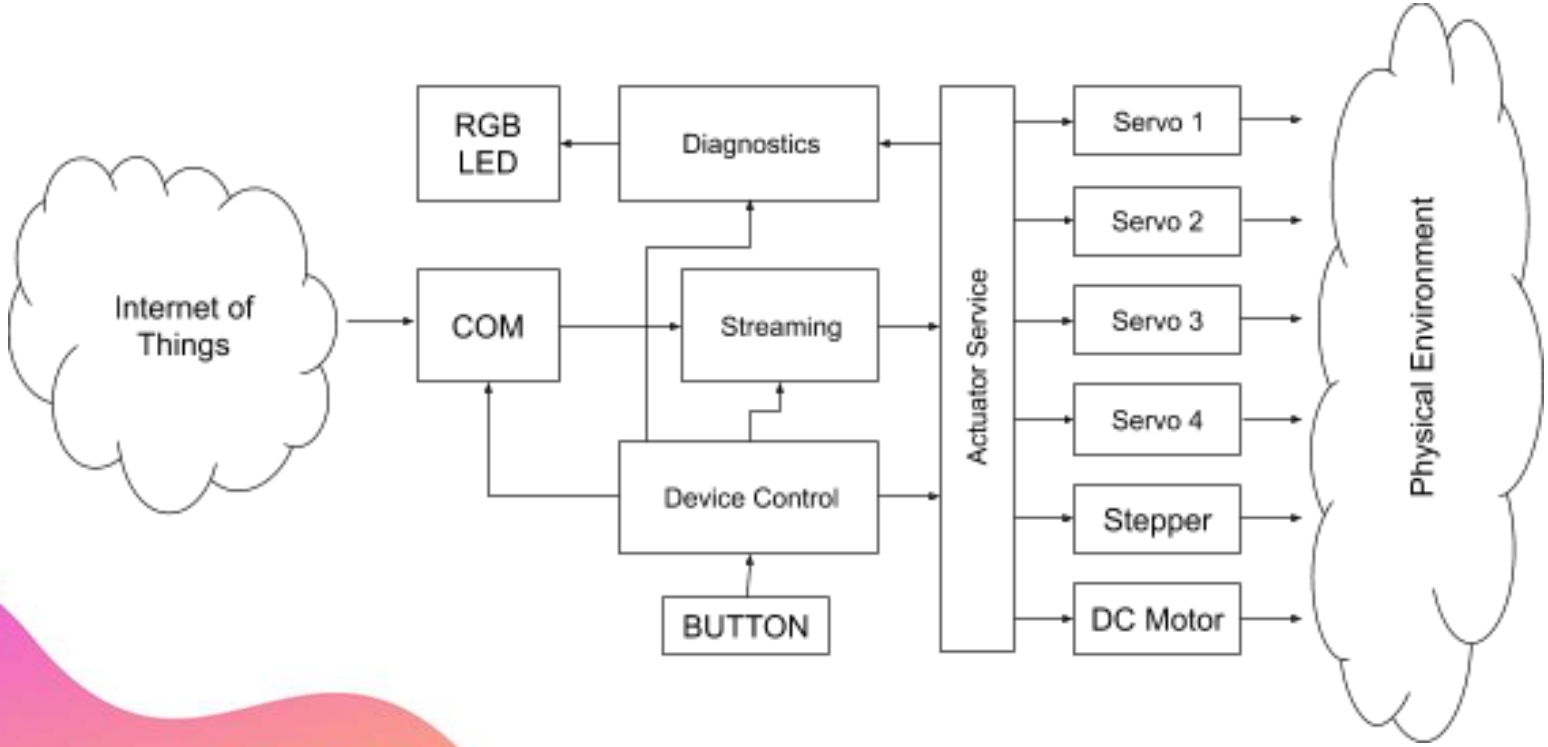
Generare semnal control



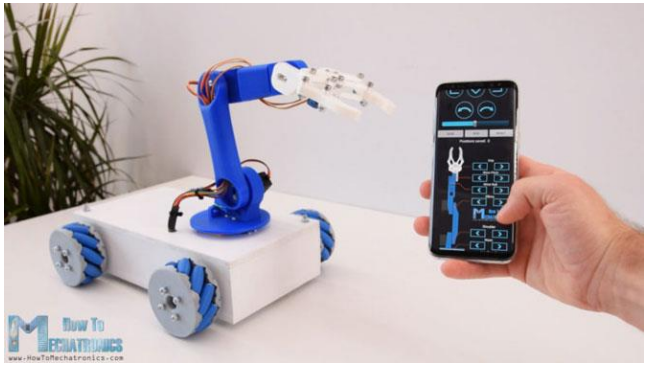
Arhitectura pe nivele

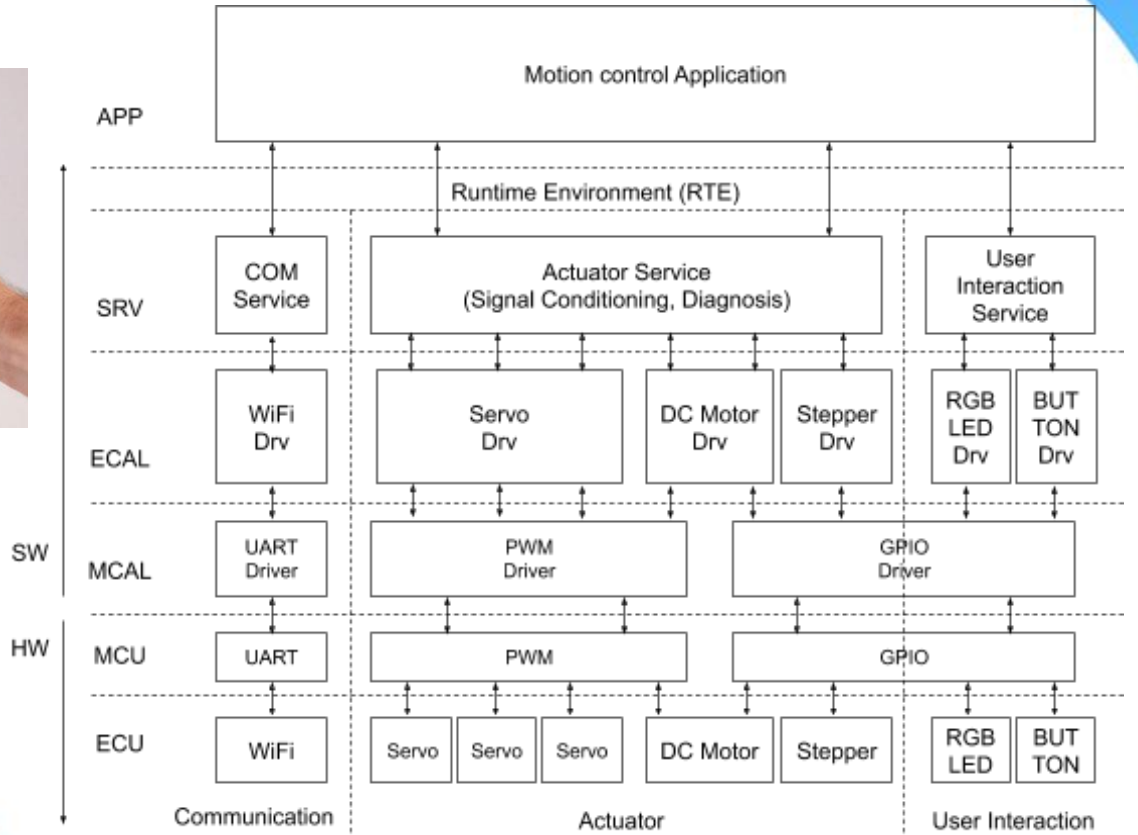


Generare Semnal

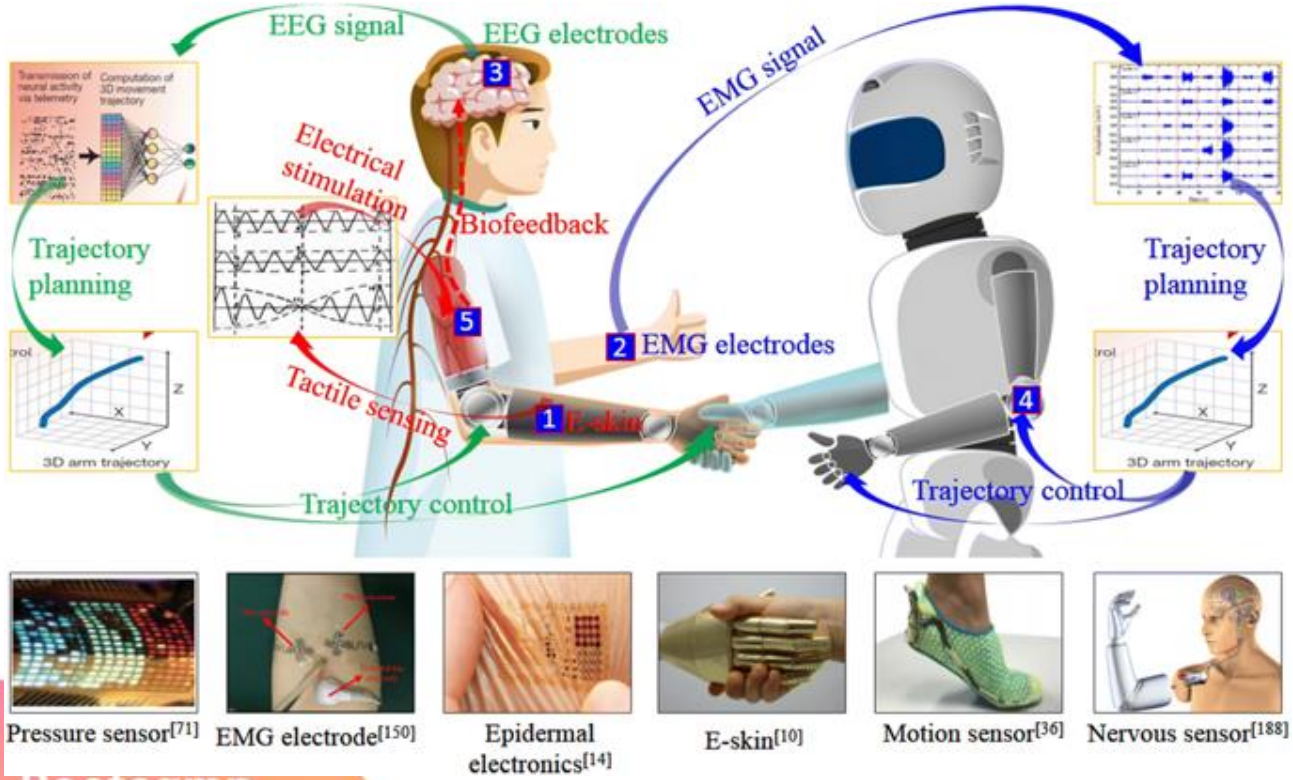


Arhitectura pe nivele





EMG Human Machine Interface



Multumiec pentru atentie

Intrebari?

Clubul Ingineresc Micro Lab

IoT 2020 Bootcamp