



**MINERVA
BOTS**

Equipe de Robótica da UFRJ

Processo Seletivo 2019.2

História



A Equipe



Competições



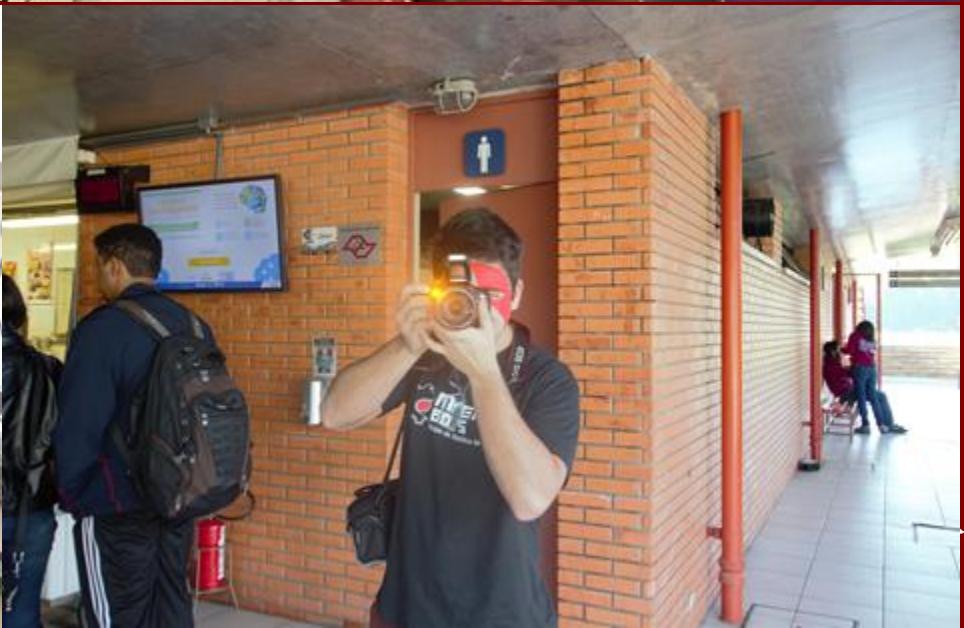
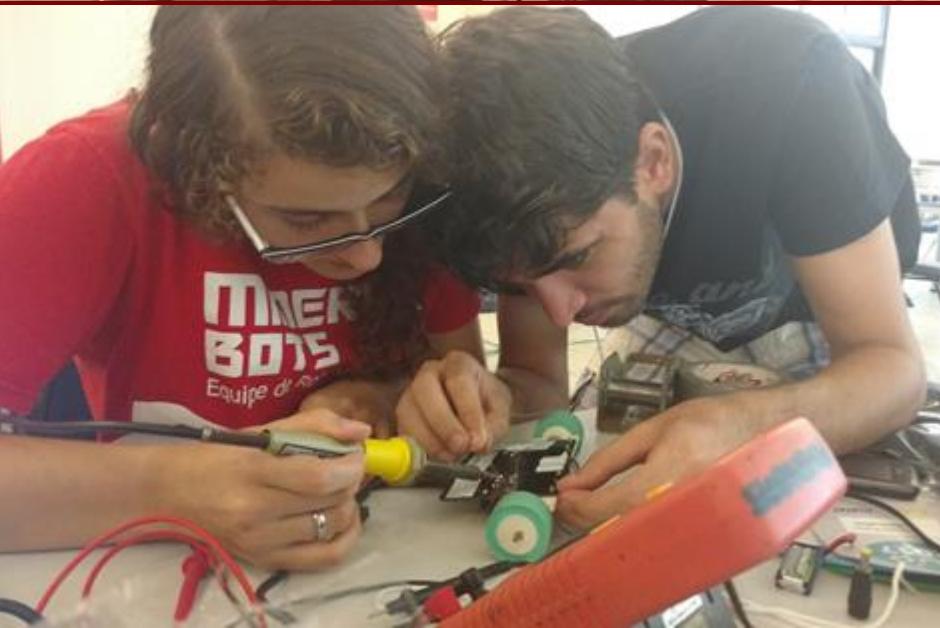
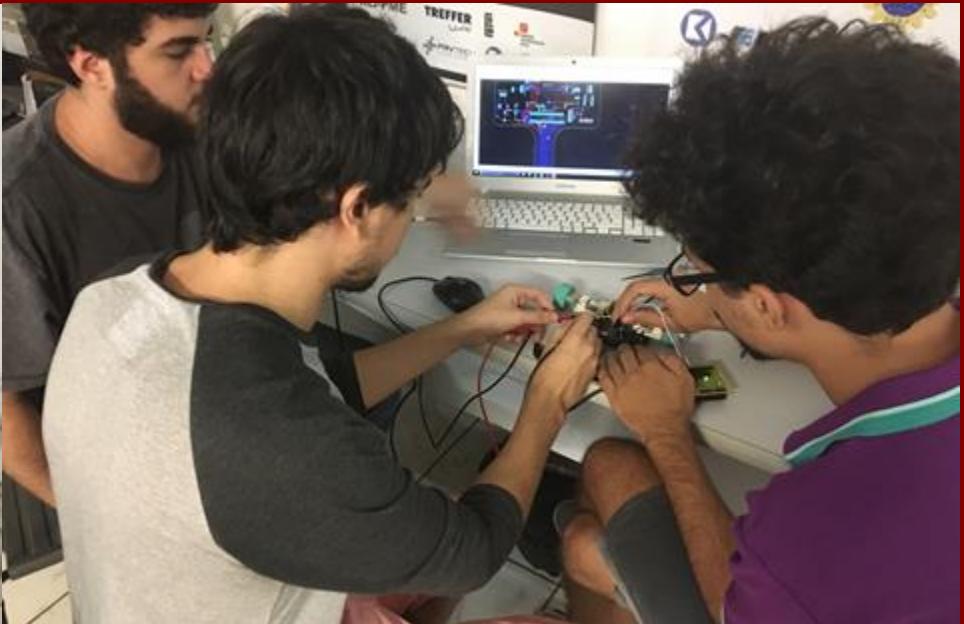
Competições



Conquistas



Áreas



Mecânica



Mecânica - Maquinário



Esmerilhadeira

Furadeira de Bancada/Manual



Esmeril



Torno Mecânico

Mecânica – Maquinário

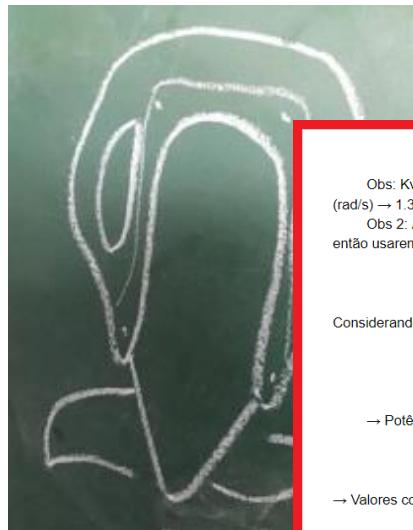


Solda a arco elétrico

Corte de Alumínio na
Policorte



Evolução do Projeto



Obs: Kv deve estar em unidades do sistema Internacional (rad/s) → 1.375 RPM/V = 144 rad/s.V
Obs 2: A Voltagem máxima que o motor aguenta é de 14,4 V, então usaremos esse valor para o cálculo da Velocidade Angular.

$$\omega = 144 \times 14,4 = 2.073 \text{ rad/s}$$

Considerando uma Eficiência do motor de 85%, temos:

$$T = 0,07 \times 0,85 = 0,0595 \text{ N.m}$$
$$\omega = 2.073 \times 0,85 = 1.762 \text{ rad/s}$$

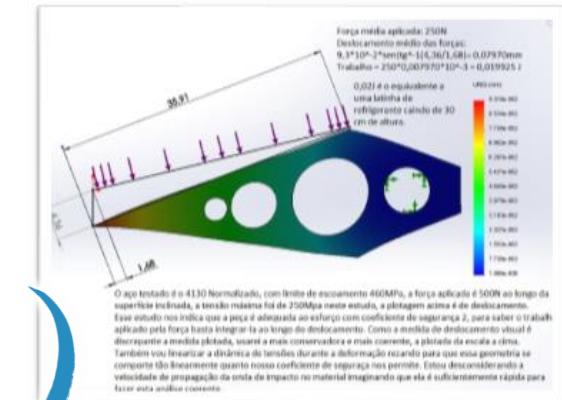
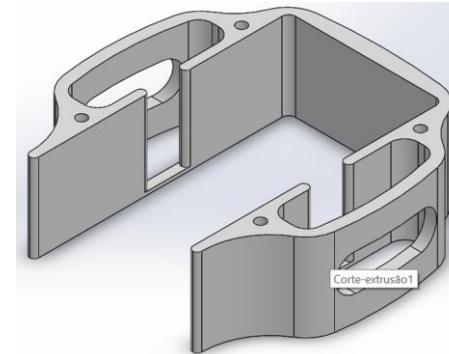
→ Potência:

$$P = T \times \omega = 0,0595 \times 1.762 = 105 \text{ W}$$

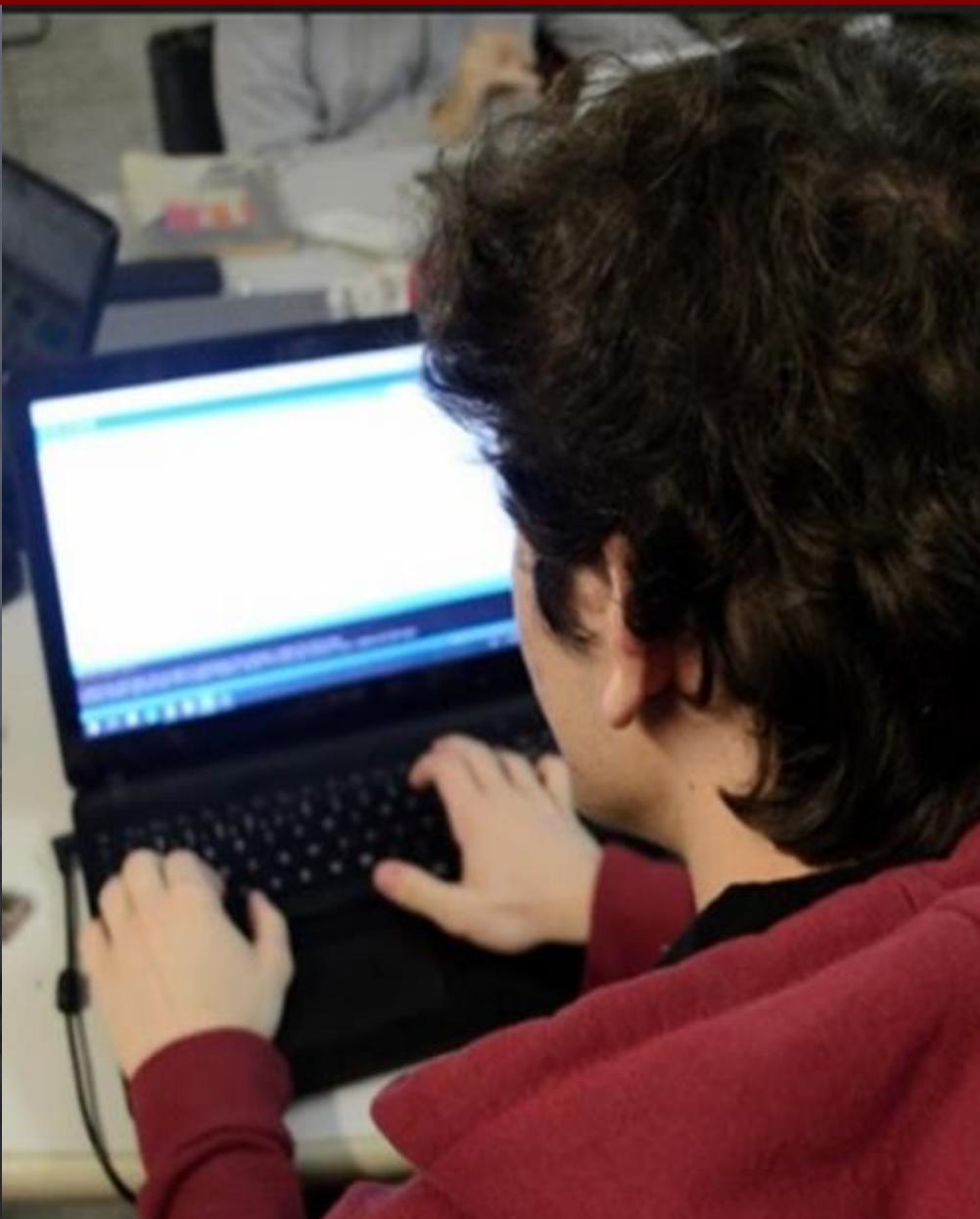
→ Valores com Redução:

Para obtermos valores próximos aos calculados anteriormente, concluímos que o ideal seria usar uma redução de 16:1. Com isso, temos, por fim, os seguintes resultados:

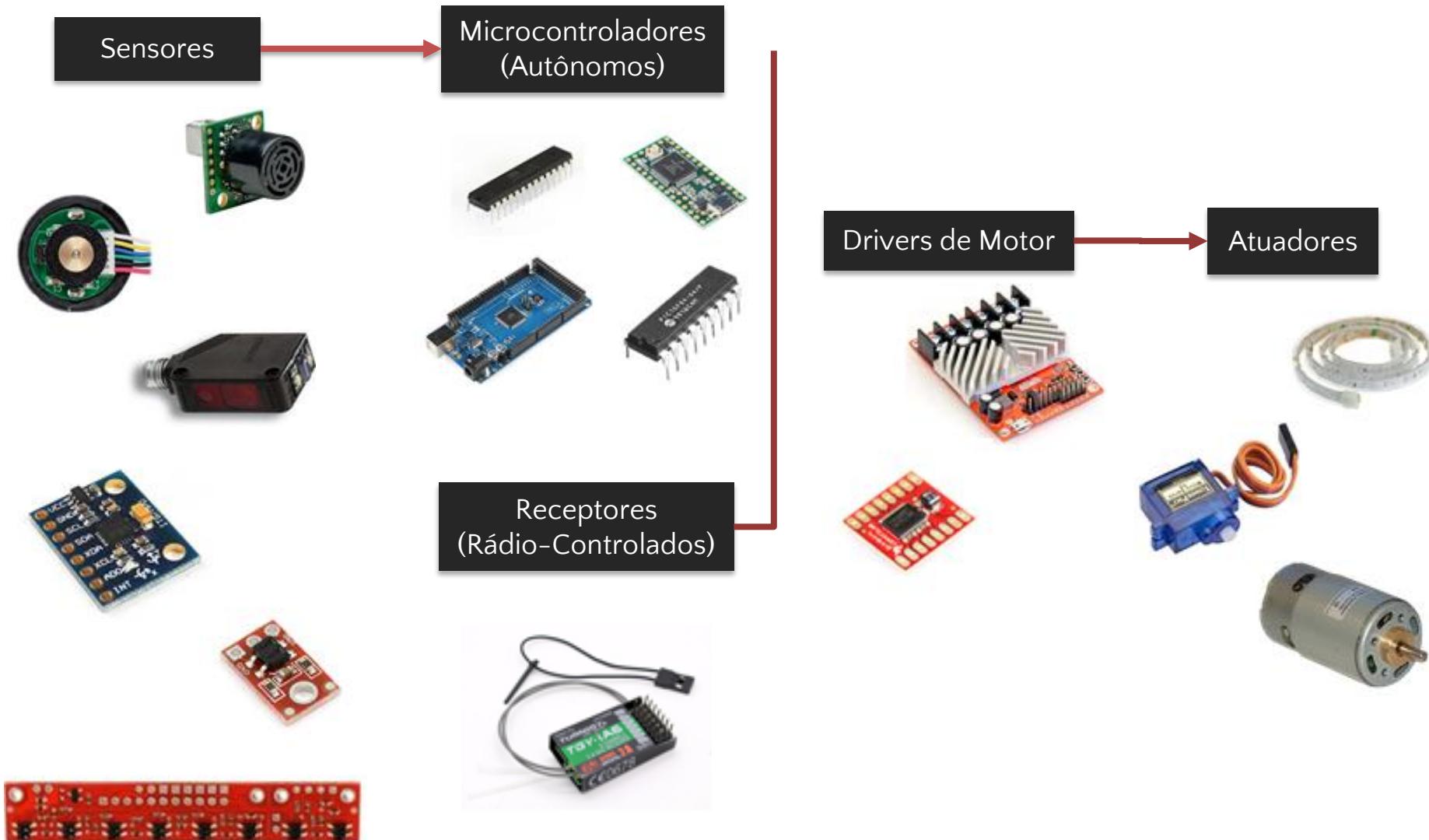
$$T = 0,0595 \times 16 = 0,952 \text{ N.m}$$
$$\omega = 1.762 / 16 = 110,125 \text{ rad/s}$$



Eletrônica e Programação

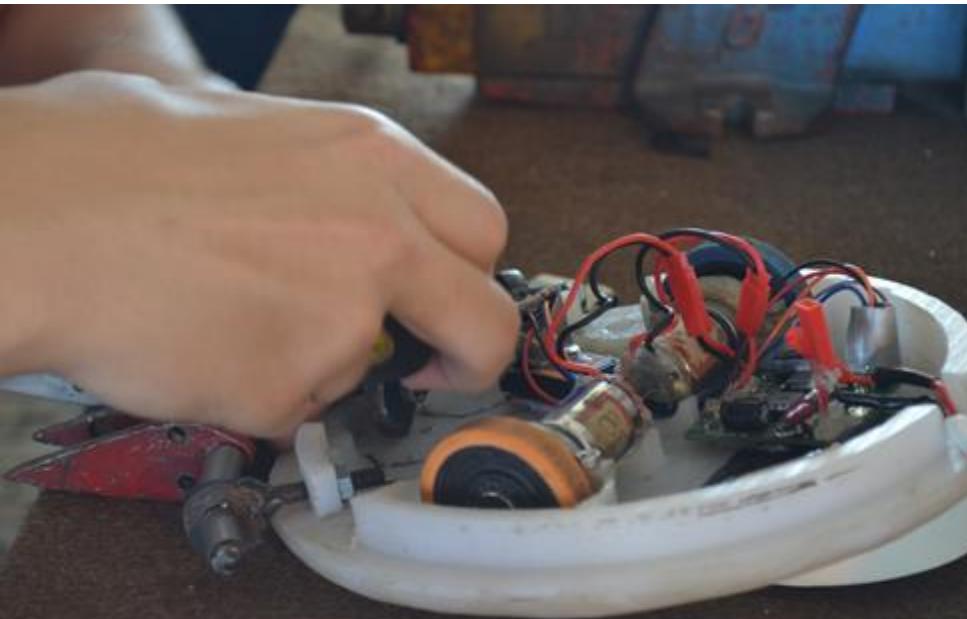
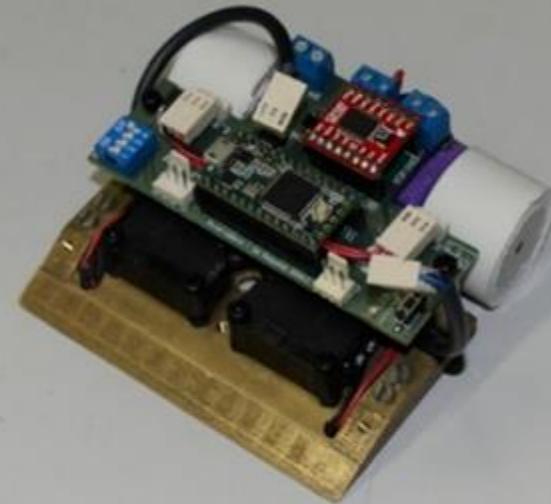


Eletrônica e Programação



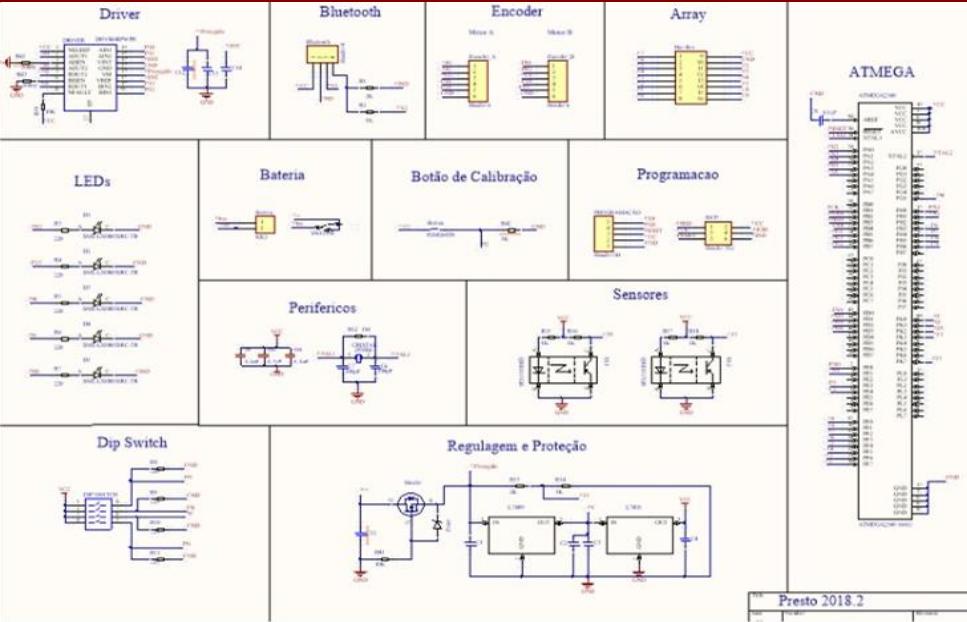
Eletrônica - Sensores e Atuadores

Usamos **sensores** que medem **distância**, que identificam **cor** e outros

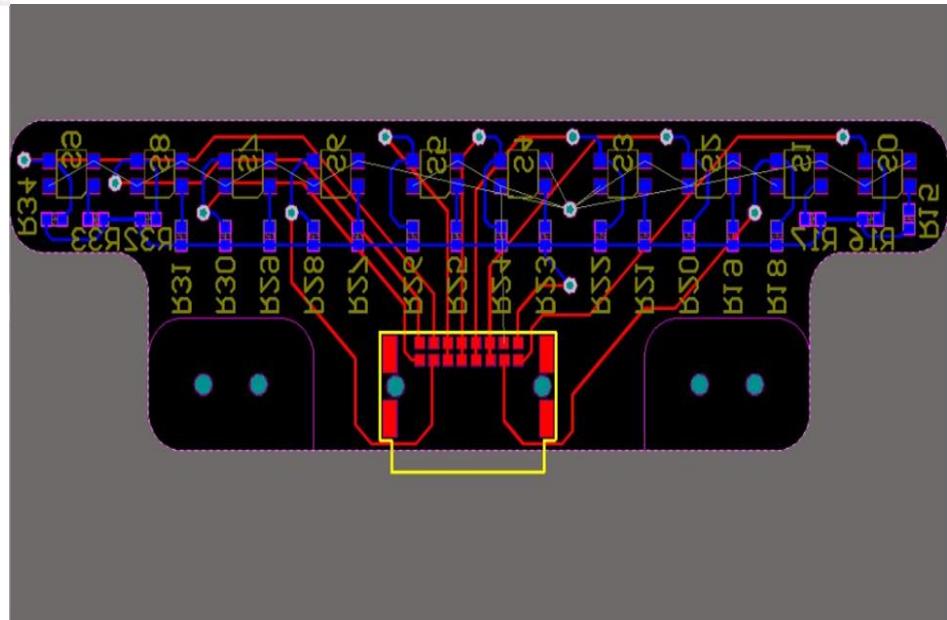


Fazemos a eletrônica para controlar os motores

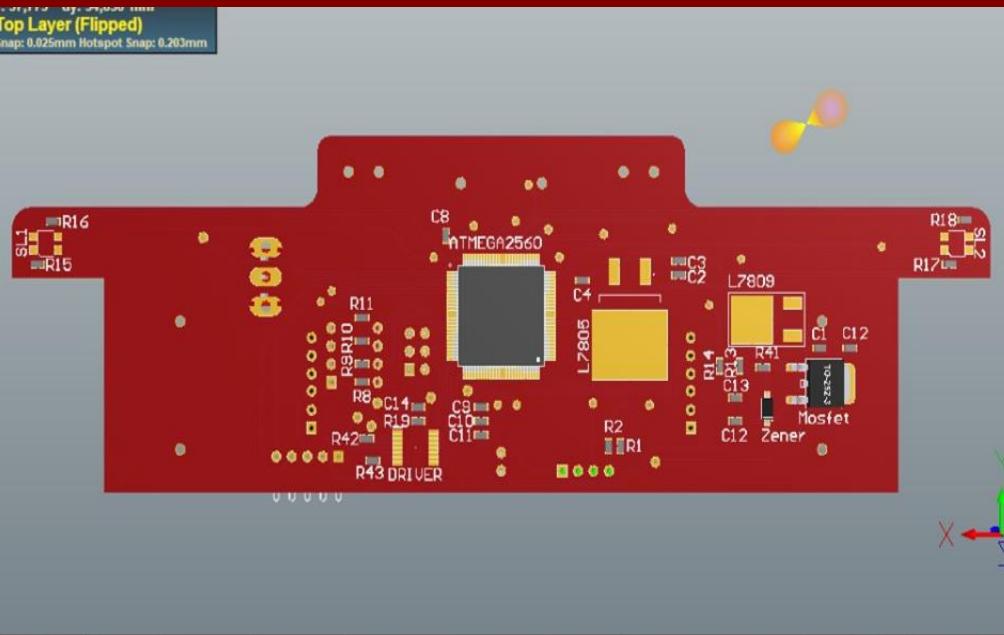
Eletrônica - PCBs



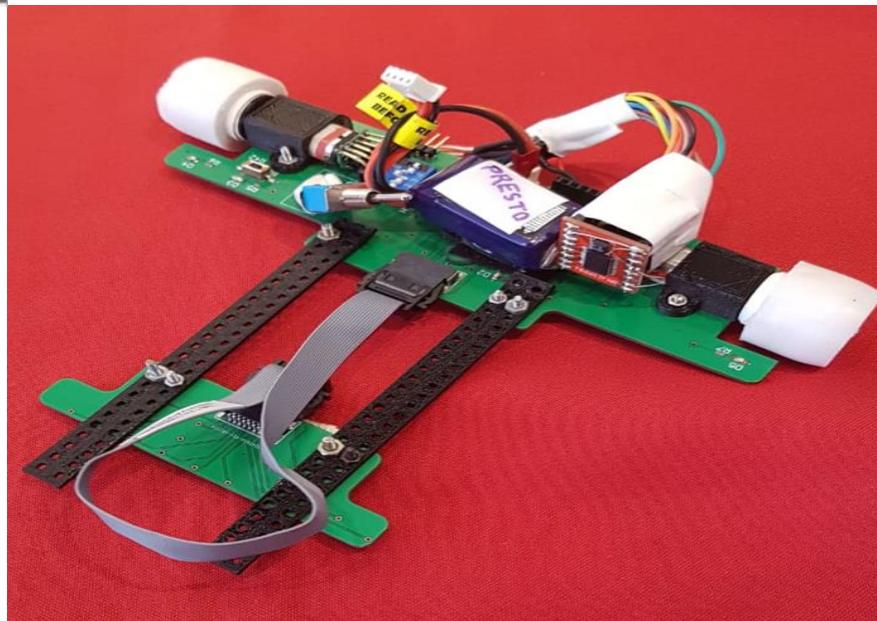
Fazemos o **projeto** de placas



Eletrônica - PCBs



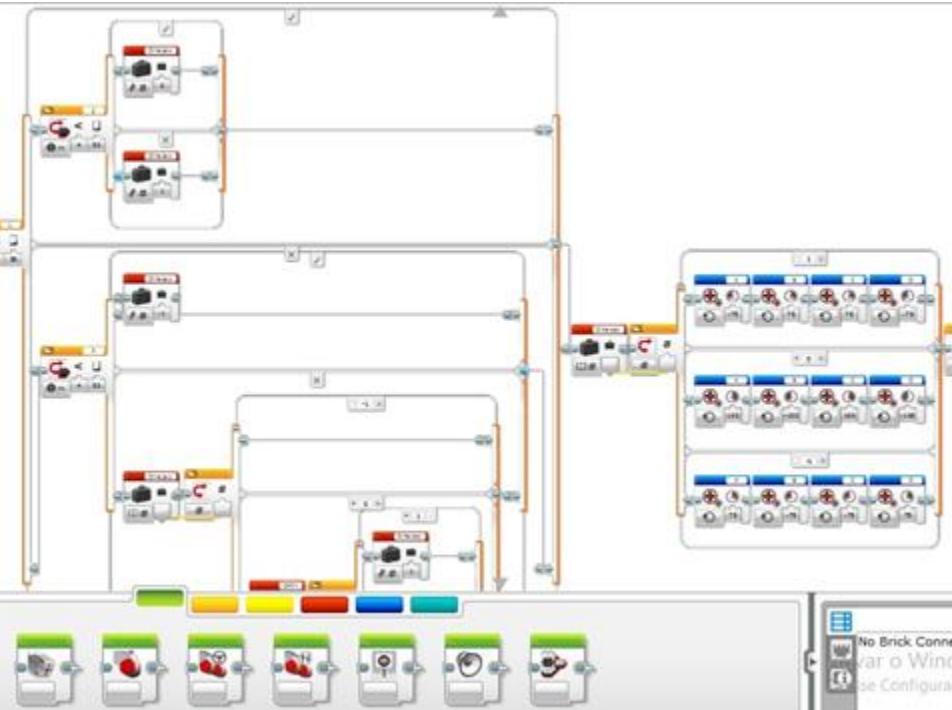
E transformamos em **realidade**



Programação

Utilizamos diversas **linguagens**

Linguagem baseada
em Labview



C++ usando a IDE
do Arduino

The screenshot shows the Arduino IDE interface with the title bar "Blink | Arduino 1.6.13". The code editor displays the classic "Blink" sketch:

```
// the setup function runs once when you press reset or power the board
void setup() {
  // initialize digital pin LED_BUILTIN as an output.
  pinMode(LED_BUILTIN, OUTPUT);
}

// the loop function runs over and over again forever
void loop() {
  digitalWrite(LED_BUILTIN, HIGH);    // turn the LED on (HIGH is the voltage level
  delay(1000);                      // wait for a second
  digitalWrite(LED_BUILTIN, LOW);     // turn the LED off by making the voltage LOW
  delay(1000);                      // wait for a second
}
```

The status bar at the bottom indicates "Pololu A-Star 32U4 on COM4".

Programação

Python

```
4  class OpenCVTracker(Tracker):
5      def __init__(self, detector, detectionIntervalMs, trackingMethodName = None):
6          Tracker.__init__(self, detector, trackingMethodName, detectionIntervalMs)
7
8      def setTrackingMethod(self, trackingMethodName):
9          self.methodName = trackingMethodName
10
11     def init(self, frame):
12         if not self.isRunning:
13             return False, [], []
14
15         detected, boundingBoxes, directions = self._detect(frame)
16         if detected:
17             self.clear()
18             for box in boundingBoxes:
19                 self._multiTracker.add(self._createTracker(), frame, tuple(box))
20
21         return detected, boundingBoxes, directions
22
23     def _track(self, frame):
24         success, boundingBoxex = self._multiTracker.update(frame)
25         directions = [self.detector.rectToDirection(box) for box in boundingBoxex]
26         return success, boundingBoxex, directions
```

Marketing



Marketing - Design e Redes sociais

“O Marketing é a ferramenta de comunicação com tudo o que é fora da equipe”



A collection of icons representing various marketing, design, and social media tools. It includes a blue play button icon, four colored squares containing the letters 'Ps' (blue), 'Ae' (purple), 'Ai' (orange), and 'Pr' (pink), followed by icons for Instagram, Facebook, and a smartphone displaying the Instagram and Facebook pages for 'minervabots'.

Categorias



Combate

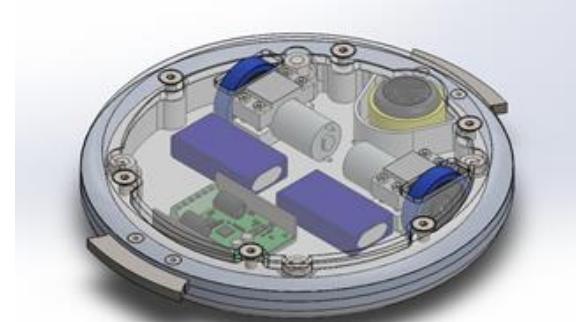


Combate



Robô Bigode

(Combate Beetleweight 1,4kg)



Robô Bixcoito

(Combate Beetleweight 1,4kg)



Robô MutAnt

(Combate Antweight 454g)



Robô Monxtro

(Combate Hobbyweight 5,4kg)

Sumô



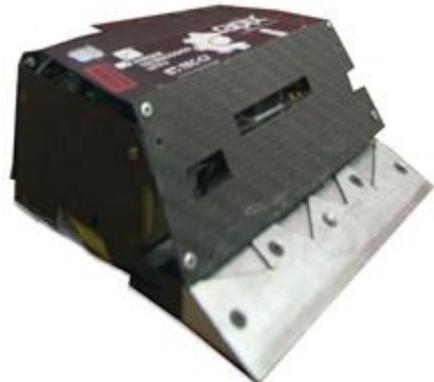
Sumô



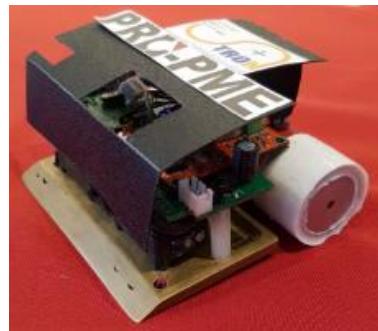
Arena de competição da categoria **Sumô**

Sumô

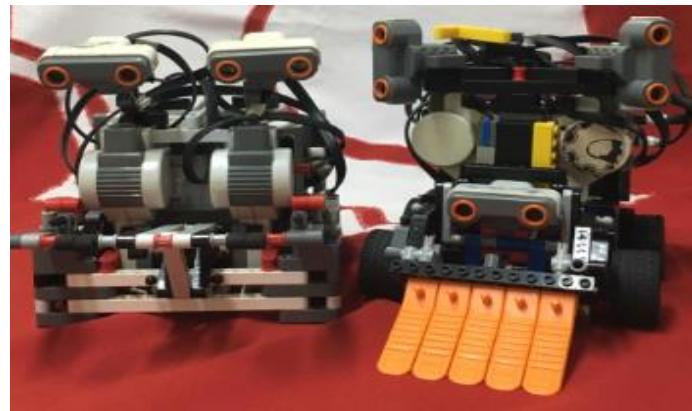
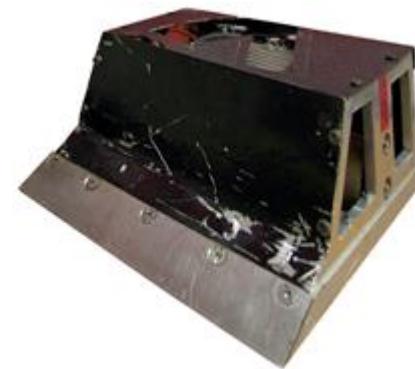
robô Auterna
(Sumô Autônomo 3kg)



robô Zé pequeno
(Mini-sumô Autônomo 500g)

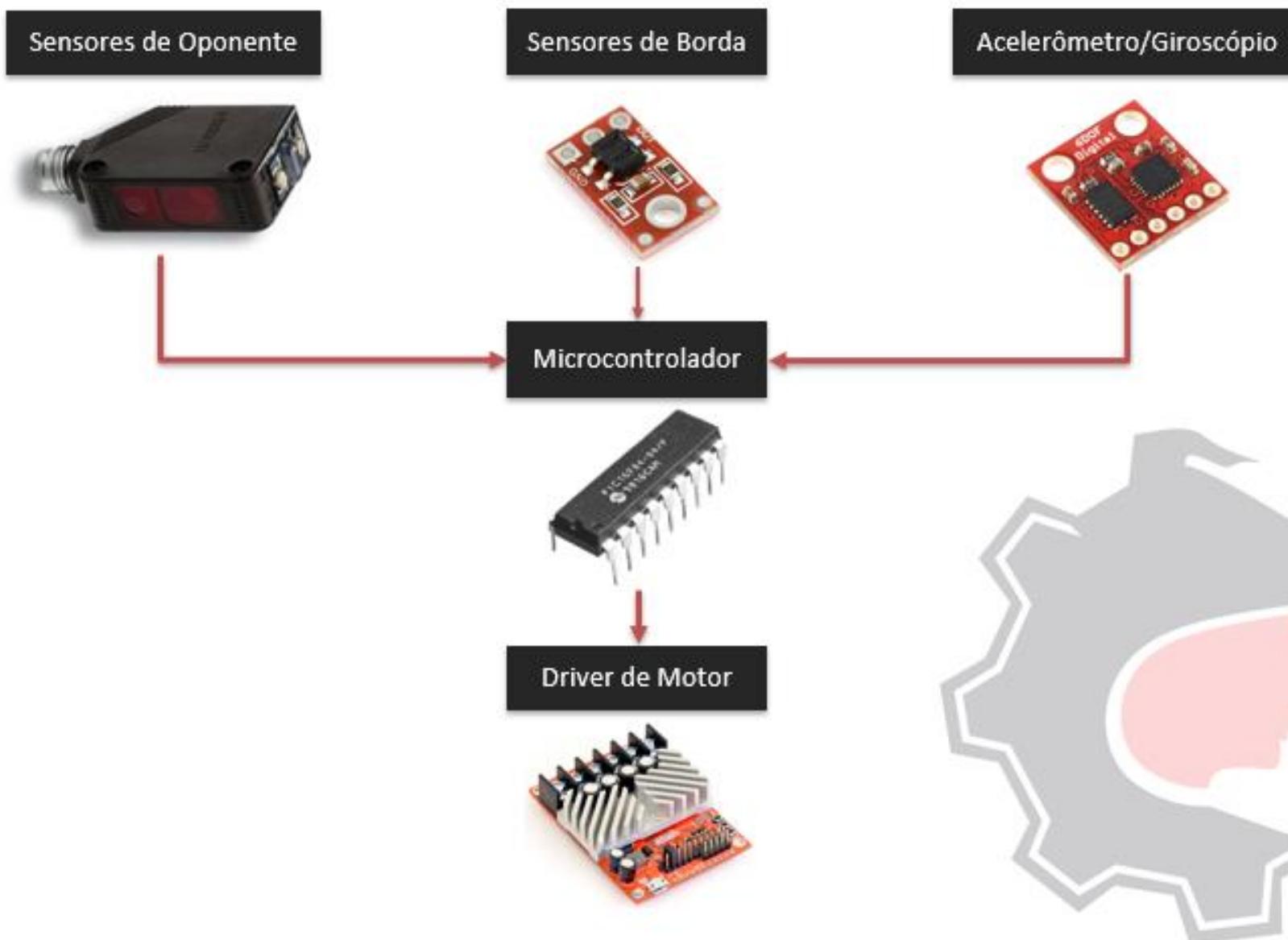


robô Valeska
(Sumô Rádio Controlado 3kg)



robôs Treta & Mc Brinquedo
(Sumô Autônomo Lego 1kg)

Sumô - Eletrônica/Controle

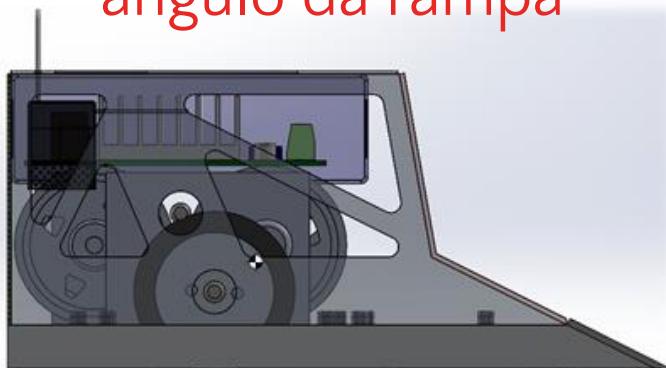


Sumô - Mecânica

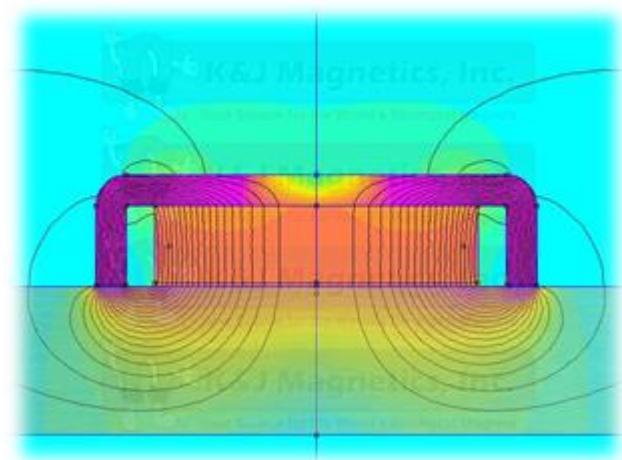
Análise do campo de visão



Otimização do
ângulo da rampa



Cálculo da força magnética

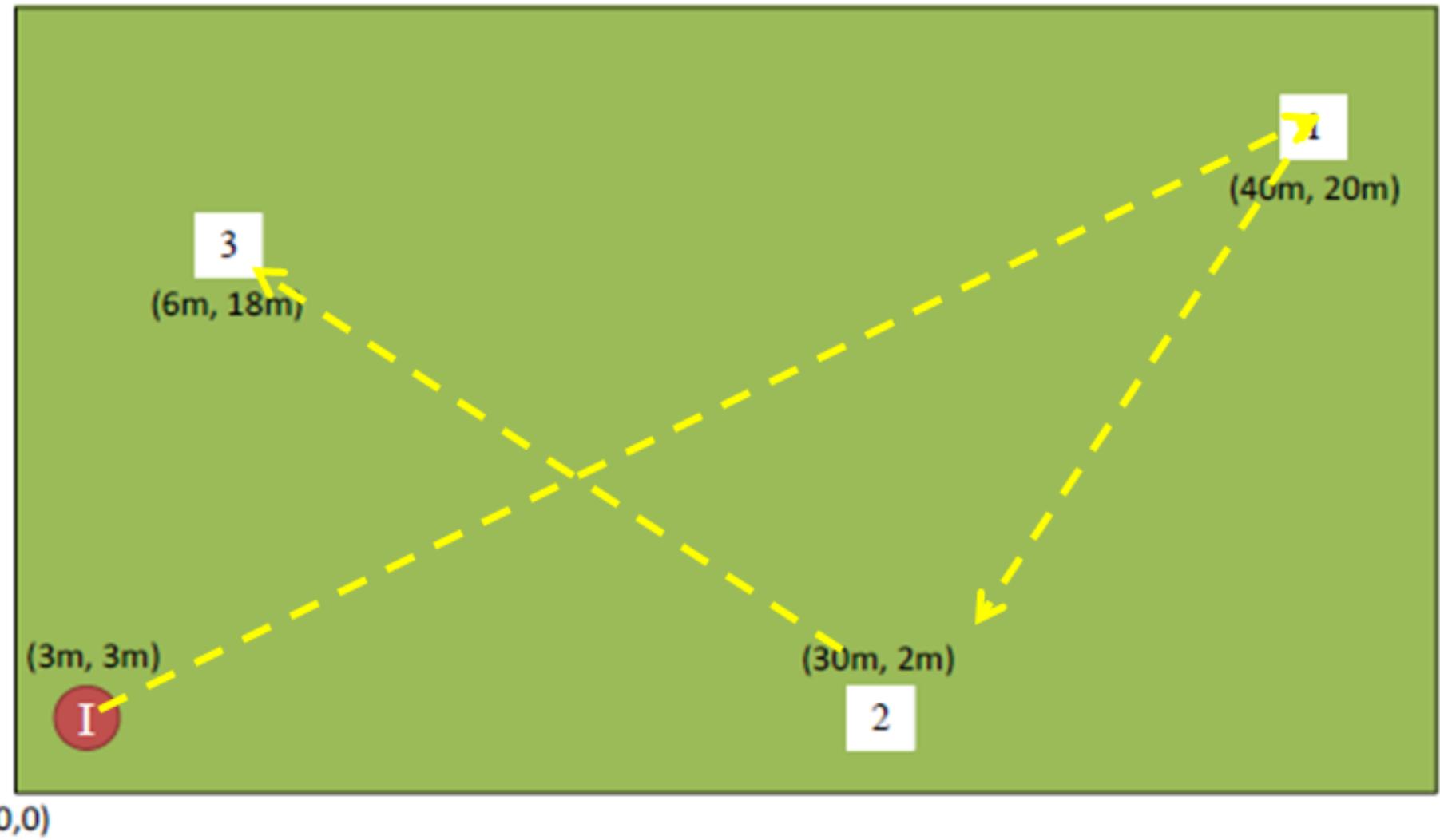


Trekking



Robô São Longuinho

Trekking



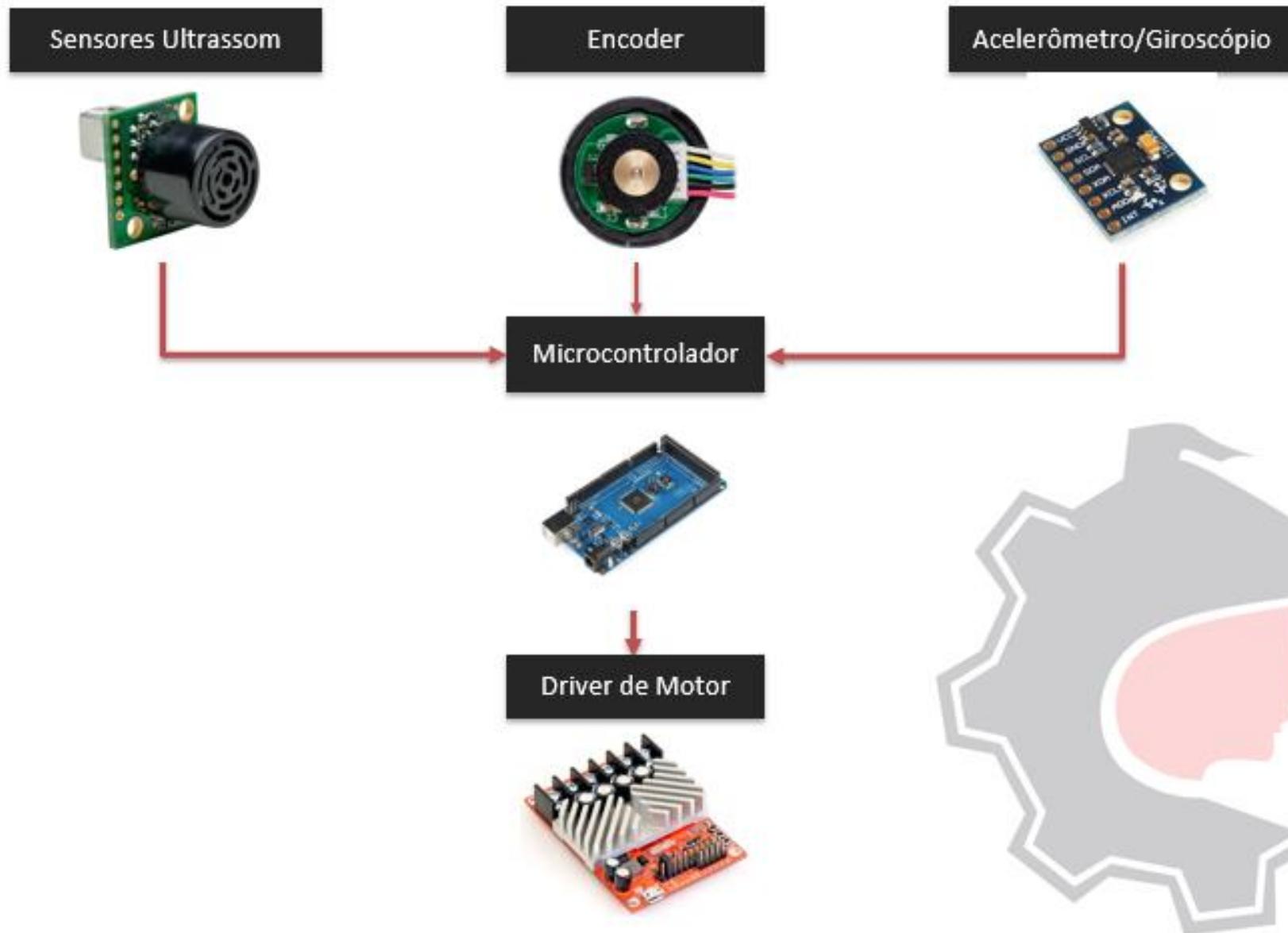
Trekking

Sensoriamento diverso e preciso

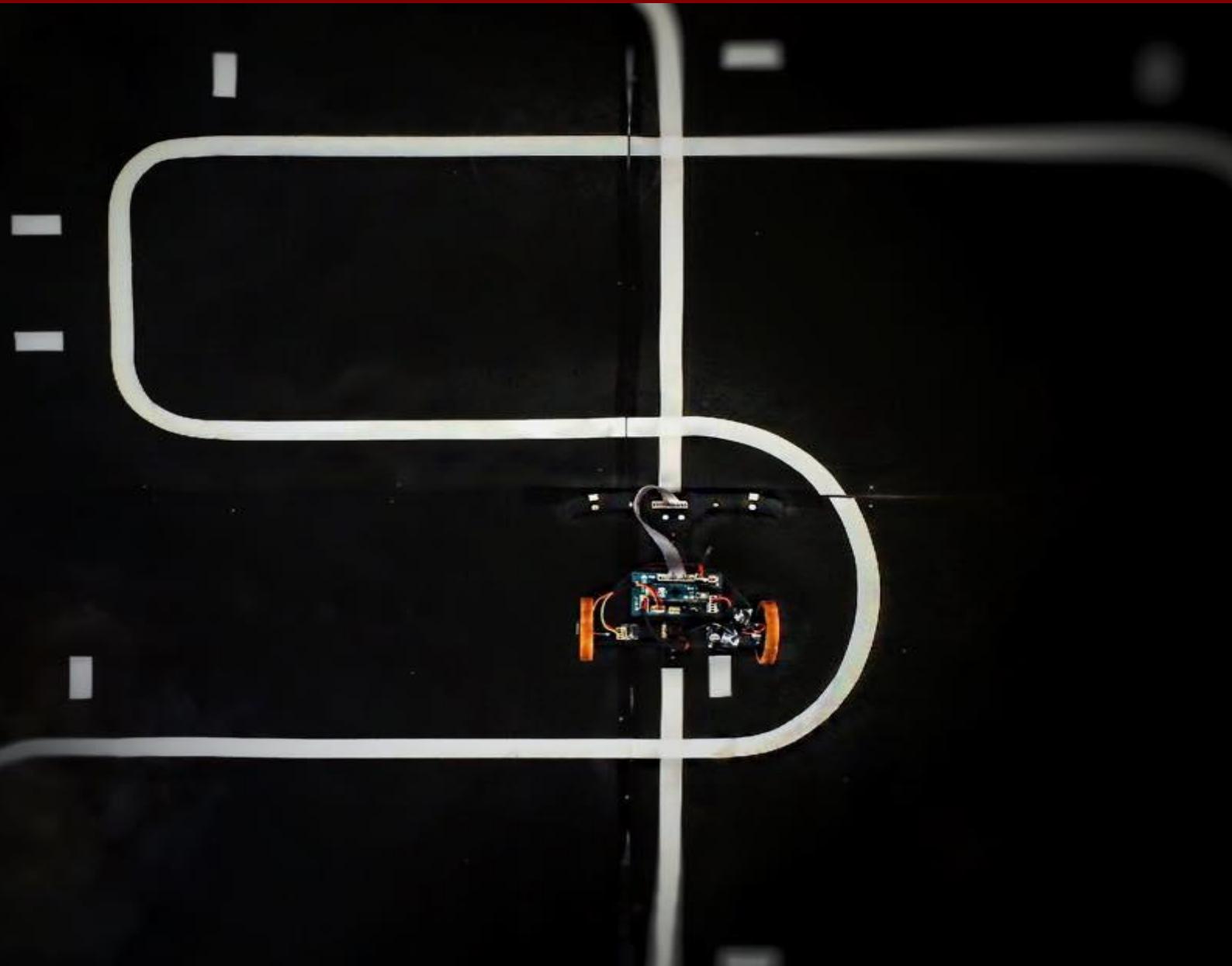
Adaptabilidade a condições adversas

Controle avançado

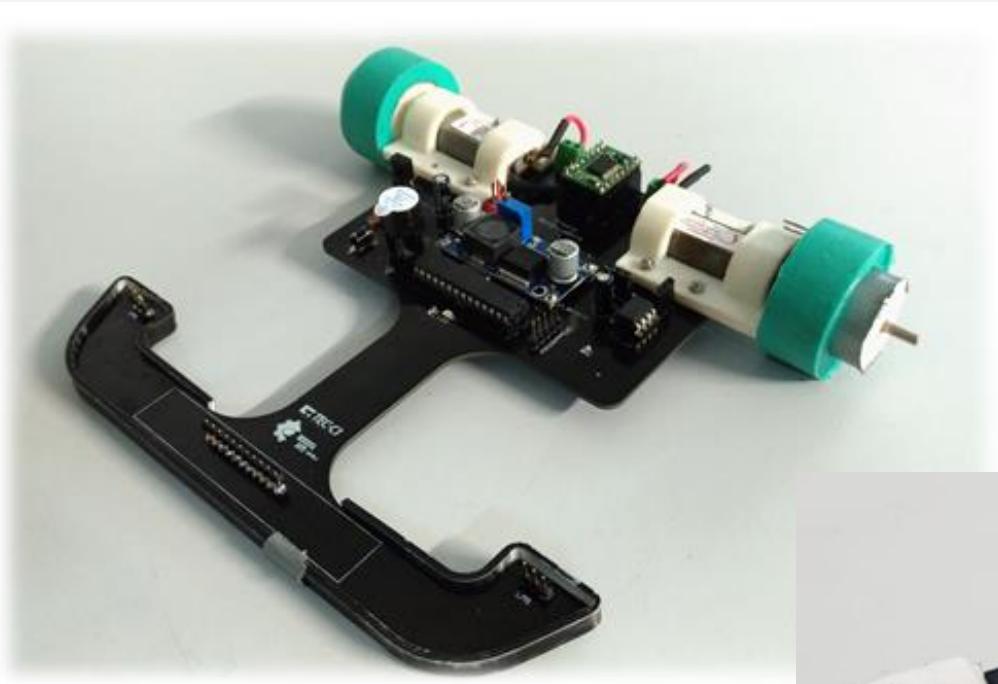
Trekking - Eletrônica/Controle



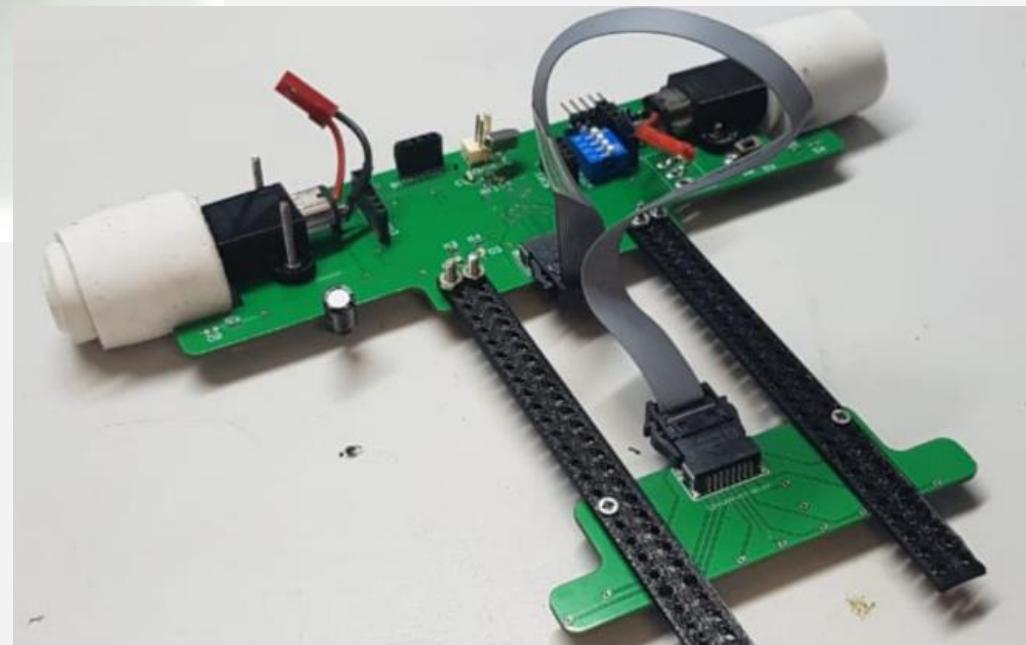
Seguidor de Linha



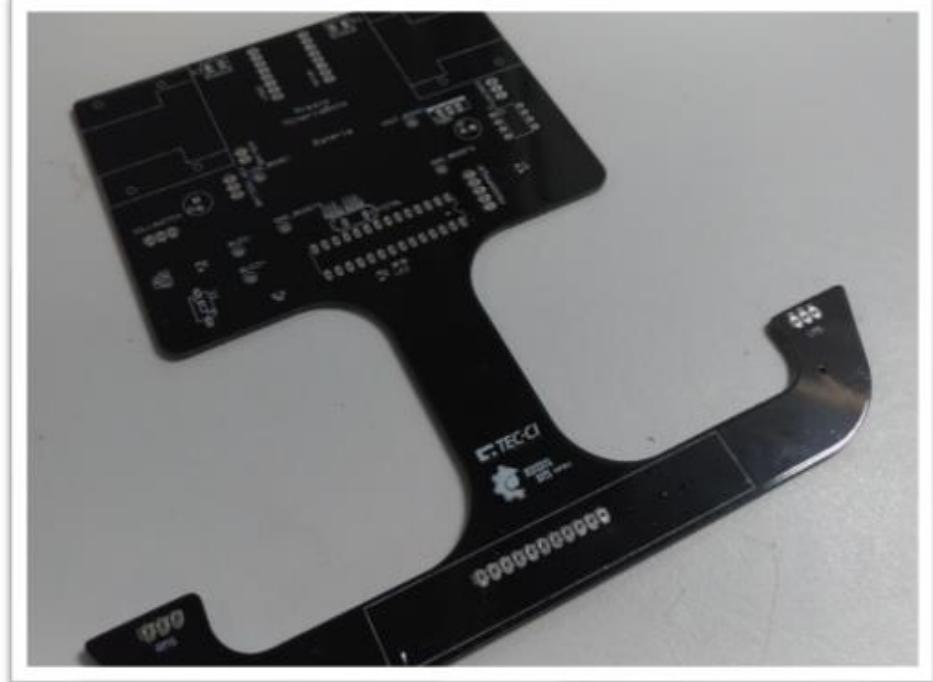
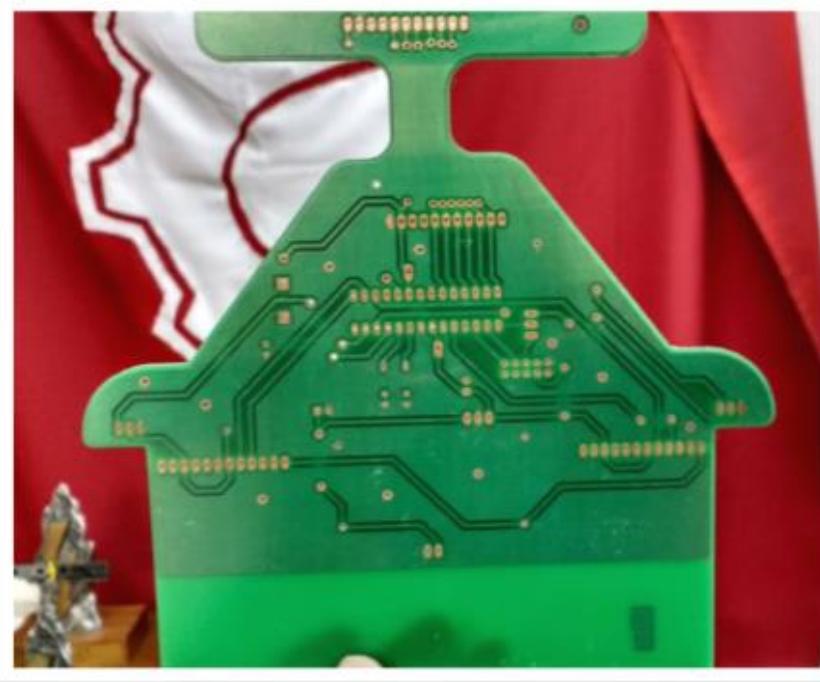
Seguidor de Linha



Robô Presto
(Seguidor de Linha PRO)



Seguidor de Linha

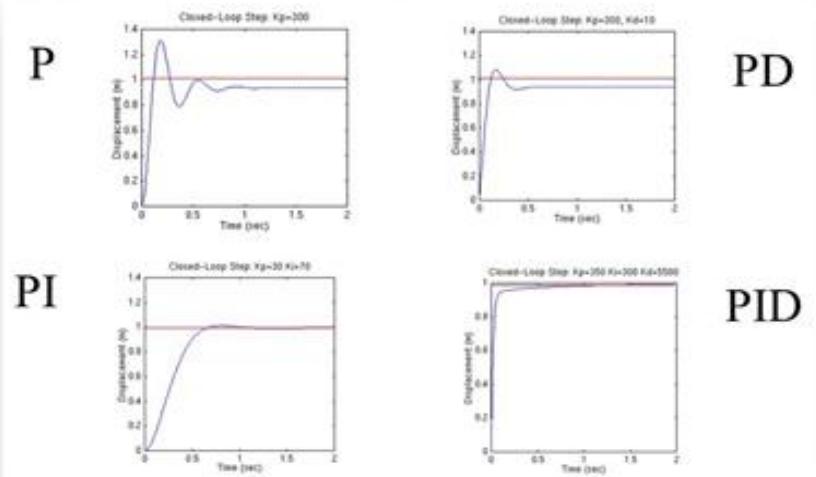
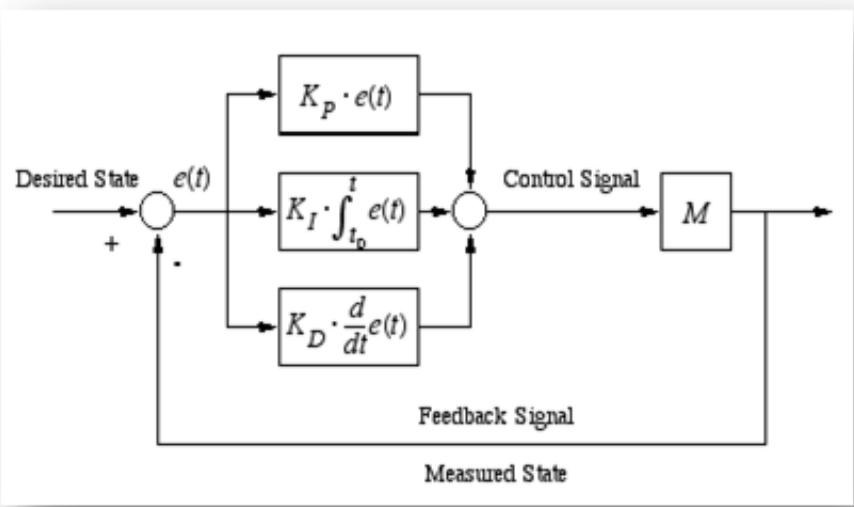


Integração
mecânica/eletrônica

Seguidor de Linha



-50 0 50



Processo Seletivo

1^a Fase: Formulário

2^a Fase: Entrevista

3^a Fase: Capacitação

+ Período Trainee

Processo Seletivo

Em caso de dúvidas:

minervabotscontato@gmail.com

(24) 98114-4683 – Leonardo Garcia
Coordenador do Processo Seletivo

Gostou da equipe?

**Então participe do
nosso Processo
Seletivo!
As inscrições são até
o dia 07/04!**

**Venha nos
visitar!
Nossa sala é
I-101
(subsolo do
C, ao lado
dos
correios)**



MINERVA BOTS

Equipe de Robótica da UFRJ

Acompanhem nossas redes sociais!



facebook.com/minervabots



instagram.com/minervabots



youtube.com/MinervaBots

Equipe UFRJ MinervaBots – Sala I-101 – Centro de
Tecnologia da UFRJ, Cidade Universitária – Rio de
Janeiro, RJ