Tussentijdse presentatie: EPIC WAGGIE

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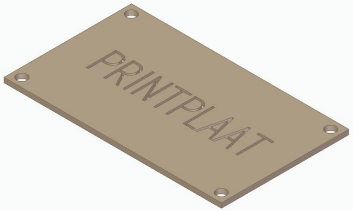
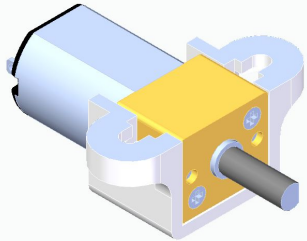
OPGAVE: AUTO

- Lijn Volgen
- Stoplijn
- Verkeerslicht detecteren
  - Groen : Doorrijden
- Obstakels detecteren
- Parcour afleggen

ONDERDELEN : EPIC WAGGIE

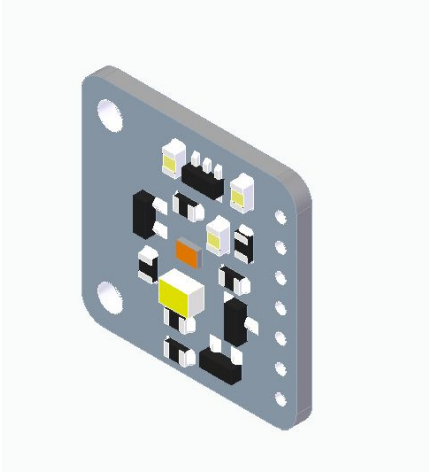
- 2 Motoren + beugel ⇒ 2 Wielen (42 x 19)
- Ballcaster
- NI MyRIO
- 2 Lithium-ion batterijen
- Printplaat
- Motorshield

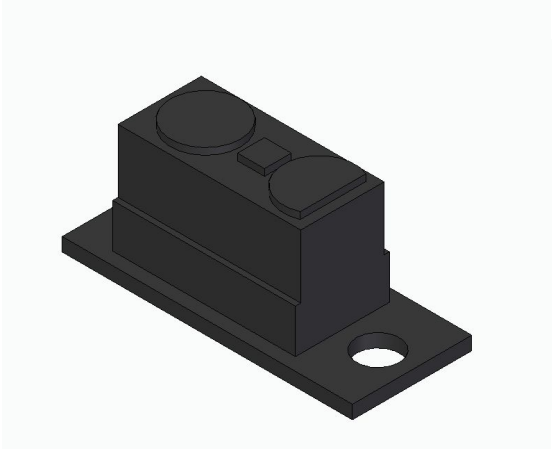




ONDERDELEN : EPIC WAGGIE

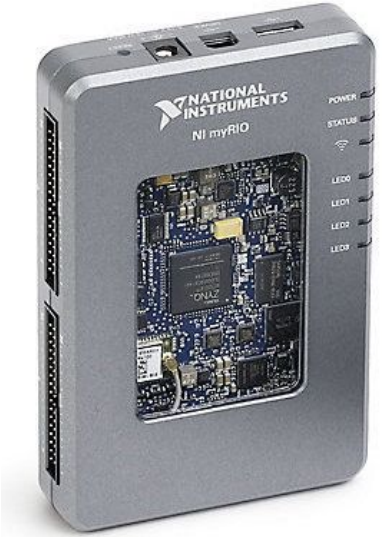
- TCS34725 Kleur sensor BOB (Analoog)
- QTR-8A reflectie sensor array (Analoog)
- Optische Afstandssensor (Digitaal)





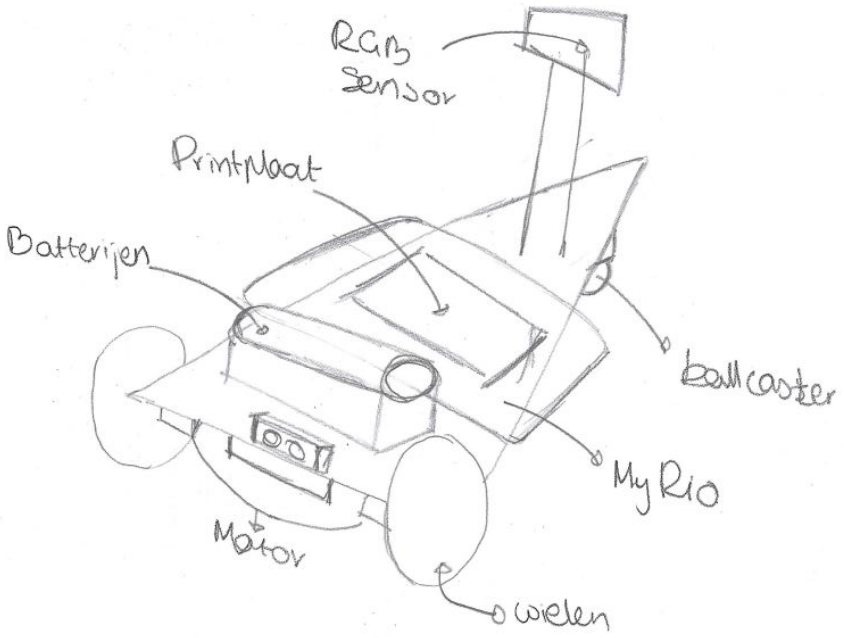
NI MyRIO

- National instruments
- Ingebed computersysteem
- LabView
- Ingenieursprojecten
- Basis applicaties



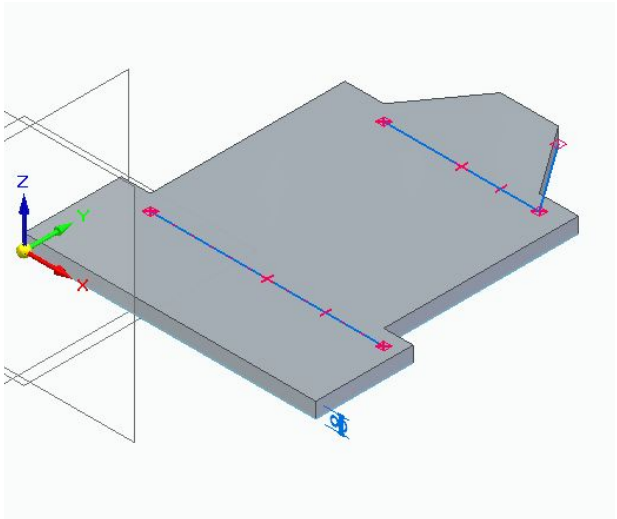
ONTWERPPROCES : EPIC WAGGIE

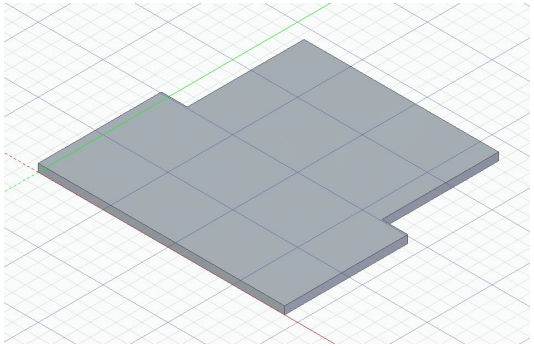
- Eerste schets ⇒ Chassis : Driehoek
- Probleem:
  - Geen plaats voor alle componenten

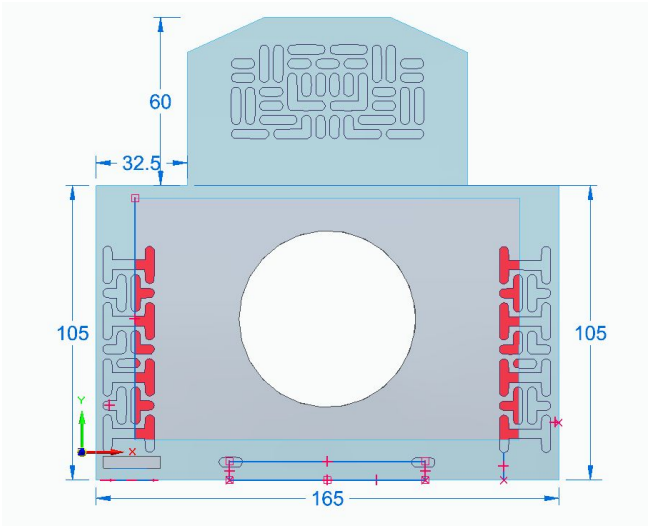


ONTWERPPROCES : EPIC WAGGIE

- Breedere chassis

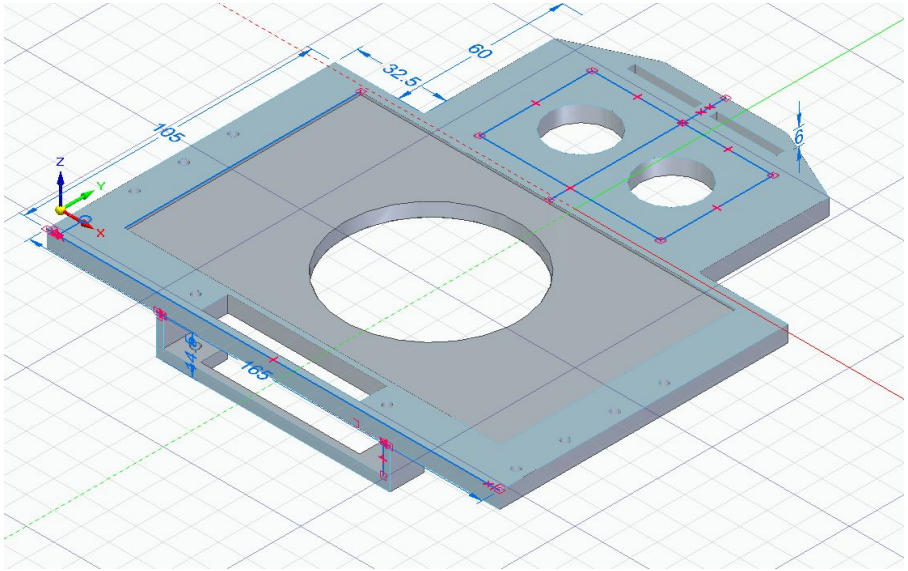






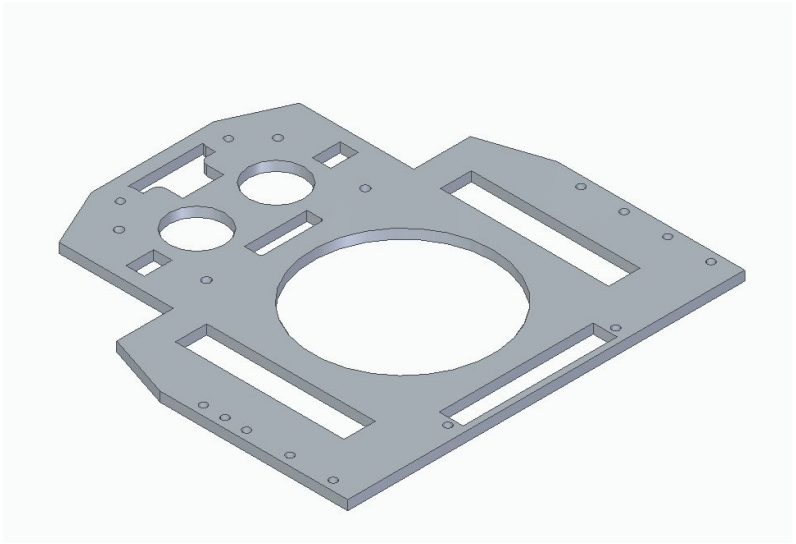
CHASSIS : PROBLEEMPJES

- NI MyRio
- Ballcaster
- Sensors
  - Afstand sensor
  - RGB sensor
  - Lijnsensor

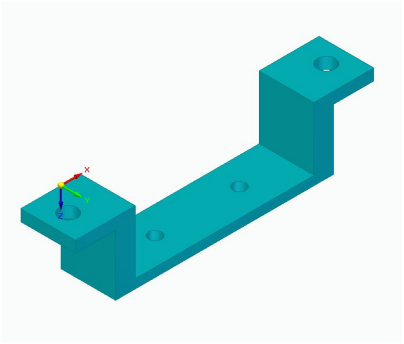


CHASSIS : OPLOSSING

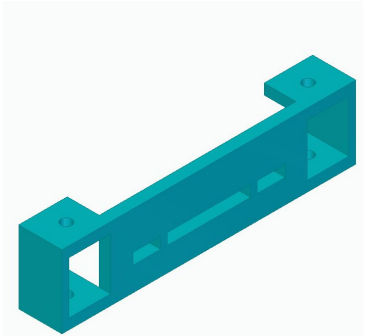
- Aparte componenten
- Printplaat boven de batterijen



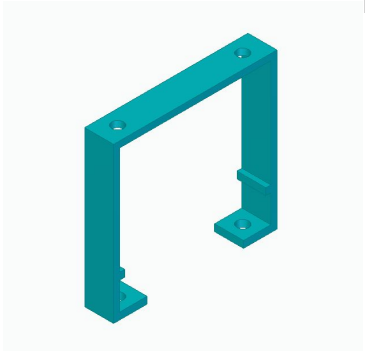
Ballcaster



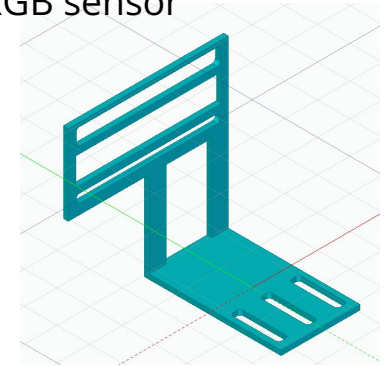
Lijn + Afstand sensor



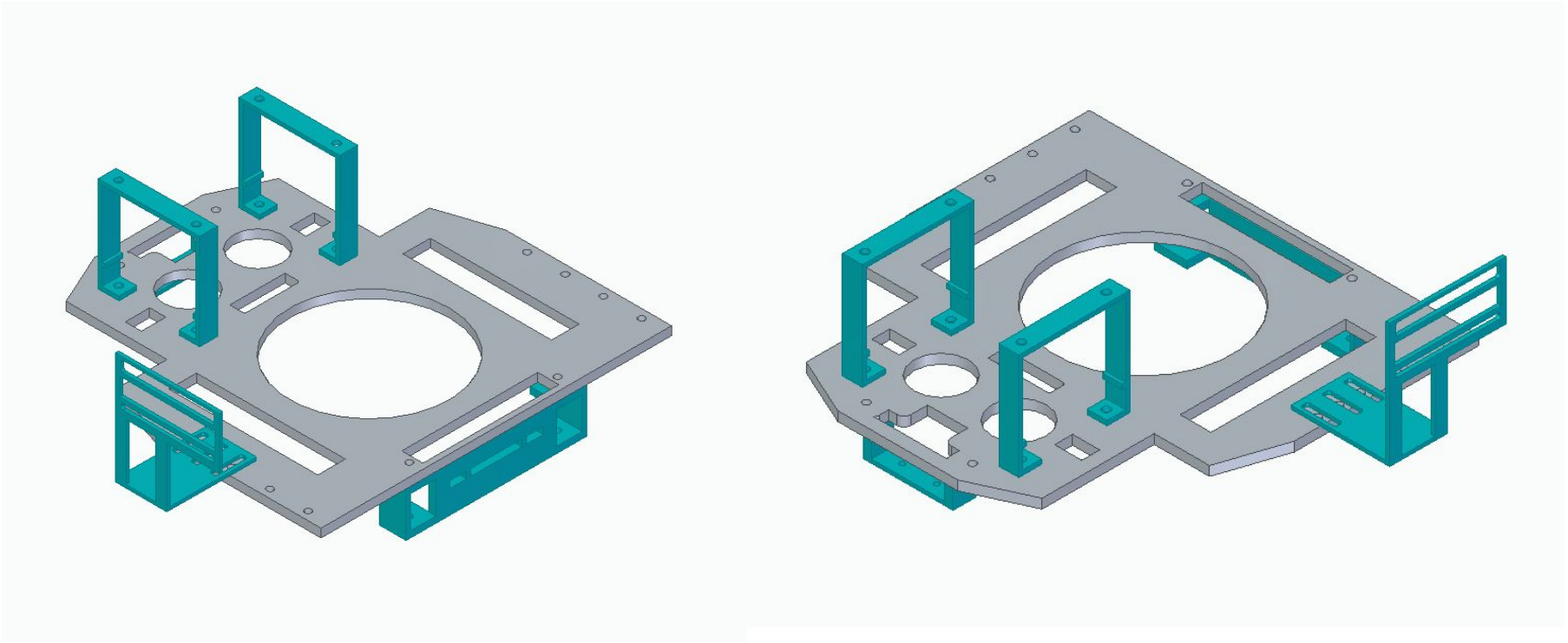
Printplaat



RGB sensor

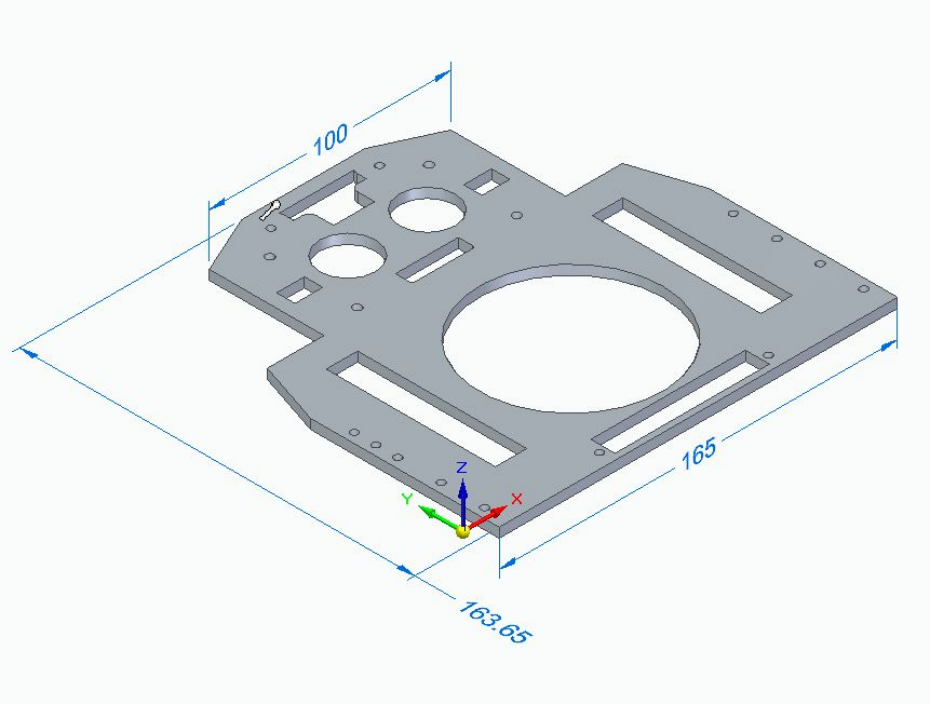


CHASSIS : EPIC WAGGIE

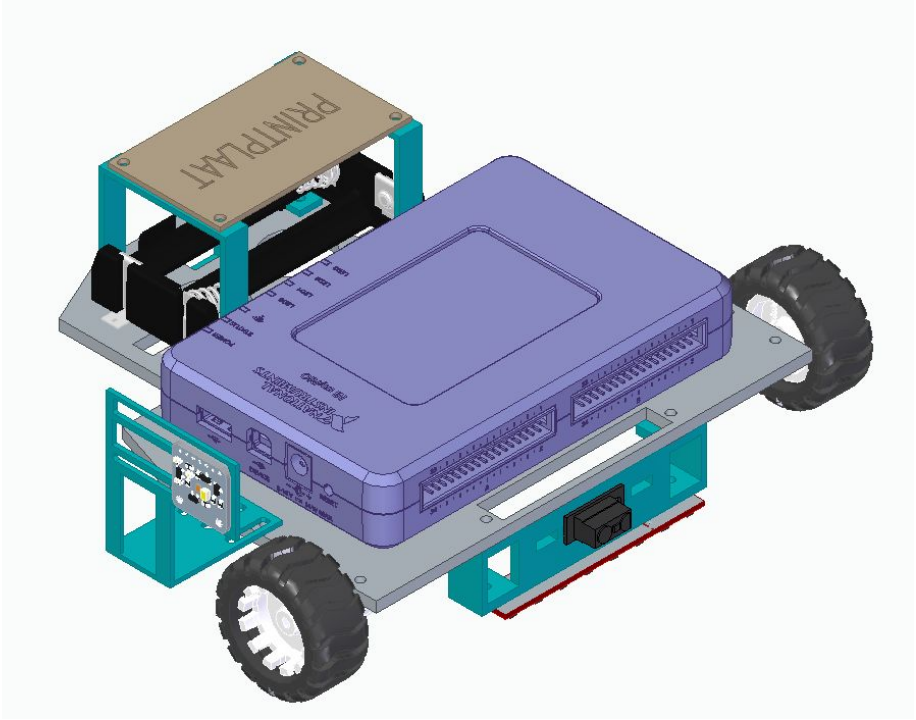


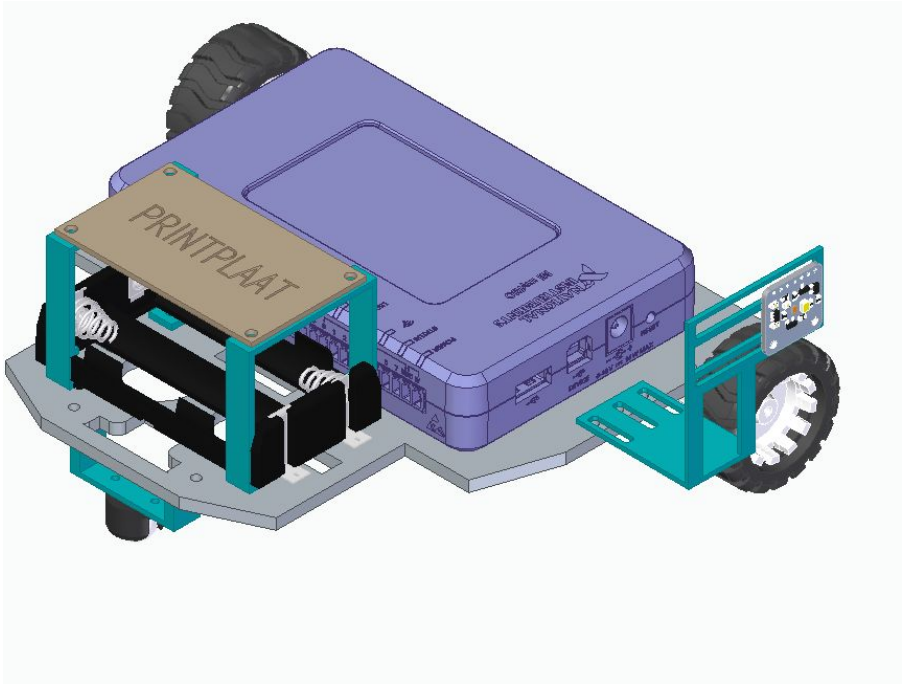
CHASSIS

- 20 %
- Volume : 71244,3 mm³
- +/- 125 - 140 credits

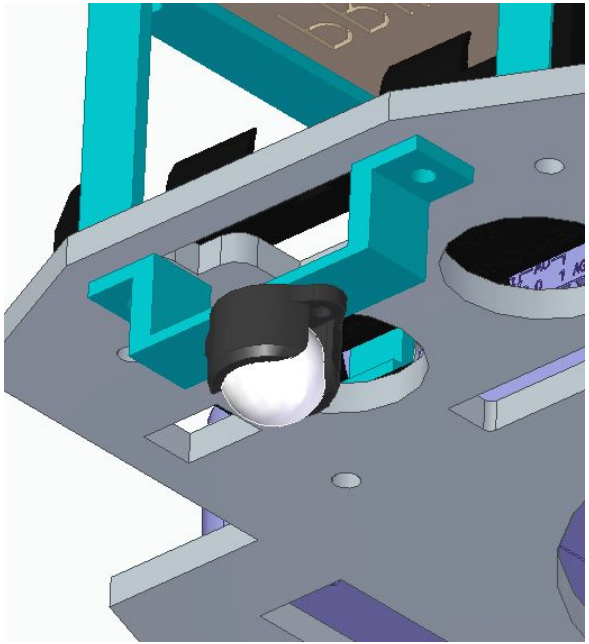


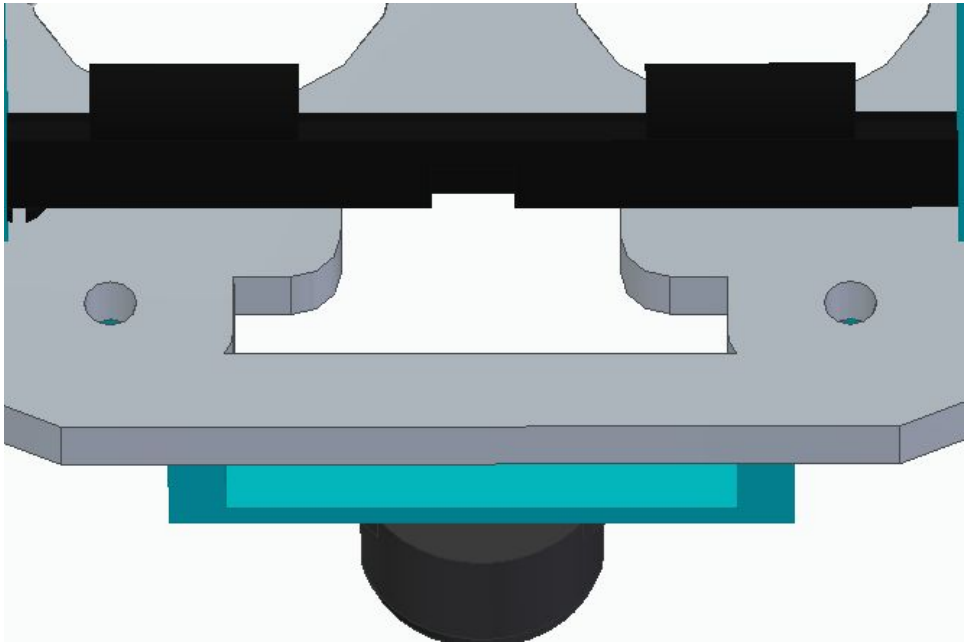
EPIC WAGGIE



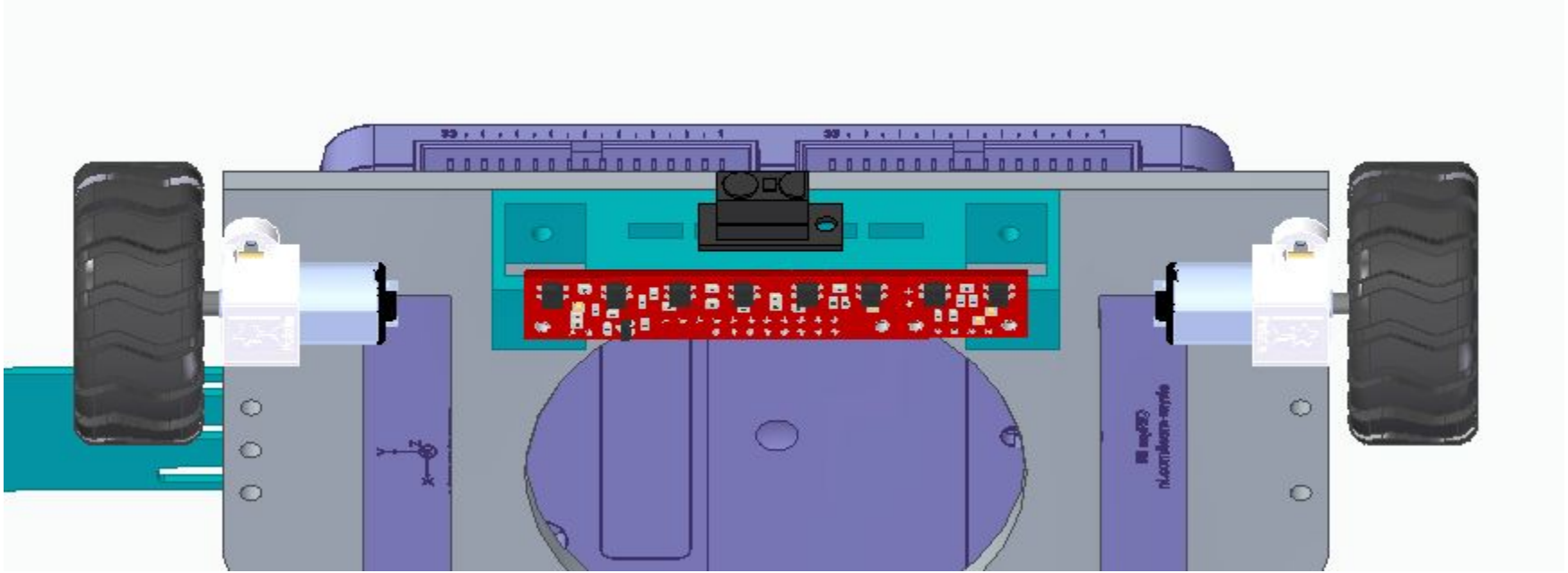


EPIC WAGGIE : BALLCASTER

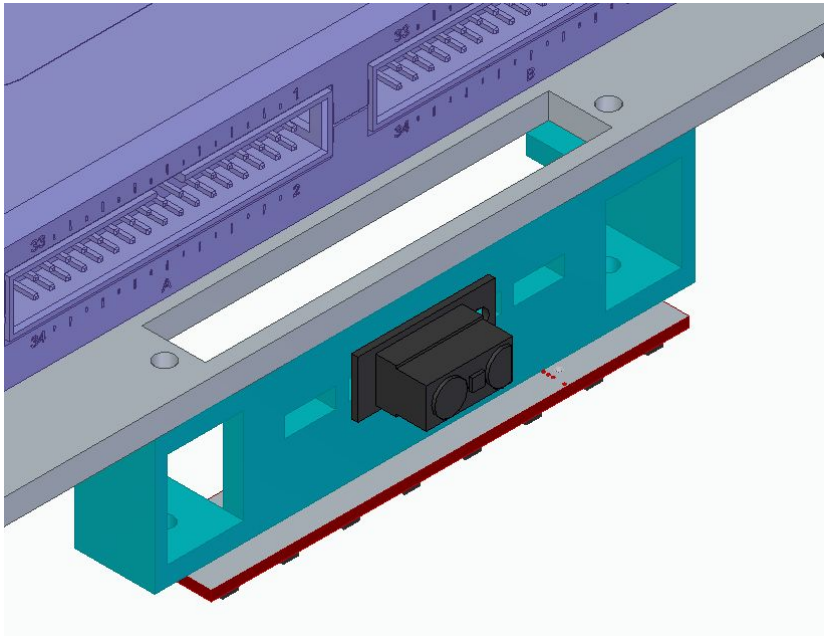


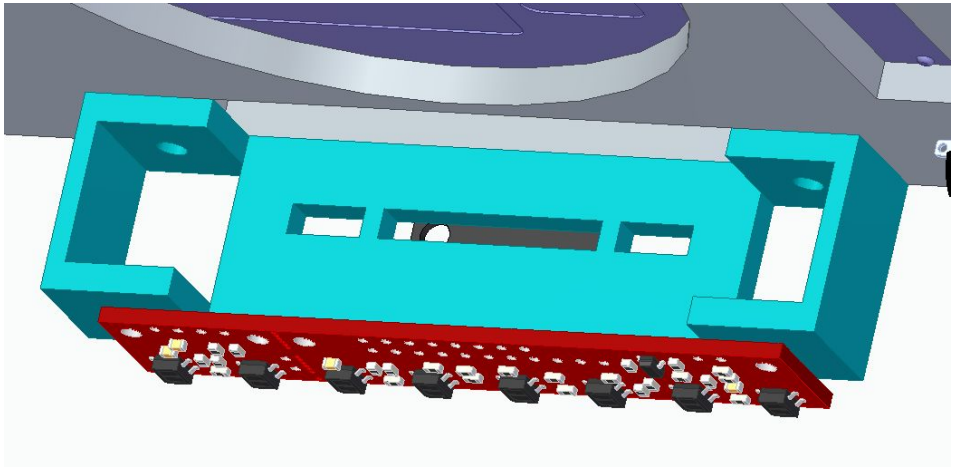


EPIC WAGGIE : WIELEN EN MOTORS

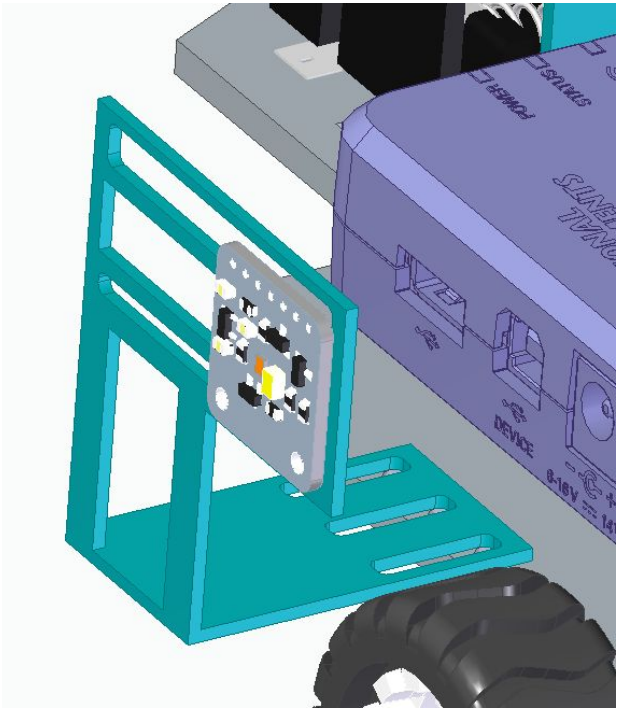


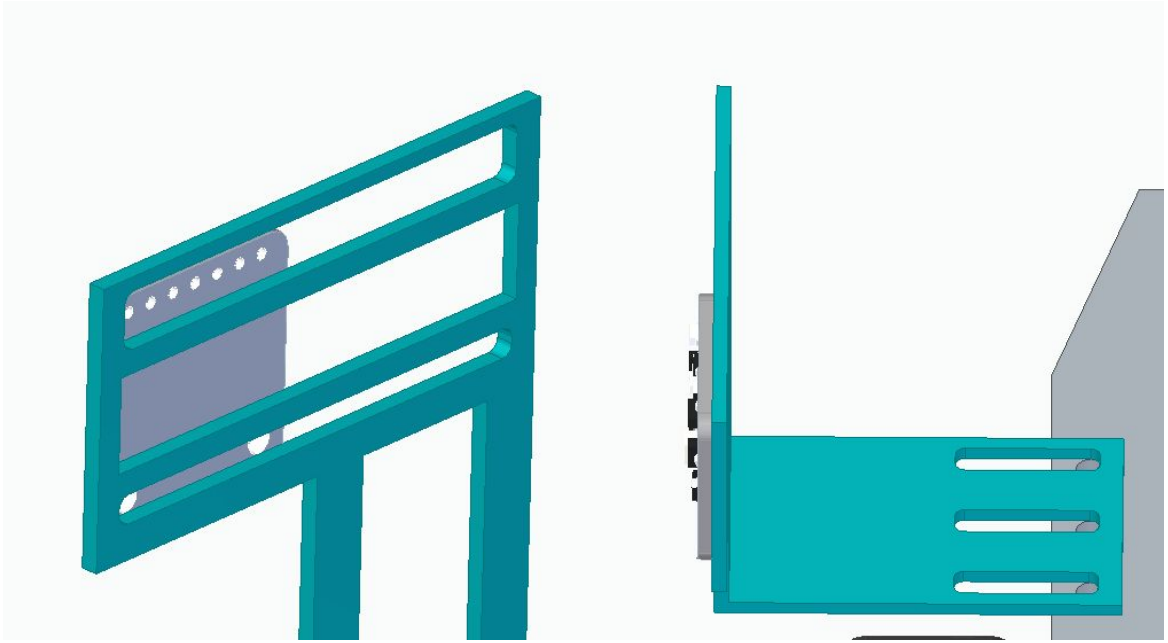
EPIC WAGGIE : LIJN EN AFSTANDSSENSOR



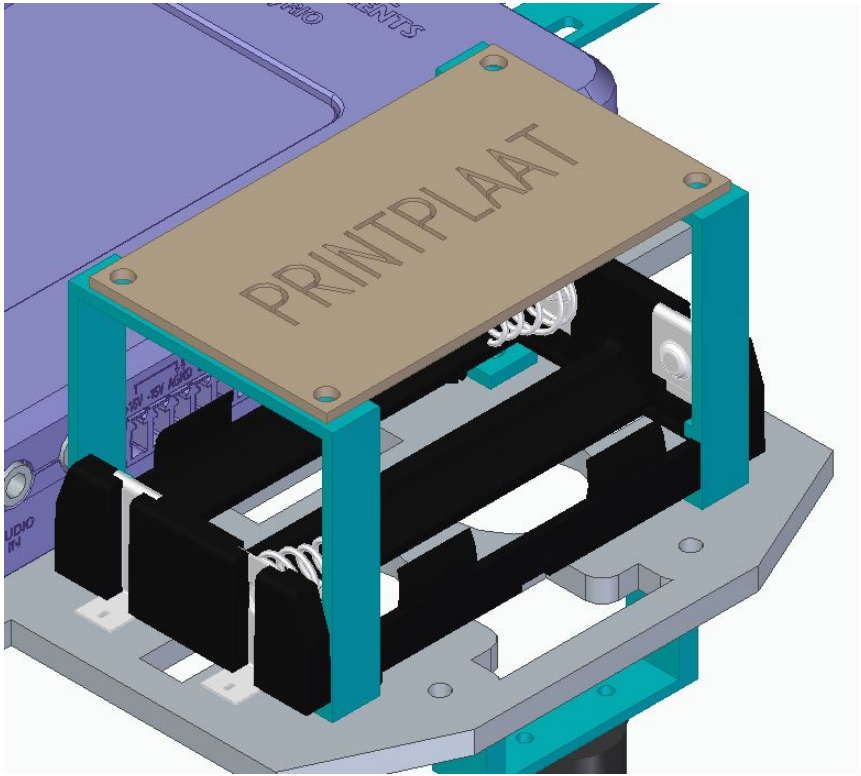


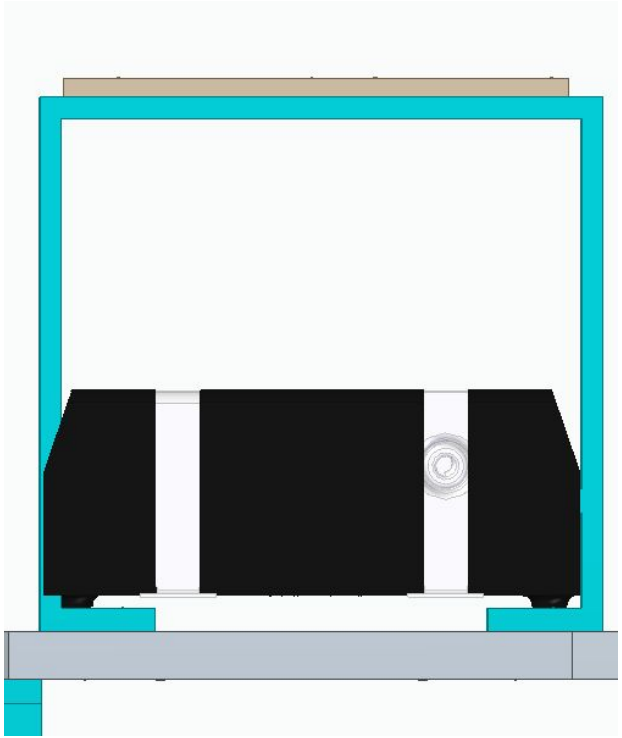
EPIC WAGGIE : RGB SENSOR





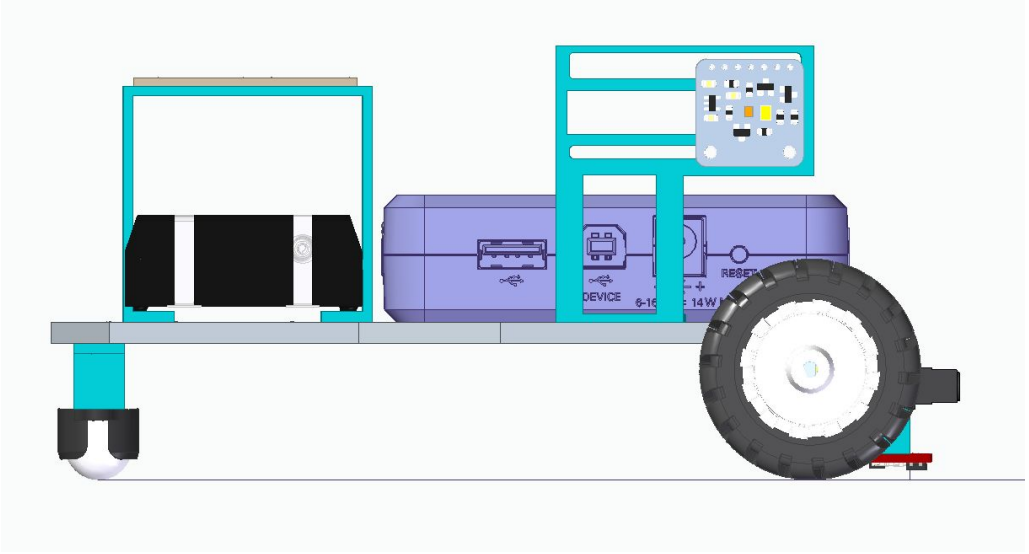
EPIC WAGGIE : PRINTPLAAT EN BATTERIJEN



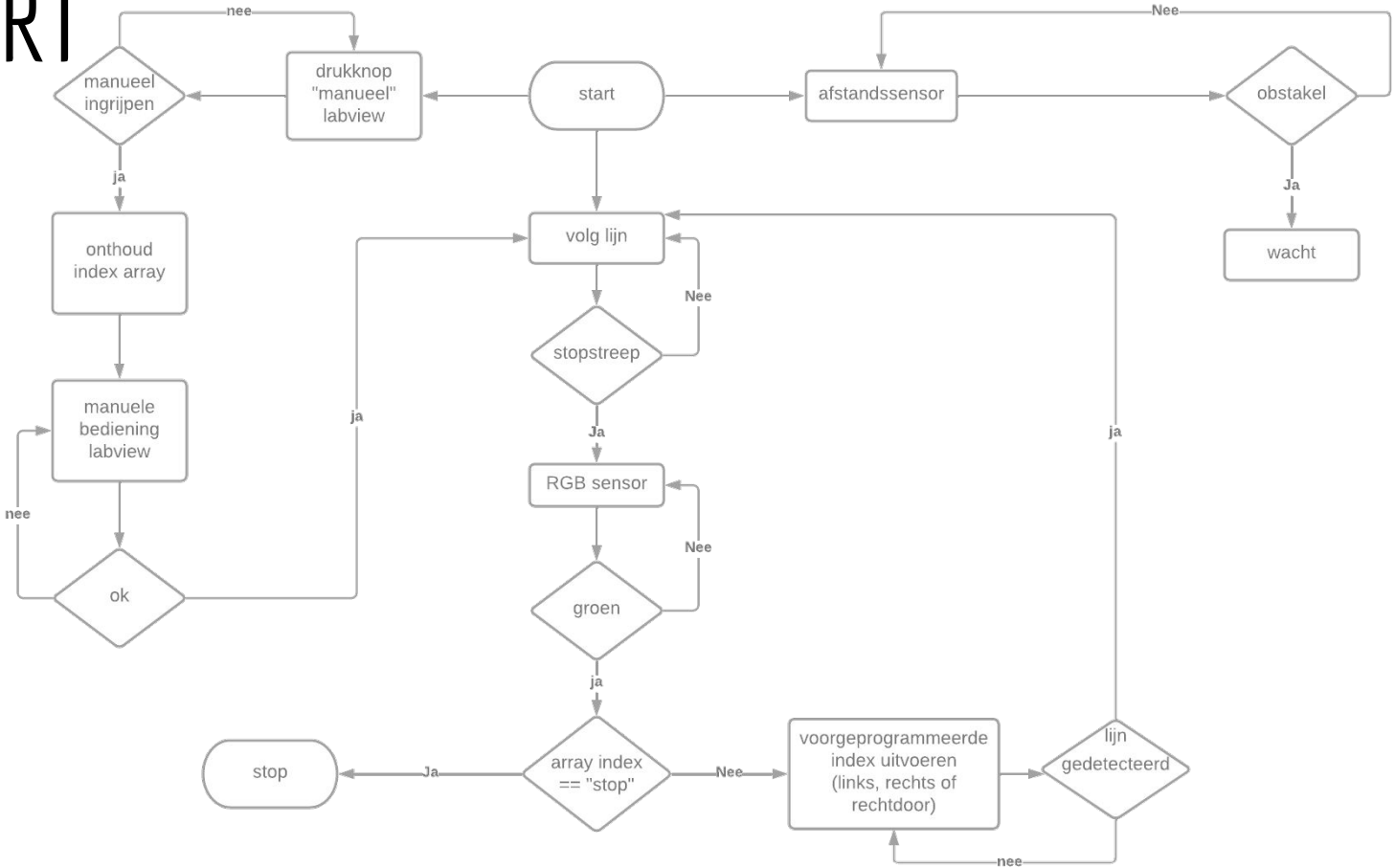


EPIC WAGGIE

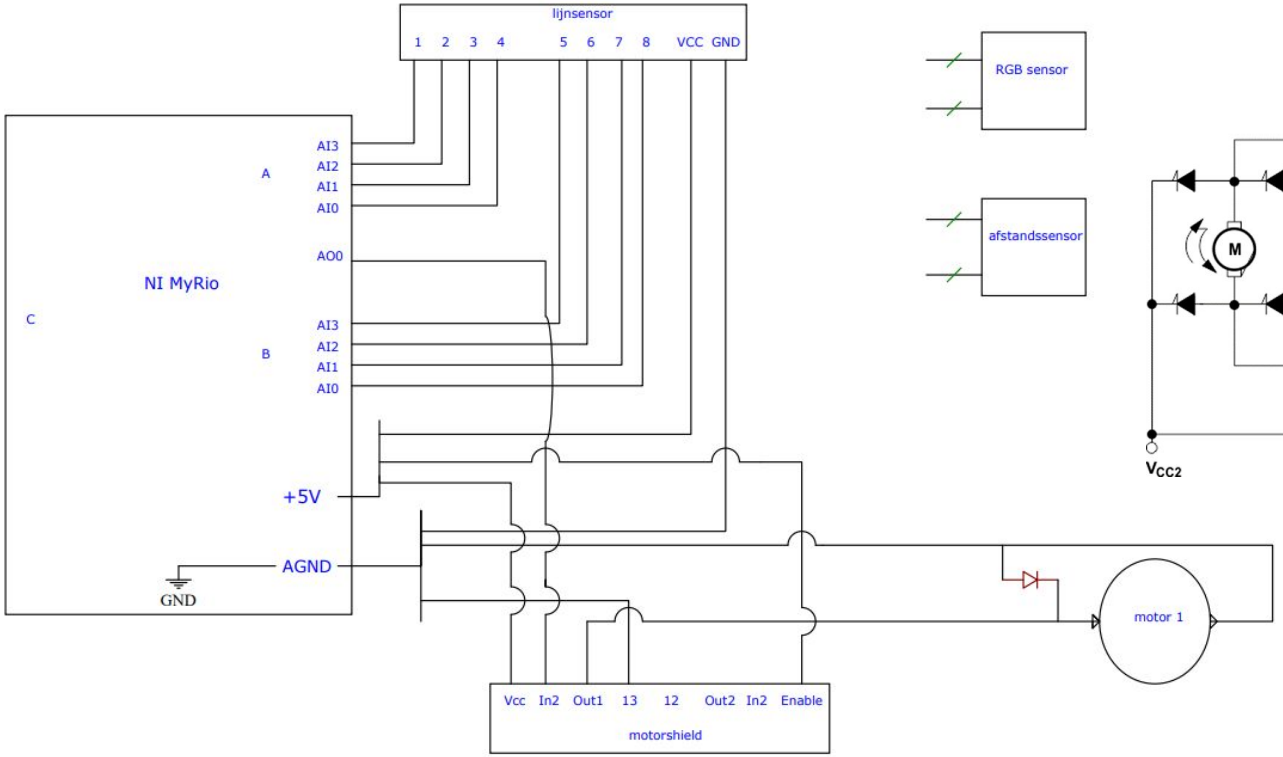
- 21 cm breed (Met wielen)
- 16.5 cm lang
- Lijn sensor: 2mm van de grond

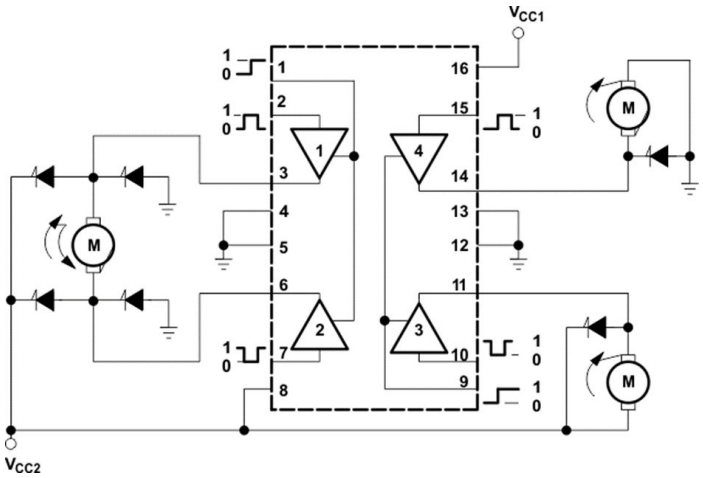


FLOWCHART


start
manueel ingrijpen
nee
drukknop "manueel" labview
ja
onthoud index array
manuele bediening labview
nee
ok
ja
afstandssensor
Nee
obstakel
Ja
wacht
volg lijn
Nee
stopstreep
Ja
RGB sensor
Nee
groen
ja
array index == "stop"
Ja
stop
Nee
voorgeprogrammeerde index uitvoeren (links, rechts of rechtdoor)
lijn gedetecteerd
ja
nee

ELEKTRISCH CIRCUIT (voorlopig)



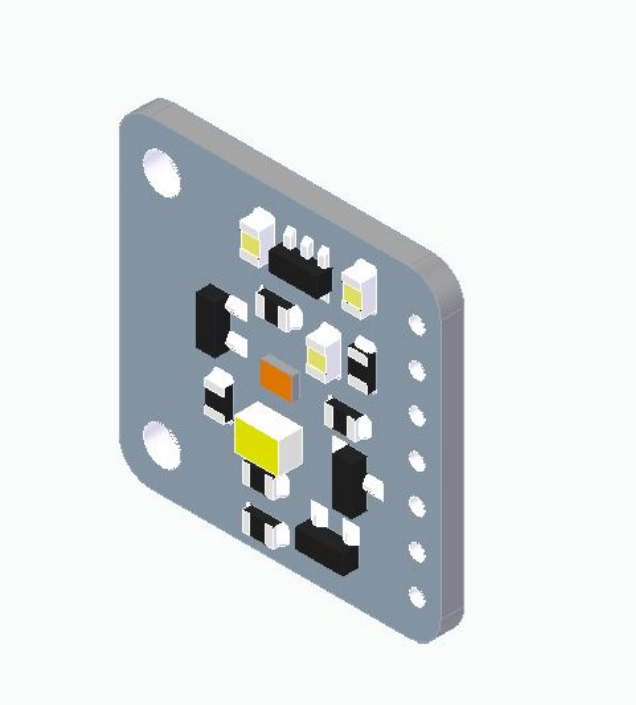


SNELHEID EN RICHTING

- Getal voor beide wielen
  - 0 = stilstaan
  - 5 = snelst
- Draaien
  - Voltage 1 ≠ voltage 2
  - Ene wiel sneller dan andere
  - Bocht / corrigeren lijn

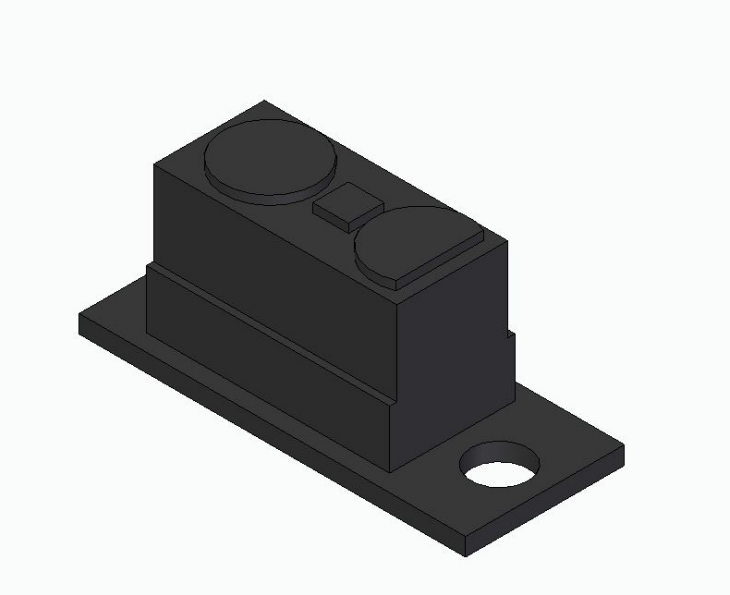
RGB SENSOR

- Rood licht
  - Wachten
  - Controleren
- Groen licht
  - vertrekken



AFSTANDSSENSOR

- Detecteert tussen 2-10 cm
- Stoppen => 0V



LIJNSENSOR

- 8 analoge spanningen ⇒ array: 0/1
- Stopstreep?
  - Alleen enen
- Hoe bijsturen?
  - Getal bijhouden
    - Grootte = hoe sterk
    - Teken = richting
  - 1 en index ?
  - 1^{e} keer 1 ⇒ getal -7 - 7
  - Vervolgens -1

FINANCIEEL RAPPORT