

*Makerspace.lt*

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# Sumo robotų intelekto kūrimas

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# Autoriai

- ❖ Makerspace.lt
- ❖ Darius Kasiulevičius ir Darius Vozbutas
- ❖ el. paštas: [labas@makerspace.lt](mailto:labas@makerspace.lt)



# Terminas Sumo

- ❖ Kilęs iš Japonų žodžio - sūmo.
- ❖ Sunkiasvoriu imtynės Japonijoje.
- ❖ Laimi tas kuris išstumia priešininką iš apibrėžto apskritimo arba priverčia paliesti žemę ne su kojomis.



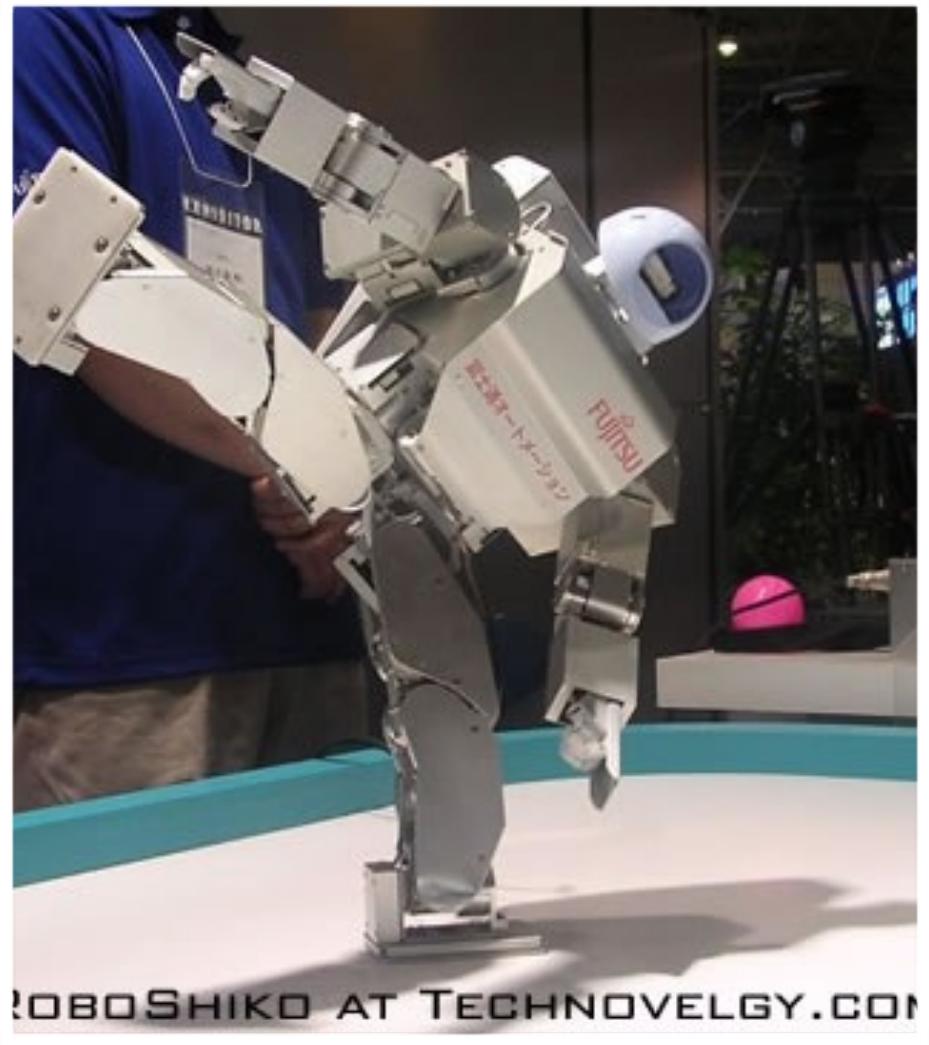
# Sumo robotai Lietuvoje

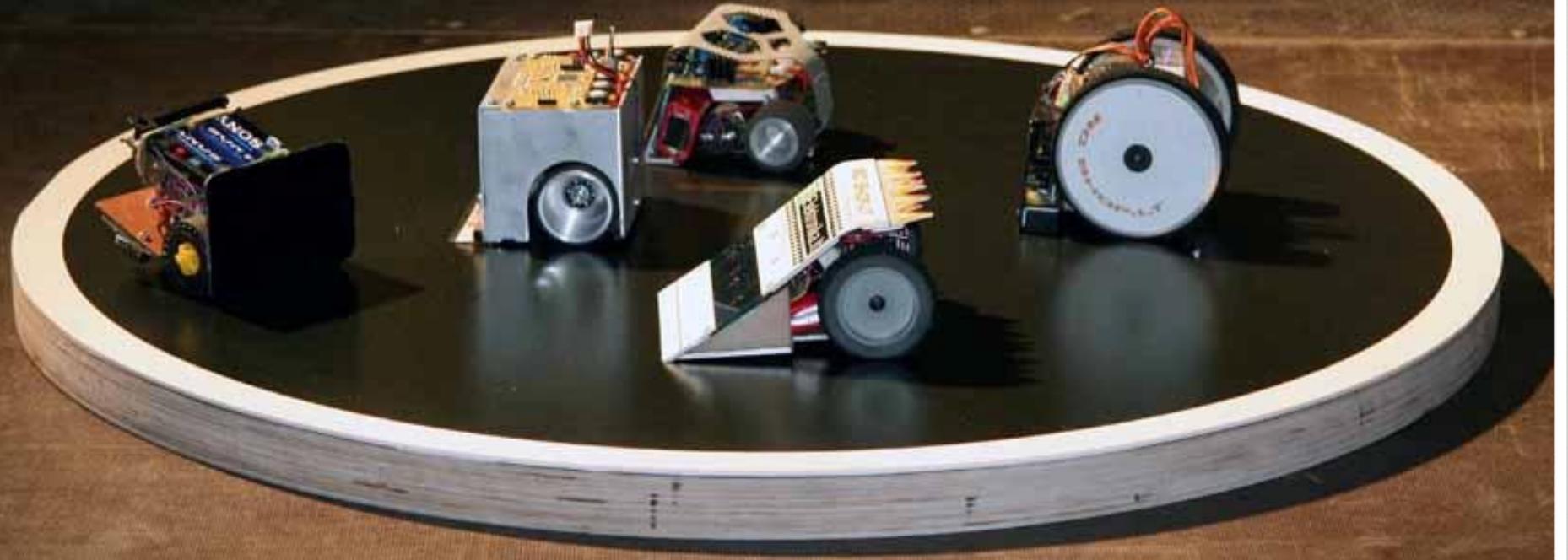
- ❖ InfoBalt 2007 m.
- ❖ “Baltic Robot SUMO Cup”  
2009 m. ir 2011m. vyko  
Klaipėdoje
- ❖ Lietuviai dalyvavo “All Japan  
Robot Sumo Tournament 2011”



# Robotų klasifikacija

- ❖ Koviniai
- ❖ Futbolas
- ❖ Sumo
- ❖ Humanoidai (kung-fu, sunkumų kilnojimas, lipimas laiptais...)
- ❖ Menininkai (piešimas, muzika...)



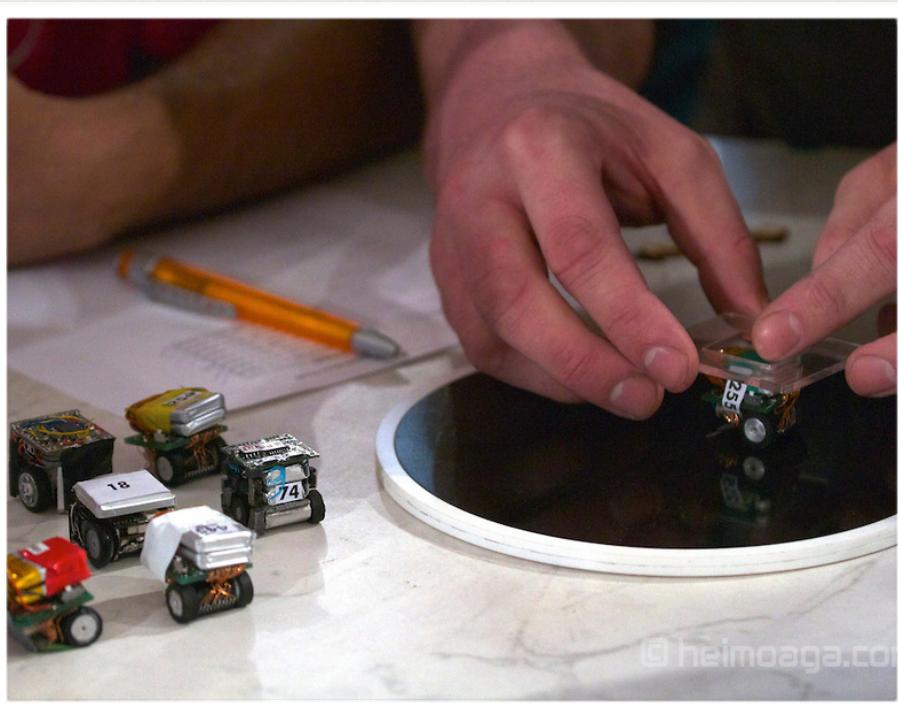
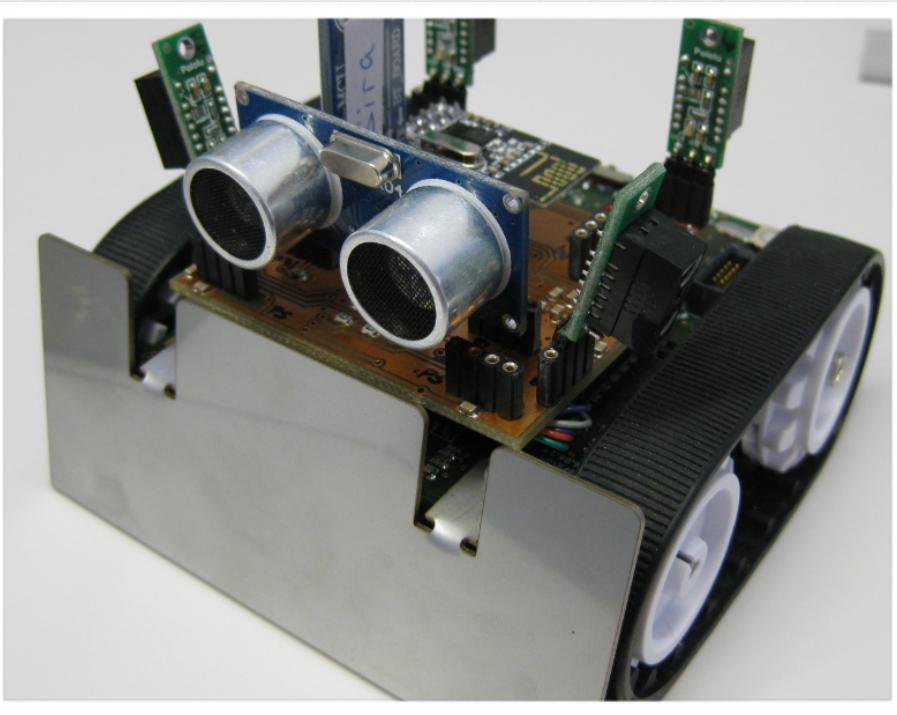
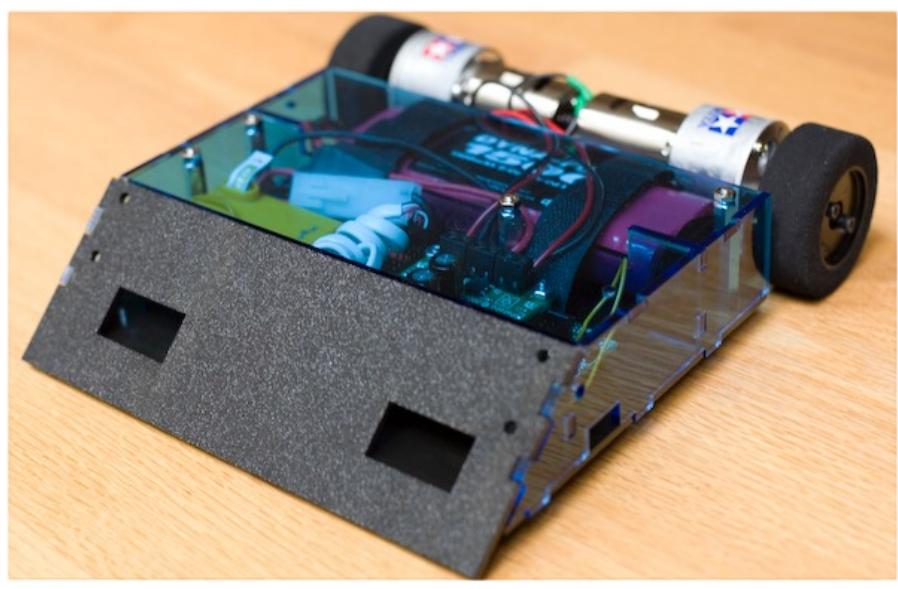
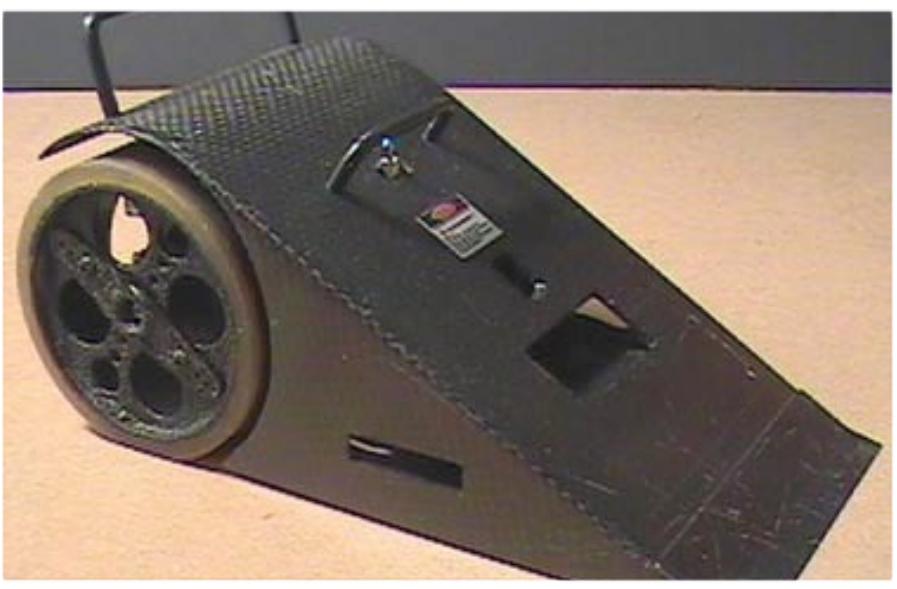


# Sumo robotai

Mega  
Humanoid  
Lego  
Mini  
Micro  
Nano

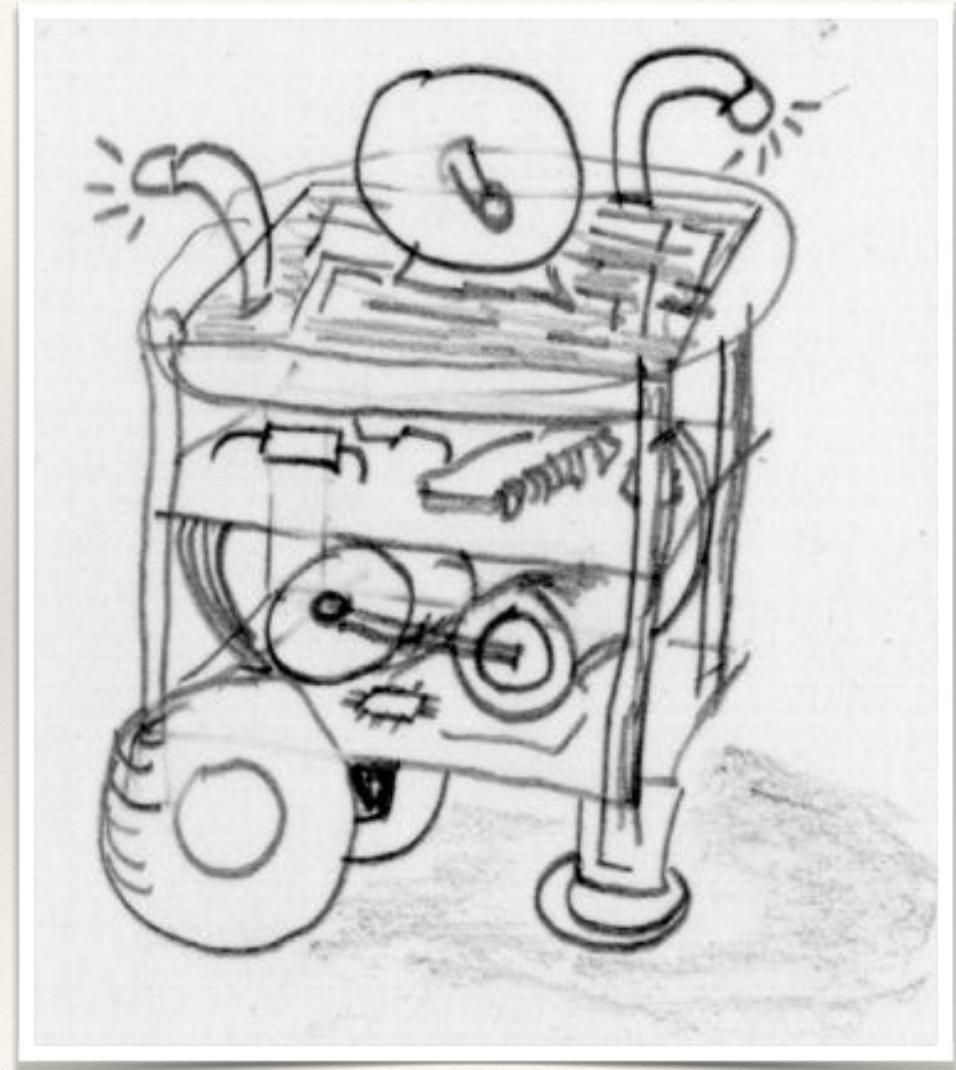
# Robotų apribojimai

Klasė	Aukštis	Plotis	Ilgis	Svoris
Mega	$\infty$	20 cm	20 cm	3 000 g
Mini	$\infty$	10 cm	10 cm	500 g
Micro	5 cm	5 cm	5 cm	100 g
Nano	2,5 cm	2,5 cm	2,5 cm	25 g



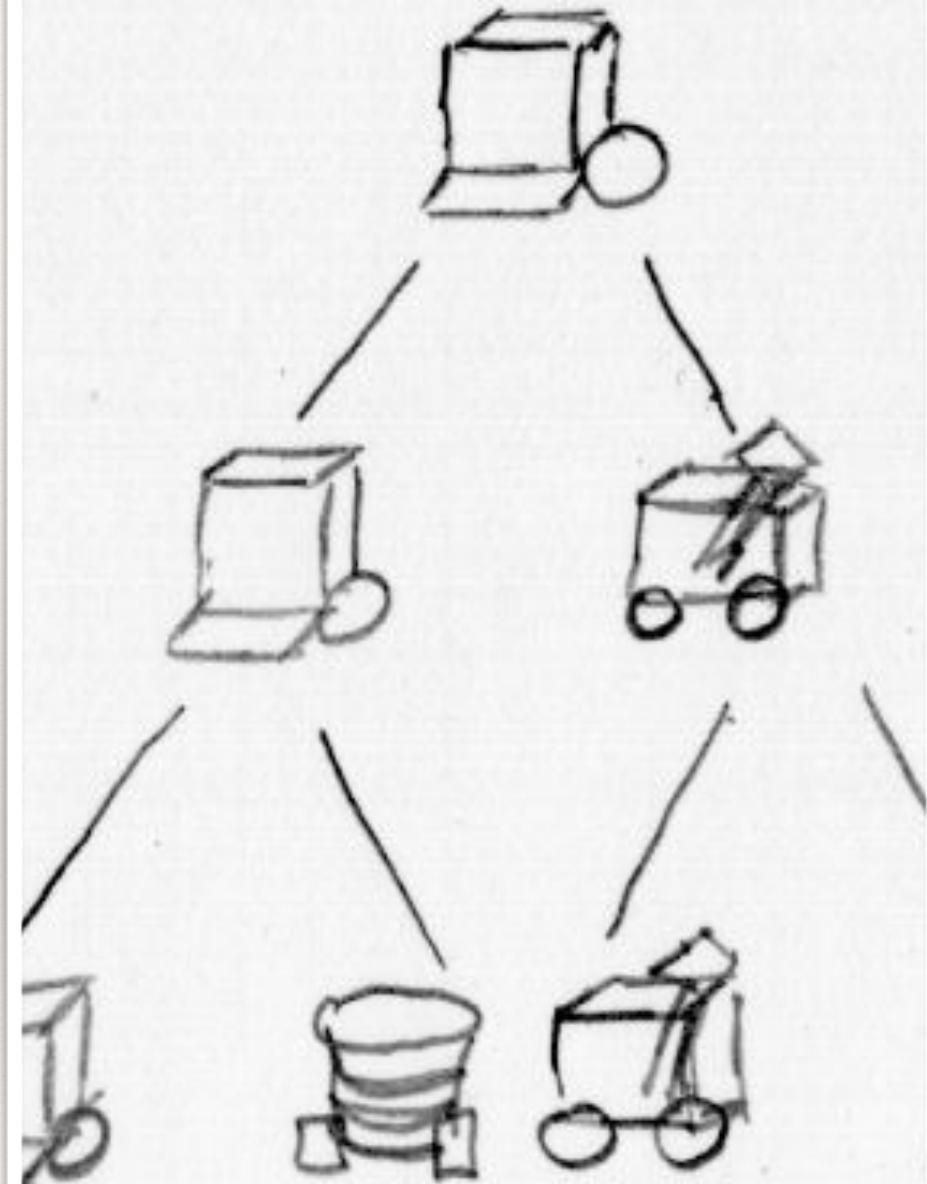
# Roboto konstrukcija

- ❖ Išnaudoti dydi
- ❖ Modernūs davikliai
- ❖ Unikali elgsena
- ❖ Nekenkti kitiems
- ❖ Nesulūžti pačiam

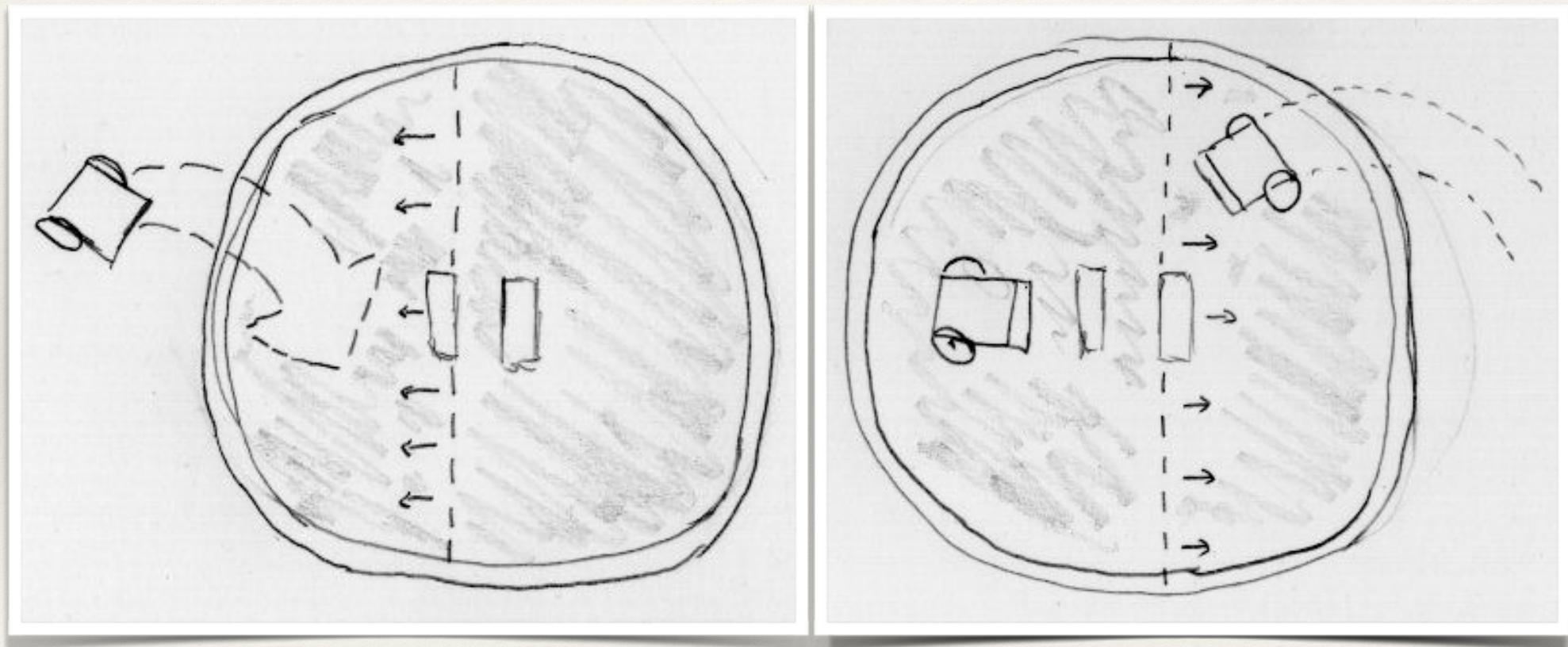


# Varžybų eiga

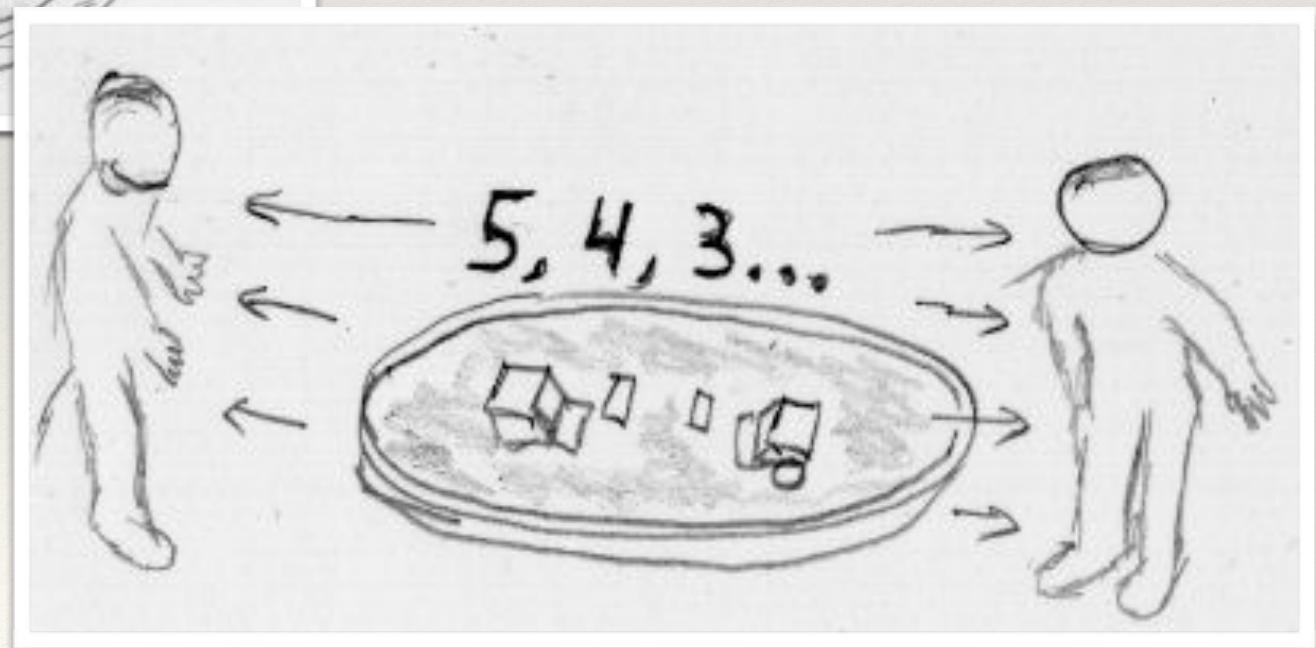
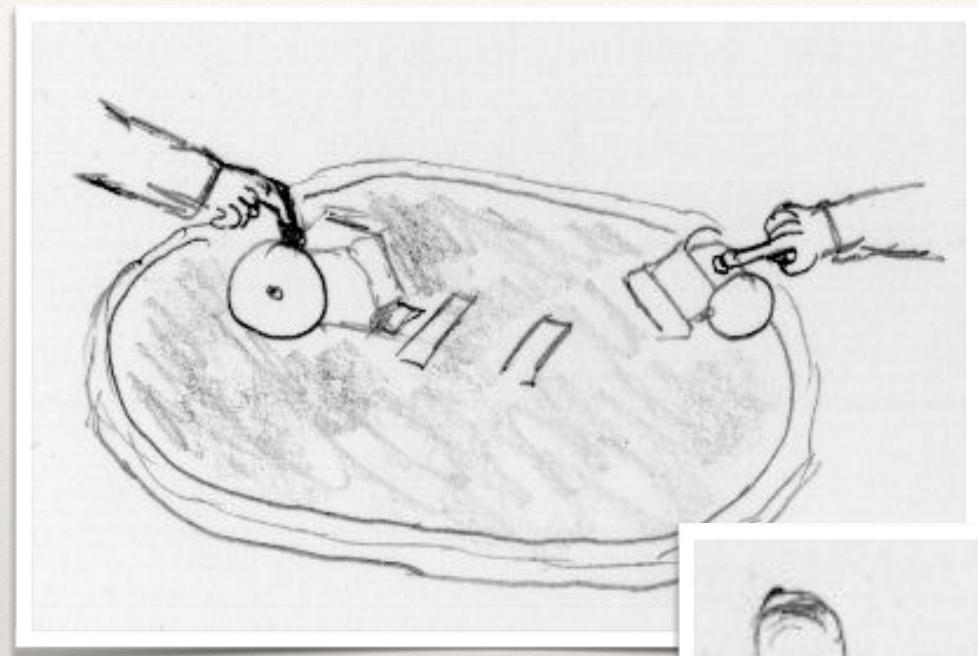
- ❖ 3 turai
- ❖ 3 min



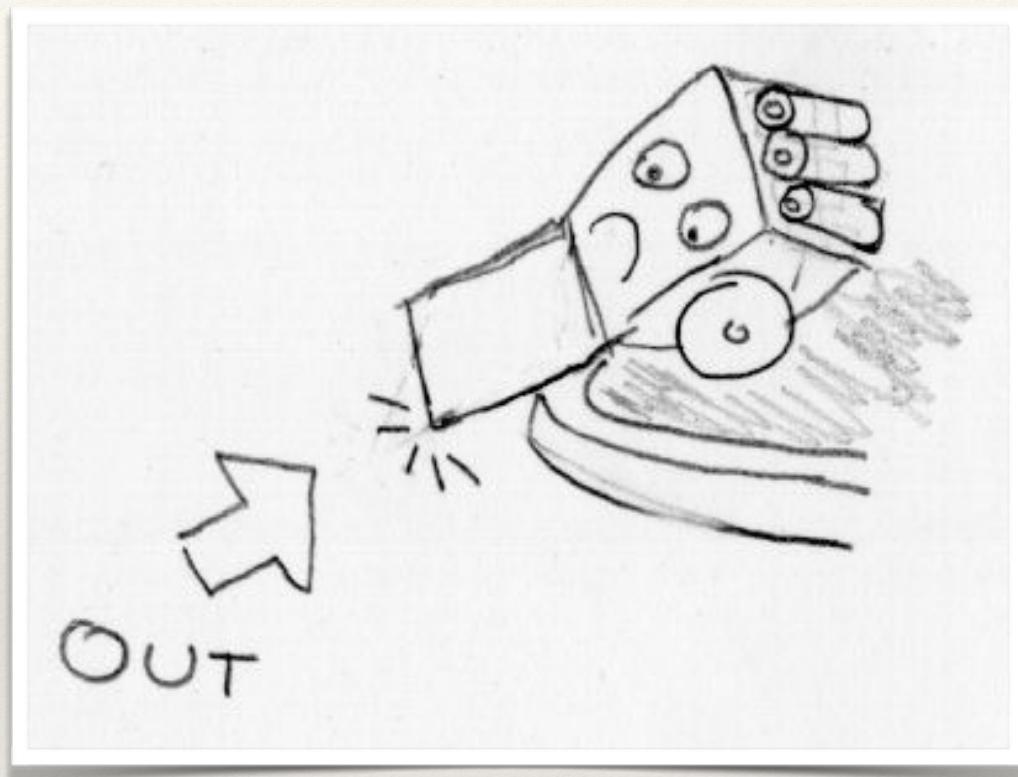
# Starto pozicija



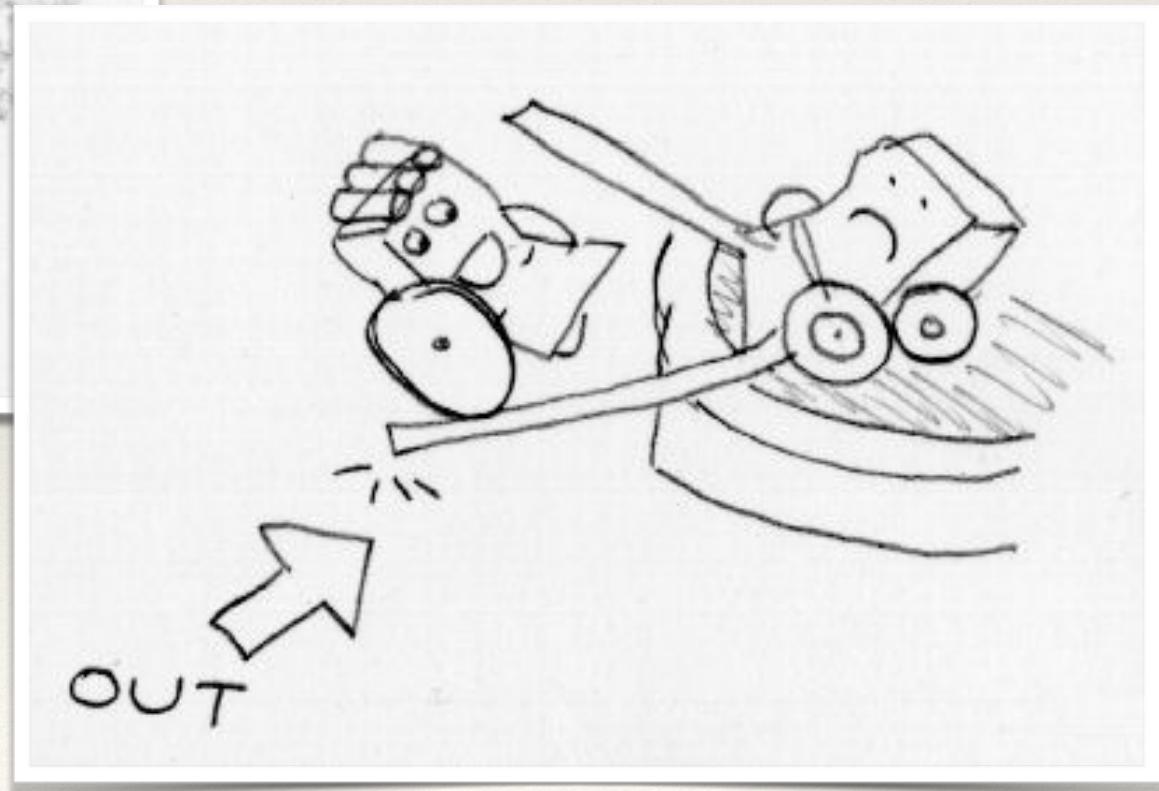
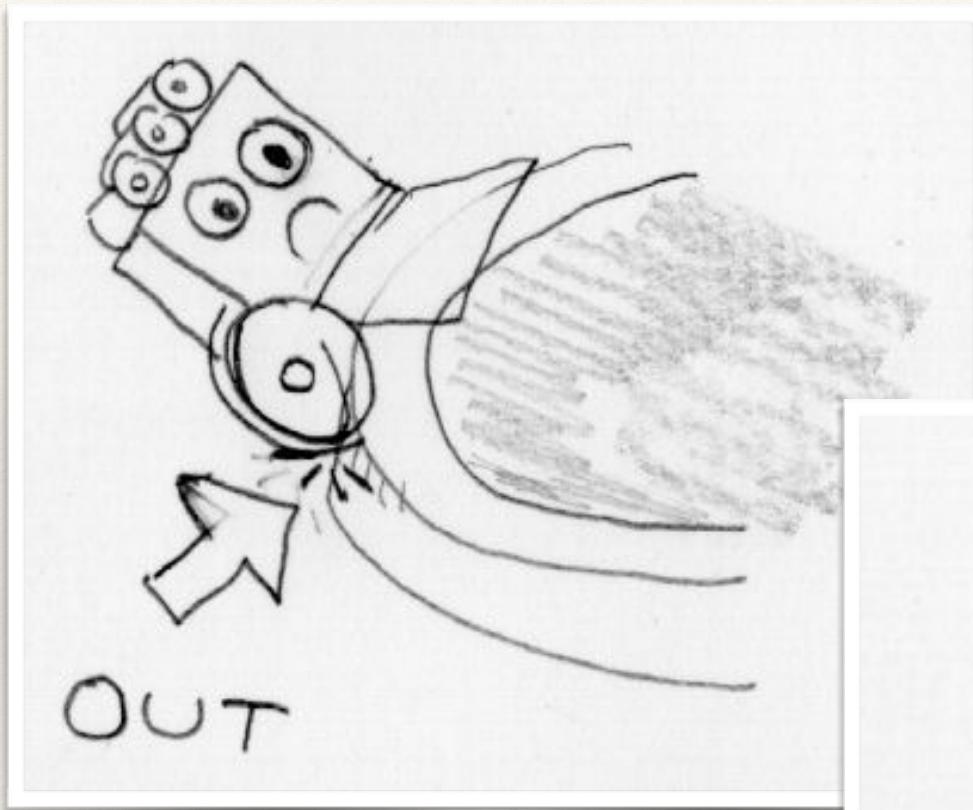
# Startas



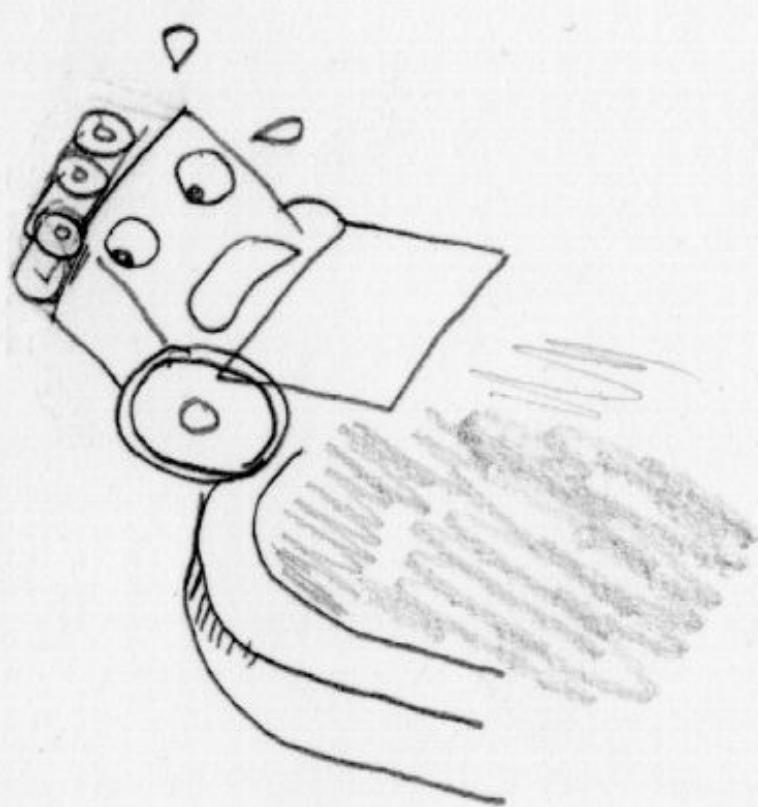
# Pralaimėjimas



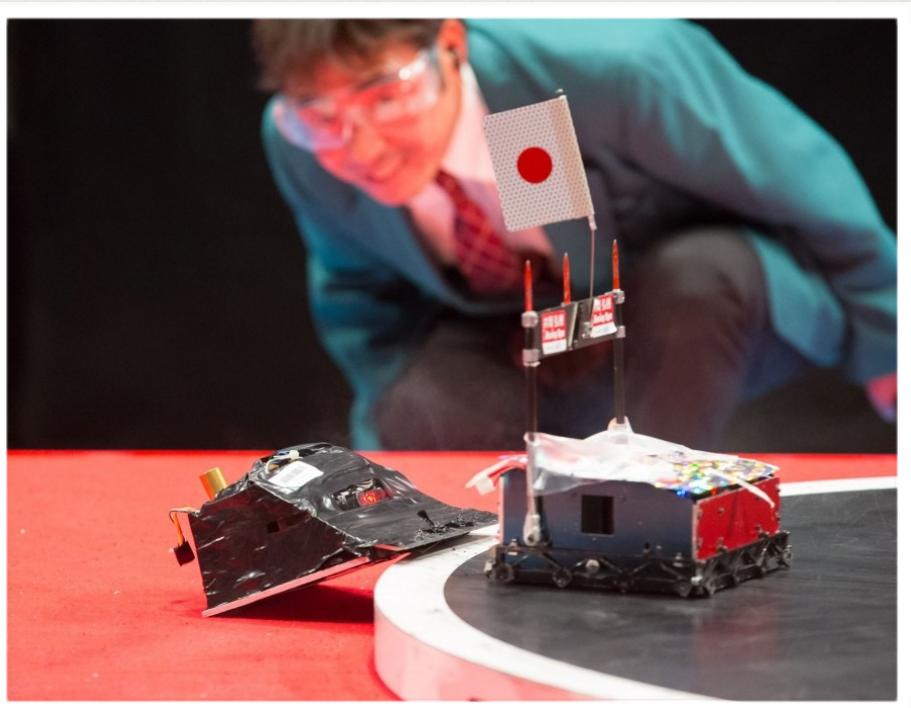
# Pralaimėjimas



# Leidžiama



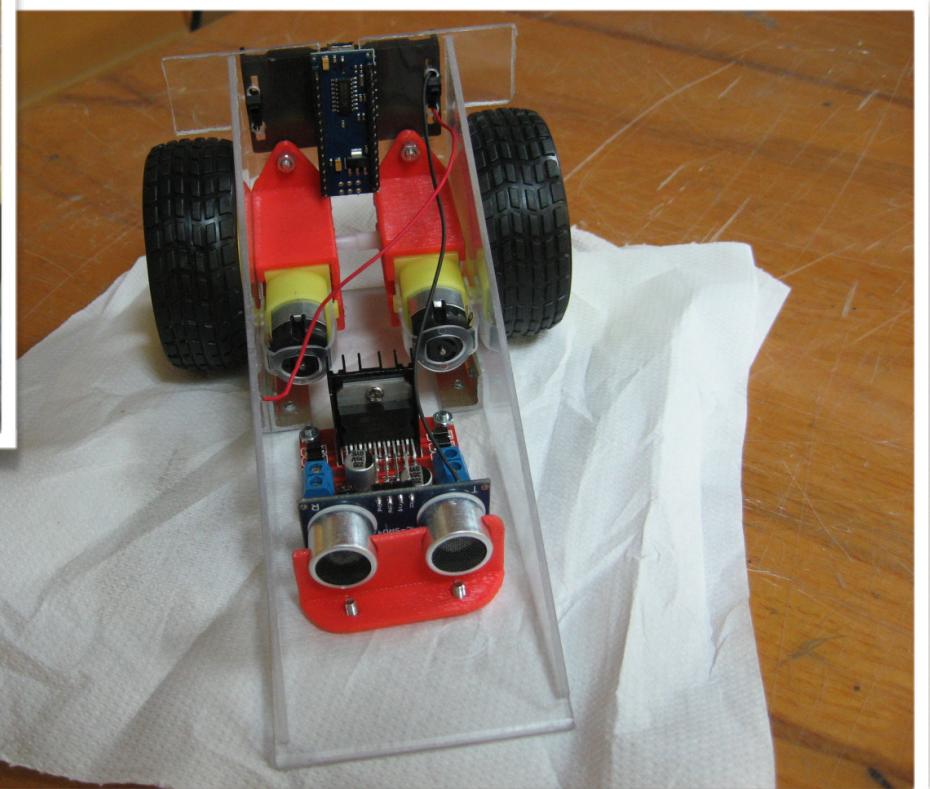
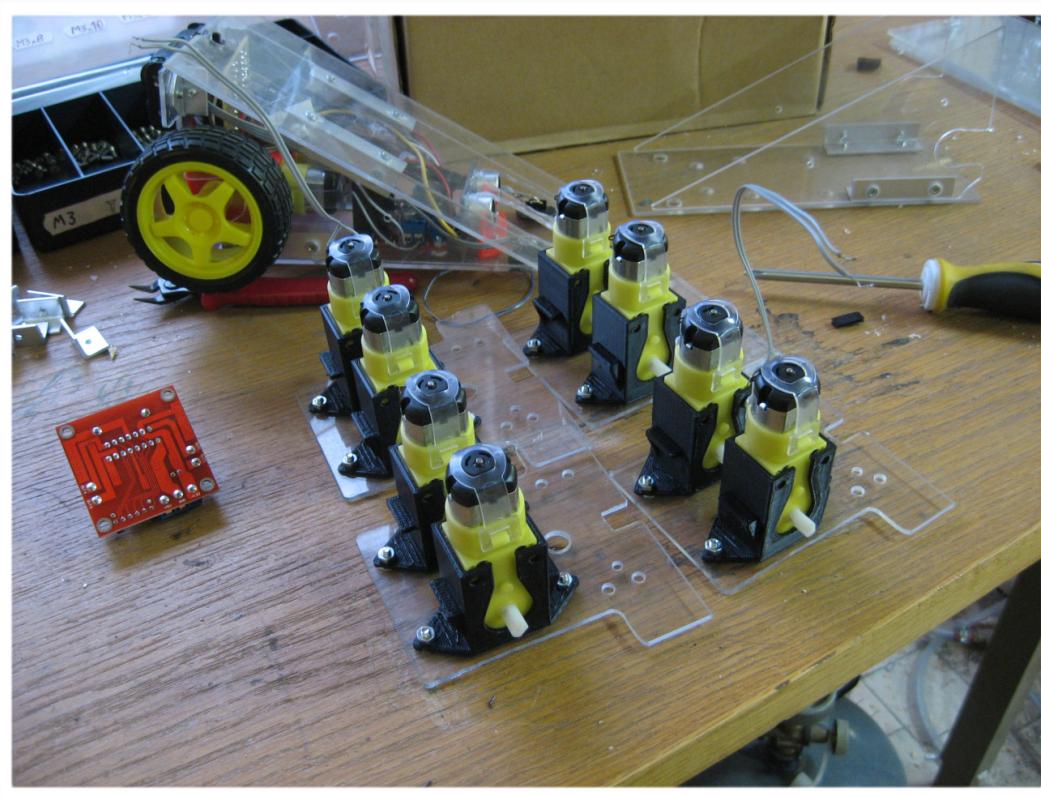
OK

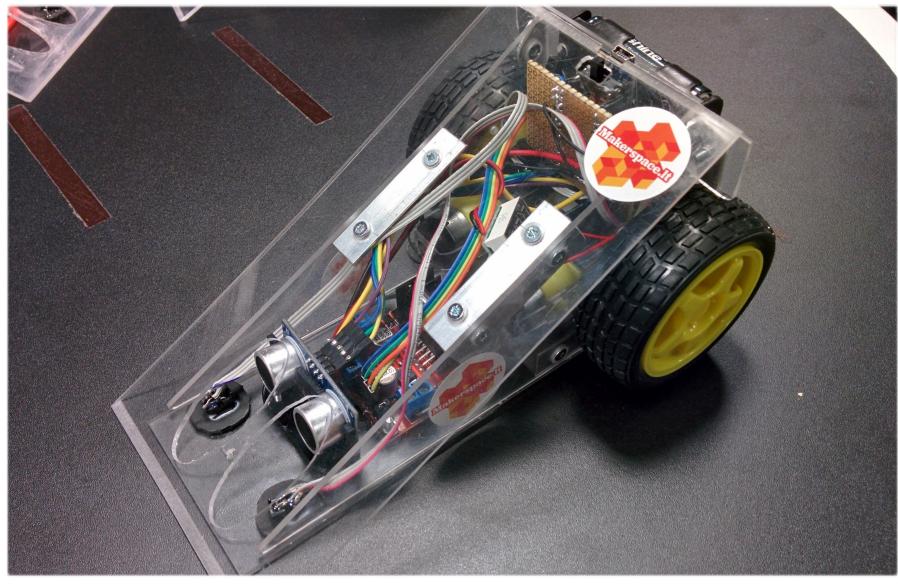
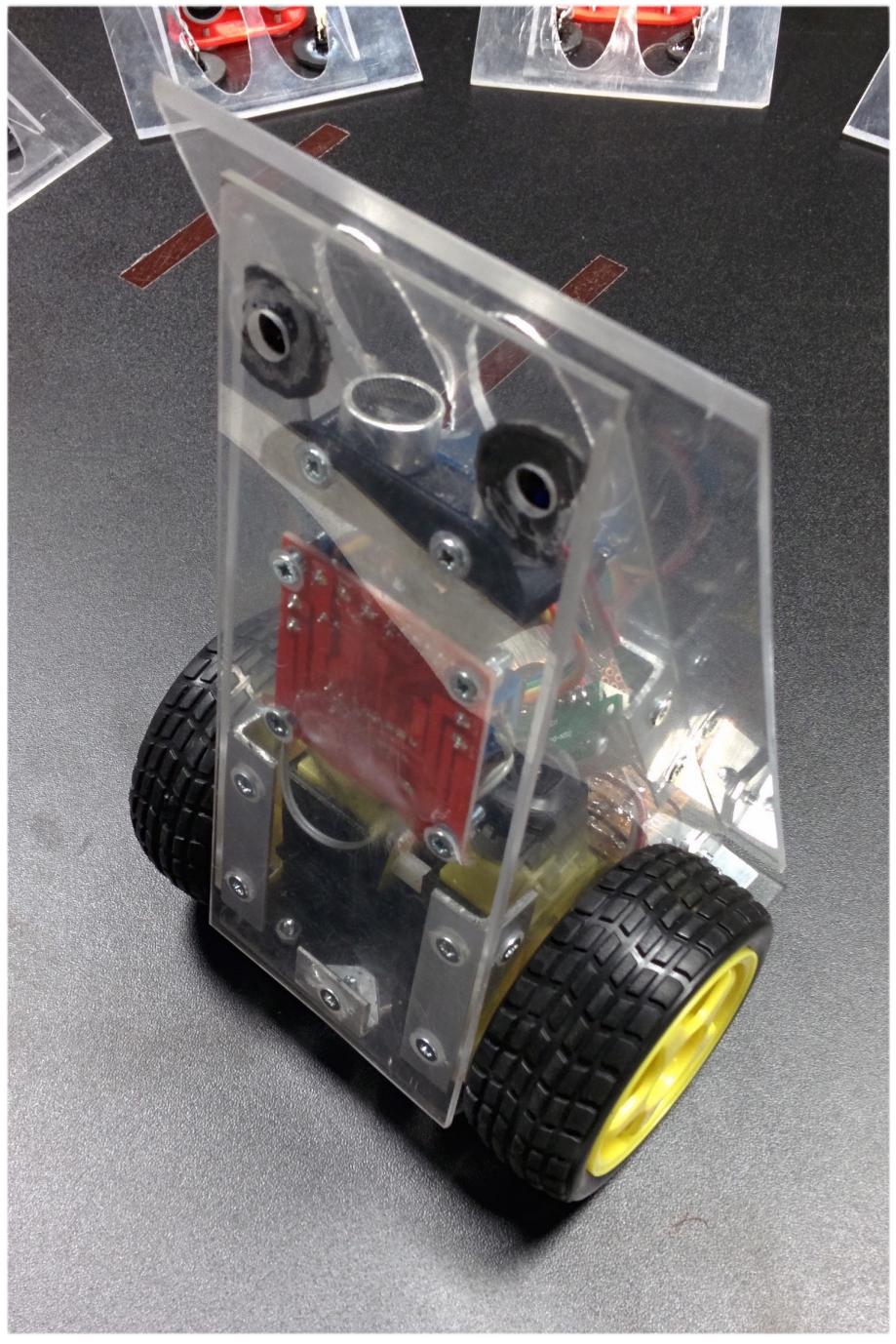


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# Makerspace sumo robotas





# Biblioteka roboto valdymui

```
class MiniRobot {  
public:  
    MiniRobot();  
    void forward();  
    void backward();  
    void stop();  
    void leftForward();  
    void leftBackward();  
    void leftStop();  
    void rightForward();  
    void rightBackward();  
    void rightStop();  
    bool leftEdge();  
    bool rightEdge();  
    int distanceToEnemy();  
    unsigned long ultraSoundDuration();  
};
```

# Kodo pavyzdys

```
case 2:  
    robot.backward();  
    delay_millis = 600;  
    start_millis = millis();  
    status = 1;  
    break;  
case 3:  
    robot.forward();  
    status = 0;  
    break;  
case 4:  
    robot.rightBackward();  
    robot.leftStop();  
    delay_millis = 80;  
    start_millis = millis();  
    status = 5;  
    break;
```

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# Nuorodos

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- ❖ <http://goo.gl/XP3eWh> (<http://makerspacelt.tumblr.com/>)
- ❖ <http://goo.gl/AvsfGR> (<http://robogames.net/rules/all-sumo.php>)
- ❖ <http://goo.gl/AOxZuH>  
(<http://www.elektronika.lt/straipsniai/ivykiai/26951/robotu-kurejas-japonija-mums-lyg-everestas/>)
- ❖ <https://goo.gl/et3ZBC>  
(<https://picasaweb.google.com/114200581918686517097/AllJapanRobotSumoTournament>)

Ačiū

Užsukite į makerspace Kaune