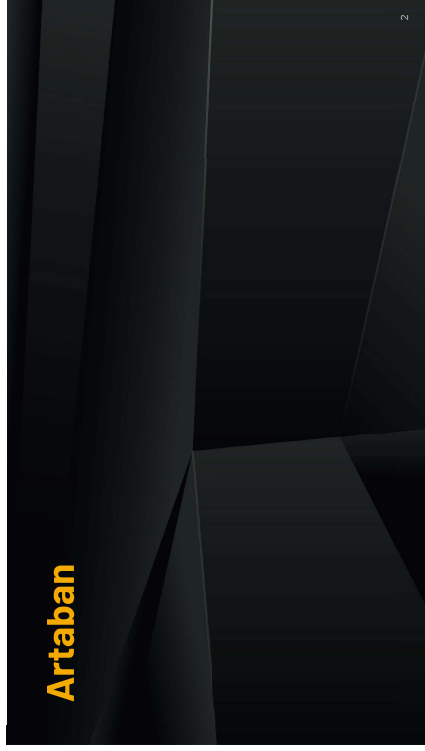
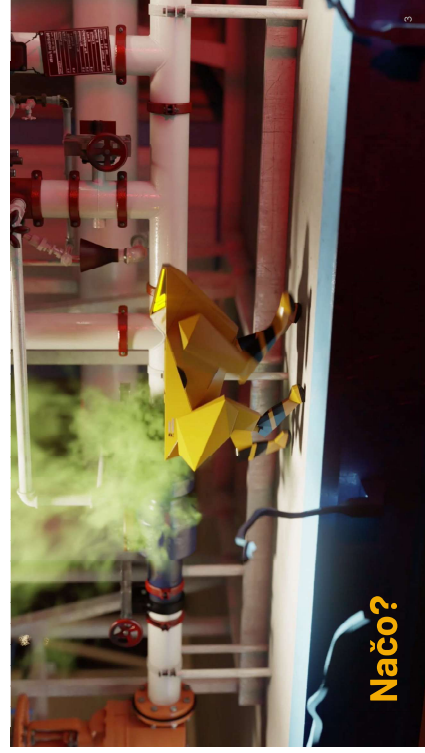
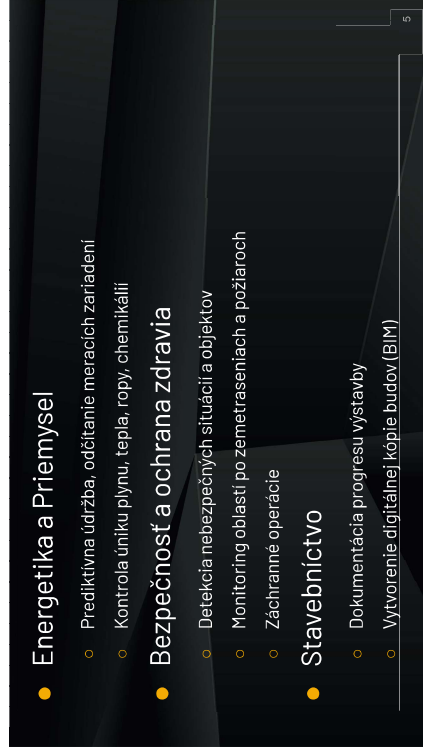




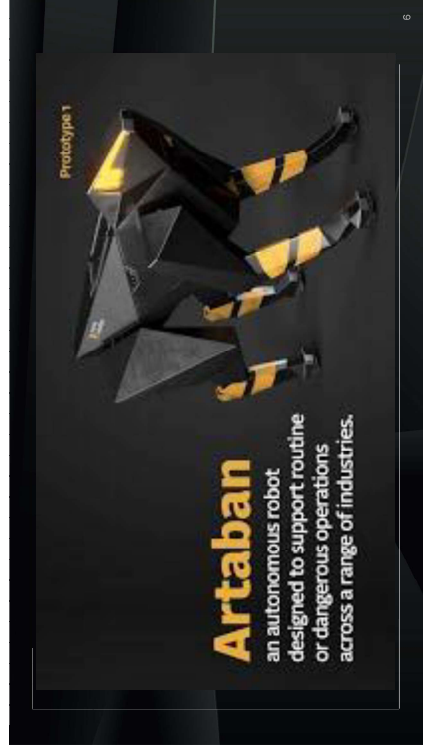
2



4



5



6

Prečo 4 nohy?



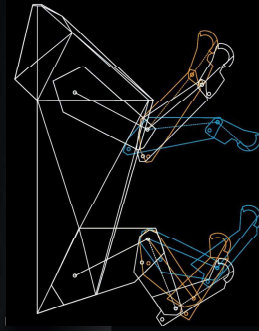
7

Čo to obnáša? (koncept, design)

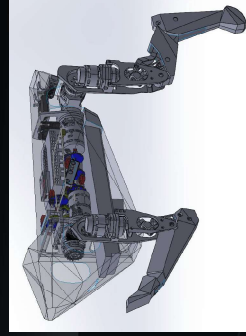


8

Čo to obnáša? (konštrukcia, návrh)



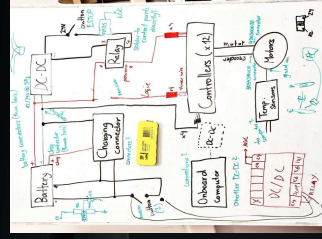
Radoslav Banjula



Matúš Mosný, Jura Brezňanský

9

Čo to obnáša? (elektronika)



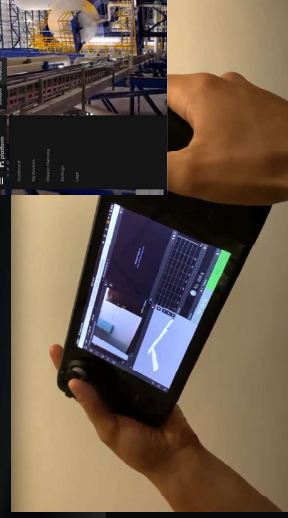
Samuel Papur

10

Čo to obnáša? (softvér)

```
// Filters even numbers from an array
function filterEven(arr) {
  let result = [];
  for (let i = 0; i < arr.length; i++) {
    if (arr[i] % 2 !== 0) {
      result.push(arr[i]);
    }
  }
  return result;
}

// Example usage
const arr = [1, 2, 3, 4, 5, 6];
const result = filterEven(arr);
console.log(result);
```



Čo to obnáša? (rozhranie človek-robot)

11

12

Kto?



13

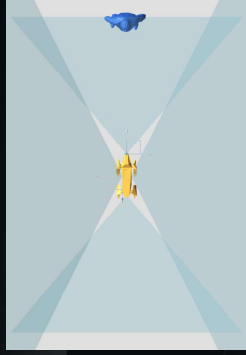
Artaban - základné údaje

- 35kg hmotnosť, 8kg nosnosť
- 2+ hodiny, vymeniteľná batéria
- 14 motorov
- WiFi, mobilné pripojenie

14

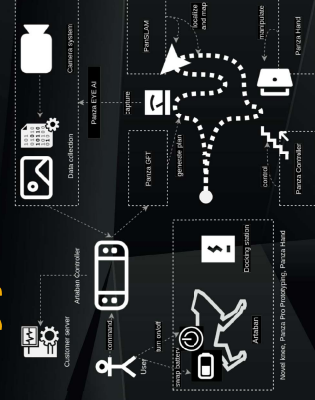
Vnímanie

- Pozíčné enkóдеры motorov
- Inertial Measurement Unit
- 360° 4 hĺbkové stereo kamery
- Time of Flight hrudná kamera
- Termálna kamera
- CO₂ senzor



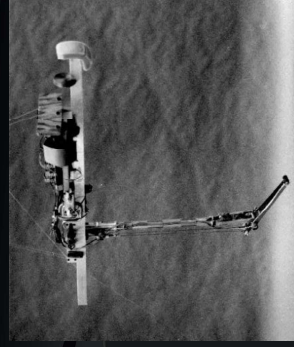
15

Ako to funguje?



16

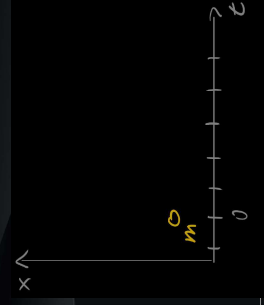
Chôdza (klasiccká)



17

Chôdza (klasiccká)

Model predictive control

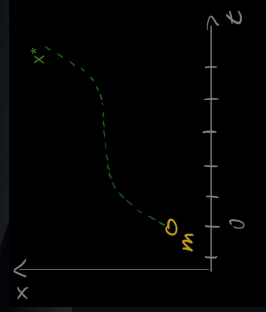


$$m\ddot{x} = f$$

18

Chôdza (klasická)

Model predictive control

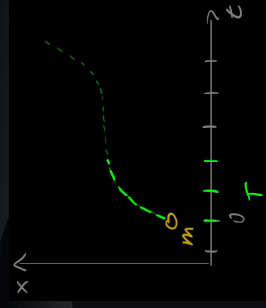


$$m\ddot{x} = f$$

19

Chôdza (klasická)

Model predictive control

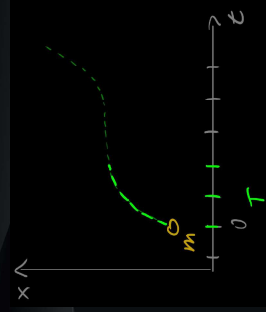


$$m\ddot{x} = f$$

20

Chôdza (klasická)

Model predictive control



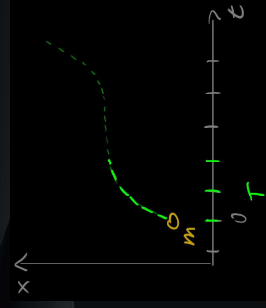
$$\min_{x,u} \sum_i^T (x_i - x_i^*)^2 Q + f_i^2 R$$

$$m\ddot{x} = f$$

21

Chôdza (klasická)

Model predictive control



$$\min_{x,u} \sum_i^T (x_i - x_i^*)^2 Q + f_i^2 R$$

s.t.

$$m\ddot{x} = f$$
$$f < f_{max}$$
$$\dots$$

22

Chôdza (klasická)

Model predictive control



$$\min_{x,u} \sum_i^T (x_i - x_i^*)^2 Q + f_i^2 R$$

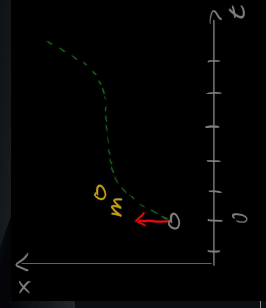
s.t.

$$m\ddot{x} = f$$
$$f < f_{max}$$
$$\dots$$

23

Chôdza (klasická)

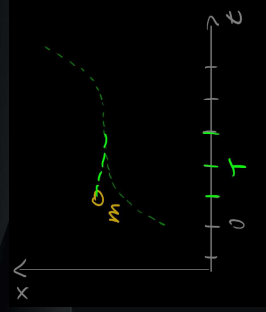
Model predictive control



24

Chôdza (klasická)

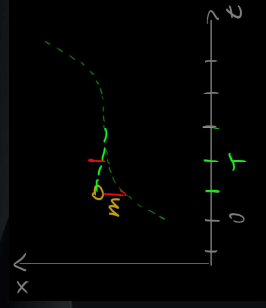
Model predictive control



25

Chôdza (klasická)

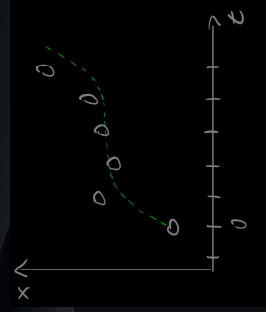
Model predictive control



26

Chôdza (klasická)

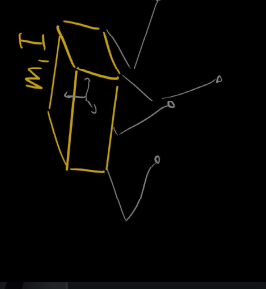
Model predictive control



27

Chôdza (klasická, model-based)

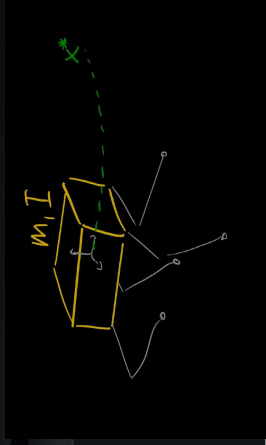
Model predictive control



28

Chôdza (klasická, model-based)

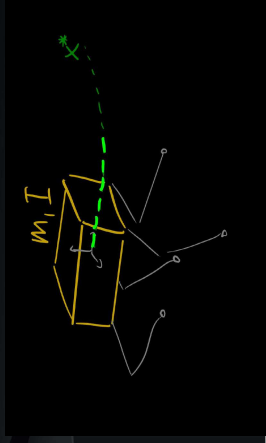
Model predictive control



29

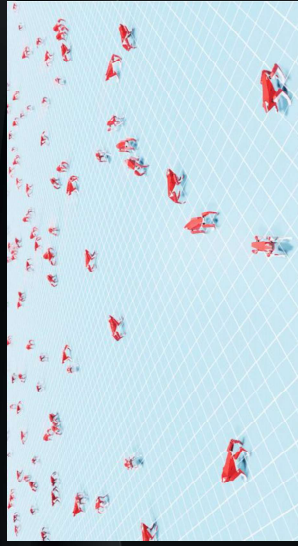
Chôdza (klasická, model-based)

Model predictive control



30

Chôdza (posilňujúce učenie)



Andriy Khrushchak

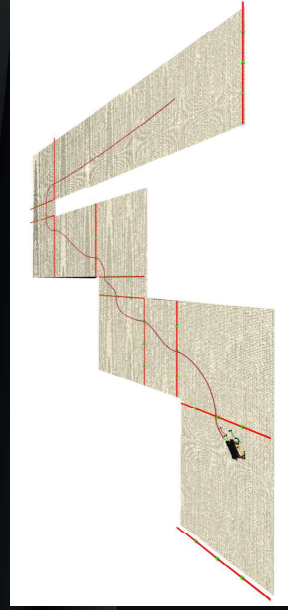
43

Plánovanie trajektórie



44

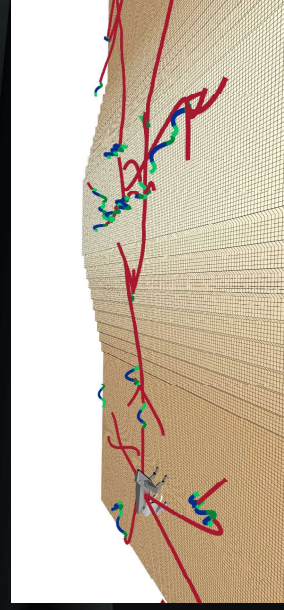
Plánovanie trajektórie



Daniel Ujj

45

Plánovanie trajektórie



Katariňa Lacková

46

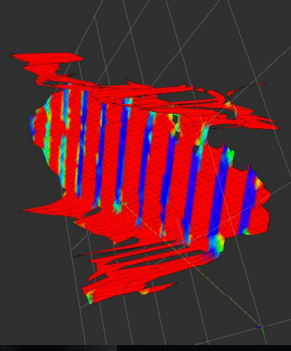
Vnímanie (SLAM)



Harmen Lucan

47

Vnímanie (mapovanie terénu)



48

