OO – Venus Exploration

Sander Stuijk
Venus Exploration – A mysterious planet…
Venus Exploration – Exploring the planet surface
Venus exploration
Assignment

- use robots find rock samples scattered on planet
- collect all rock samples in the lab

constraints
- robots cannot climb mountains
- when a robot falls of a cliff, the robot is lost

objective
- team that collects all rock samples in least amount of time is the winner
- maximal time 8 minutes, 2 minutes penalty per rock left on planet
Terrain

- terrain boundary marked with black tape
- cliffs marked with black tape
- hills are large objects that
  - reflect ultra-sound
  - absorb most infrared light
- rock samples
  - reflect infrared light
- lab
  - squared container (20 cm x 20cm x 2.5 cm)
  - ramp (angle less than 30 degrees) available on one side
Robot

- Arduino robot kit
  - gripper kit
  - ultrasound distance sensor
  - digital encoders on both wheels
  - ZigBee wireless communication
Material

- list of material per team
  - 2 robots
  - 2 USB cables
  - 2 ACDC 7,5V power supplies
  - 10 AA rechargeable batteries
  - 2 battery charger
  - 1 vinyl floor element (to create your own planet)

- all material must be returned in same state as it has been received
- any components added by a team must be removed
- nothing may be soldered or otherwise permanently connected to the robot
- vinyl floor surface differs from the actual planet surface
Grading

- design report - 15% of the final result (before May 6, 11:59 pm)
  - system-level description of proposed system
  - detailed specification of the components
  - test and integration plan for components and system
  - detailed planning of the design and development process

- video presentation (week 8) - 15% of the final result (before June 21, 11:59pm)
  - demonstrate your design
  - explain design concept and motivate main design decisions

- final report (week 8) - 70% of the final result (before June 24, 11:59 pm)
  - description of system-level design
  - description of all components
  - discuss the integration of components
  - results from tests carried out to verify the correct operation of the system
Grading

- design and final report consists of a team part and an individual part
  - team part covers technical aspects
  - individual part covers your contribution (both technical and non-technical) to the system
  - critical reflection on your own actions and role must be included in the individual part
- check [http://www.es.ele.tue.nl/education/oo2/grading.php](http://www.es.ele.tue.nl/education/oo2/grading.php) for all requirements
- reports must be submitted through Canvas
Support resources

- project website
  http://www.es.ele.tue.nl/education/oo2

- teaching assistant office hours in FLX 8.096
  - Wednesday 15.00 - 17.00
  - Friday 10.00 - 12.00

- OGO lockers available for all groups
  - Robinson Medina will come to your OGO room today to program a locker for your team
Equipment

- each team must collect equipment in Flux 8.096 on Wednesday (April 25th) 15.00-17.00
Teams and rooms


KEEP YOUR ROOM CLEAN

NO TAPE ON THE FLOOR, TABLE OR ANYWHERE ELSE USE THE VINYL FLOOR TO TEST YOUR ROBOT