



Robotour 2018

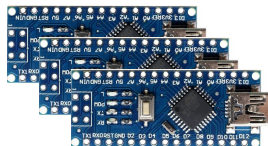
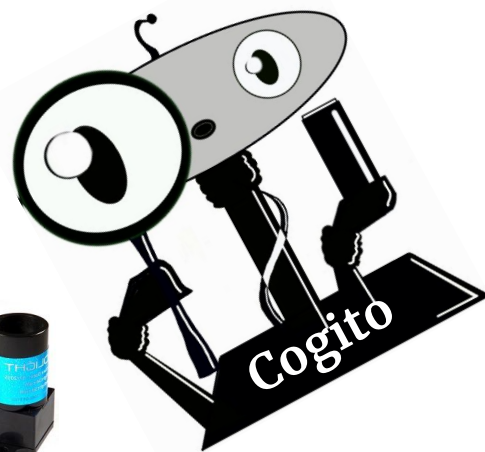
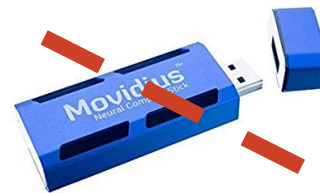
Jirka Iša, Romana Išová
2018/09/16

The collage consists of 12 individual photographs arranged in a grid-like fashion. The top row shows a yellow LEGO-based robot, a white robot with a laptop, and a robot with a camera. The second row features a robot with a fan, a robot with a camera and a fan, and a robot with a camera and a fan. The third row includes a robot with a camera and a fan, a robot with a camera and a fan, and a robot with a camera and a fan. The bottom row shows a robot with a camera and a fan, a robot with a camera and a fan, and a robot with a camera and a fan.



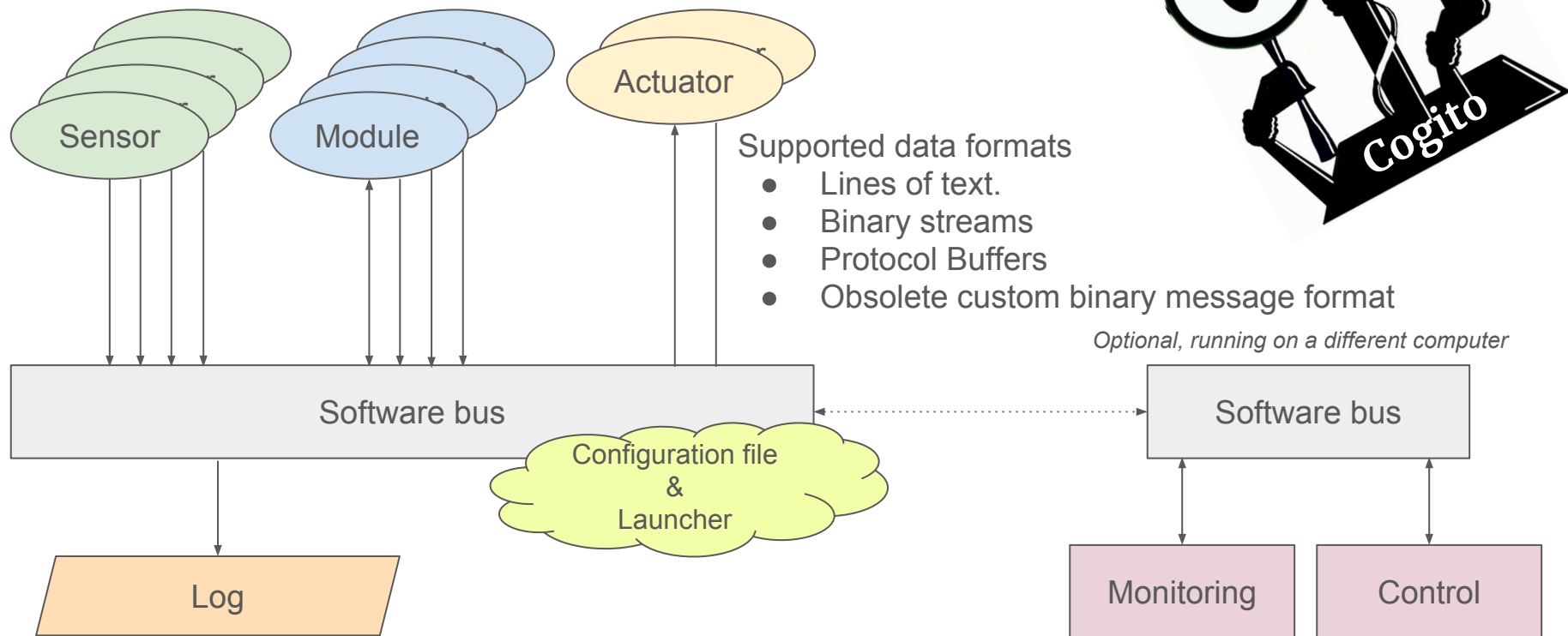
Interesting bits about hardware

- Stereo camera with wide-angle lenses
- Not only SICK lidar, but also self-made planar sensor based on Lidar Lite and a rotating cosmetic mirror
- Benewake TFMini lidars
- So why not any sonars?
 - Bad experience at competitions (cross echos)
 - Undesired reflections from flat surfaces
- Movidius Neural Compute Stick (cannot recommend)
- Stepper motors
- Other than that, pretty standard: Intel NUC + several Arduinos



<https://sites.google.com/site/cogitoteam/robotour-2018/hardware>

Software architecture



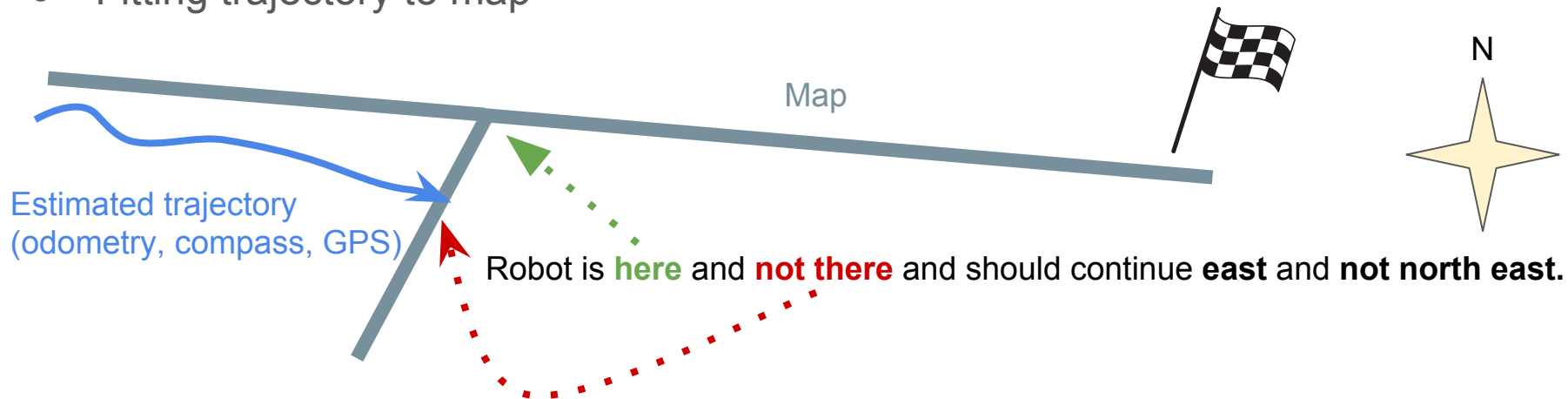
Software as an oriented graph



Sensors, modules and actuators running on top of the software architecture.

Interesting bits about software

- Road detection: Not So Deep Neural Network (CNN, seven layers)
- Sensor fusion into a sparse obstacle map
- Probabilistic planner on top of the obstacle map
- Fitting trajectory to map



Future: Make robots useful

Automated human transportation ...
... or a shopping cart ...
... or other helpful vehicle.

