Zumy Architecture

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Motivation

- building linux crawlers is hard
USB-enabled Architecture

Zumy

ODROID U3

USB

Camera

USB

mbed

USB

Radio

USB

wifi

Ground Control

wifi

Wireless Basestation
Features+

● Compute
  ○ ODROID-U3 single board computer
    ■ 4 x 1.6ghz cpu
    ■ 2gb RAM

● Peripherals
  ○ mbed Ipc1768 microcontroller
  ○ 802.11n WiFi
  ○ MPU6050 6dof IMU
  ○ dual motor control
  ○ Lifecam HD-3000
  ○ ⭐️⭐️⭐️
LCM Network → ROS Nodes

Ground Control (192.168.1.101)

- ROS user nodes
- Zumy ROS node
- Zumy LCM node

Robot Computers (192.168.1.x)

- Zumy LCM nodes

LCM WiFi

ROS
What is a LCM and a ROS?

- LCM and ROS are publisher-subscriber frameworks (and more)
  - any node can talk to any other node
- LCM = UDP multicast
  - Lightweight Communications and Marshalling
- ROS = TCP + nameserver
  - Robot Operating System
Example: Base controller

Ground Control (192.168.1.101)
- ROS teleop: /robot002/cmd_vel publish
- ROS: /robot002/cmd_vel subscribe
- LCM: /002/cmd_vel publish

Robot Computers (192.168.1.x)
- LCM: /002/cmd_vel subscribe

ROS

LCM WiFi
Applications

- cooperative control/manipulation/sensing
  - austin
  - andrew chen
- ???
  - you
The Future

- carrier board → integrated board
- onboard usb → lab usb hub
- odroid u3 → something smaller
- scm/cardboard shell → vacuum-formed
- v-rep model