Hacking and controlling toy flyers

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Motivations

• Aerial robots for experiments
• Avoid new MAV development:
  • Mechanic
  • Aerodynamic
  • Low level control

\{ Time consuming \}
Outline

• Goals of the project
• Flyer board
• Remote
• Demonstration
• Future work
Alien Jump Jet

- Quadrocopter
- Highly maneuverable
- Small (22cm)
- Light (54g)
- Cheap (CHF 130)
Project

- PCB design
- IR → Bluetooth
- Control
Flyer Board

- Battery
- Step-Down
- LDO analog
- LDO digital
- LED
- IR
- AJJ control
- dsPIC
- UART
- Bluetooth
- Magnetometer
- Accelerometer
- Gyroscope

Analog: stable supply
Flyer Board

- Supply: S-D + LDO
- dsPIC
- Bluetooth
- Sensors
- Motor control
Pulse-position modulation

280us

Roll  Pitch  Thrust  Yaw

Use multipurpose knob to set trigger source
Modified AJJ

Original  Modified
Remote

![Diagram showing the connection between a joystick, A/D converters, dsPIC, Bluetooth, and UART to a joystick.]
Remote

- dsPIC on the Development Board below
Demonstration

✓ Reading the joysticks
✓ Bluetooth connection
✓ Pulses generation

But not enough power to lift off
Future work

• Solve the problem of power
• Solder sensors
• Implement I\textsuperscript{2}C communication
• Implement feed-back control
Thanks for your attention