WiiCopter

Final Presentation

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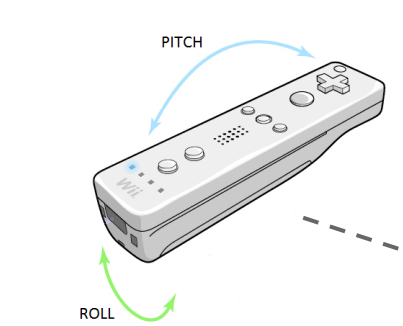
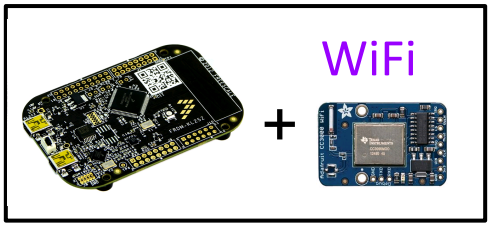
GSI: Antonio Iannopollo

Project Description: Controlling quadcopter w/ Wiimote and incorporating sensors for safety



http://embeddedcode.wordpress.com/



http://www.seeedstudio.com/

http://www.amazon.com/

(goal)

Mounted

Mounted

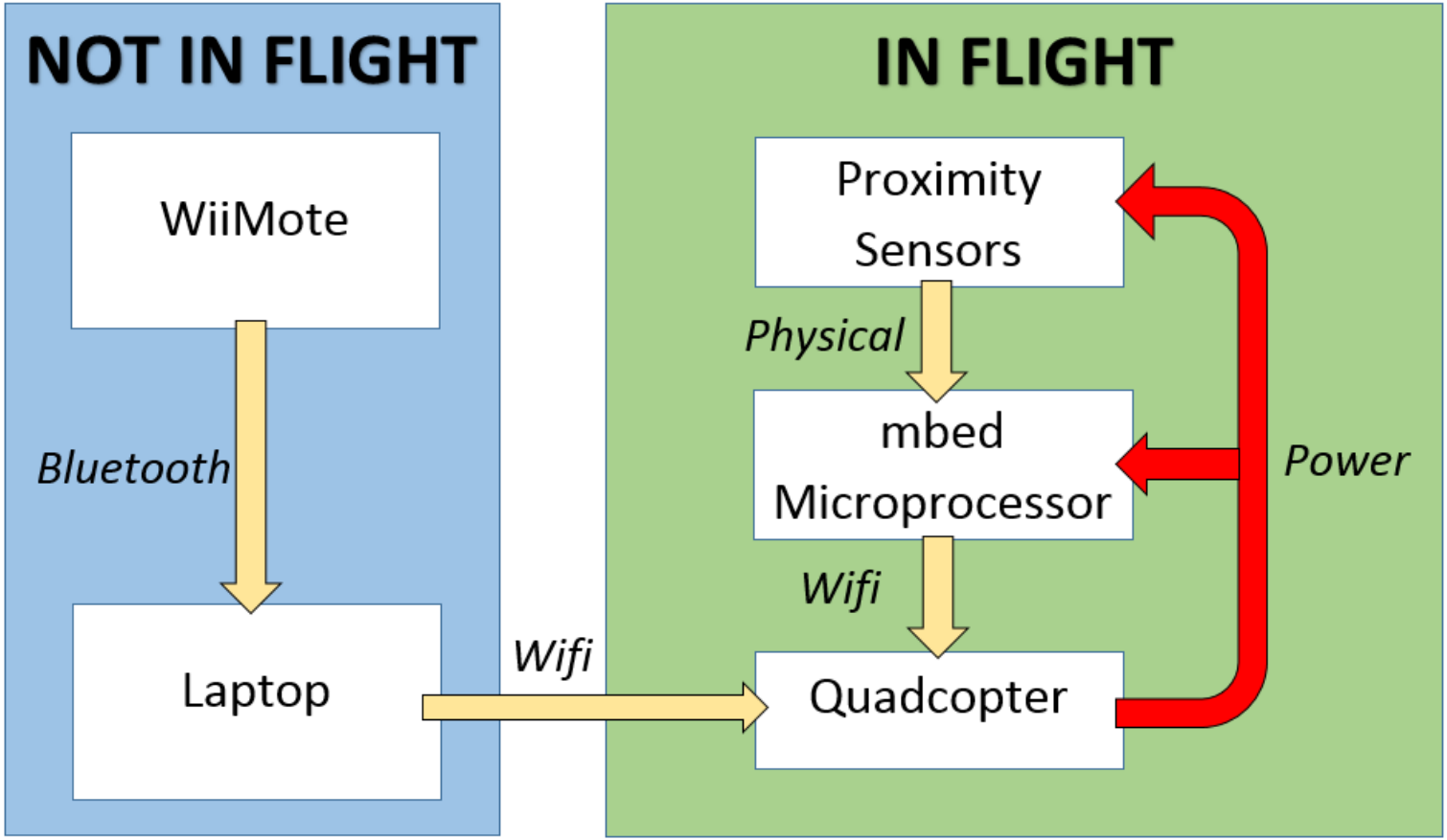
Bluetooth

WiFi

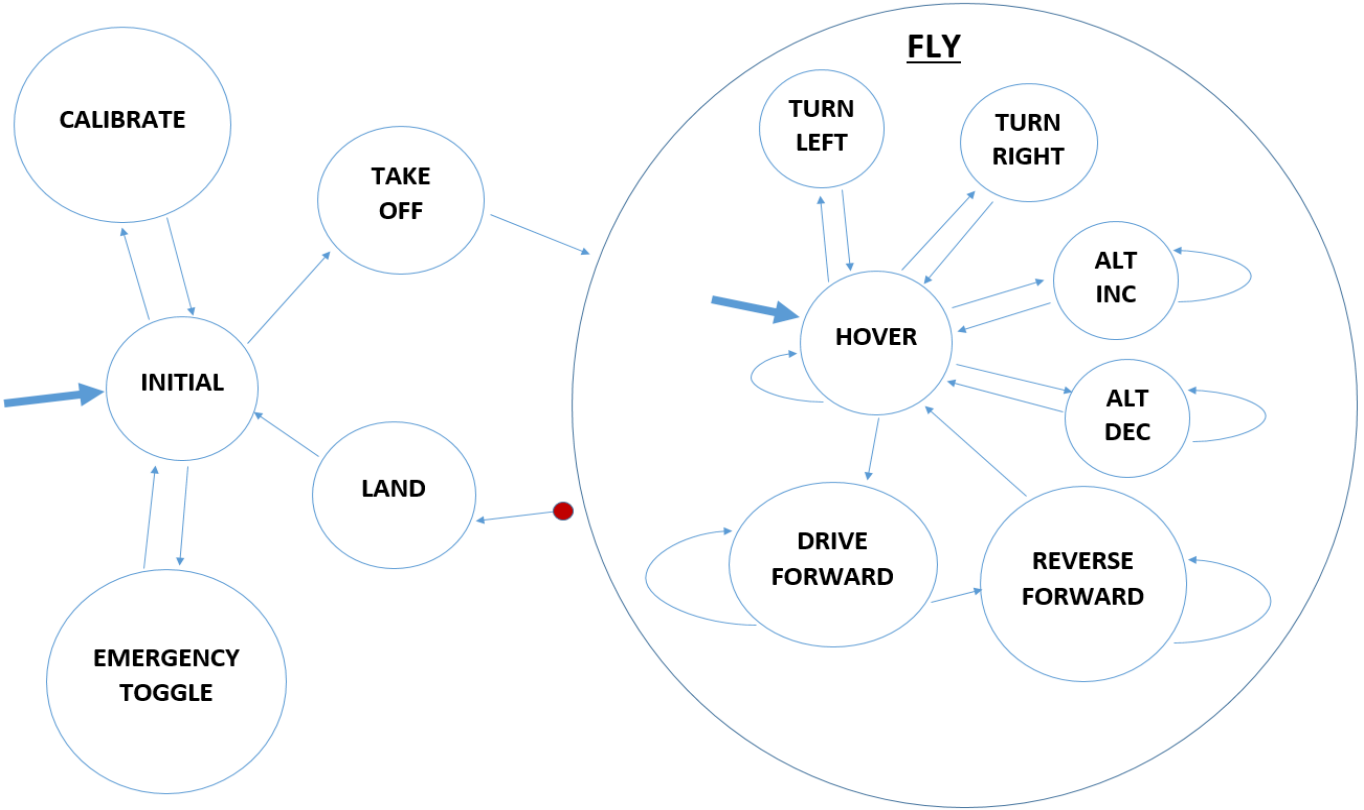
https://www.sparkfun.com/

http://www.groupon.sg/

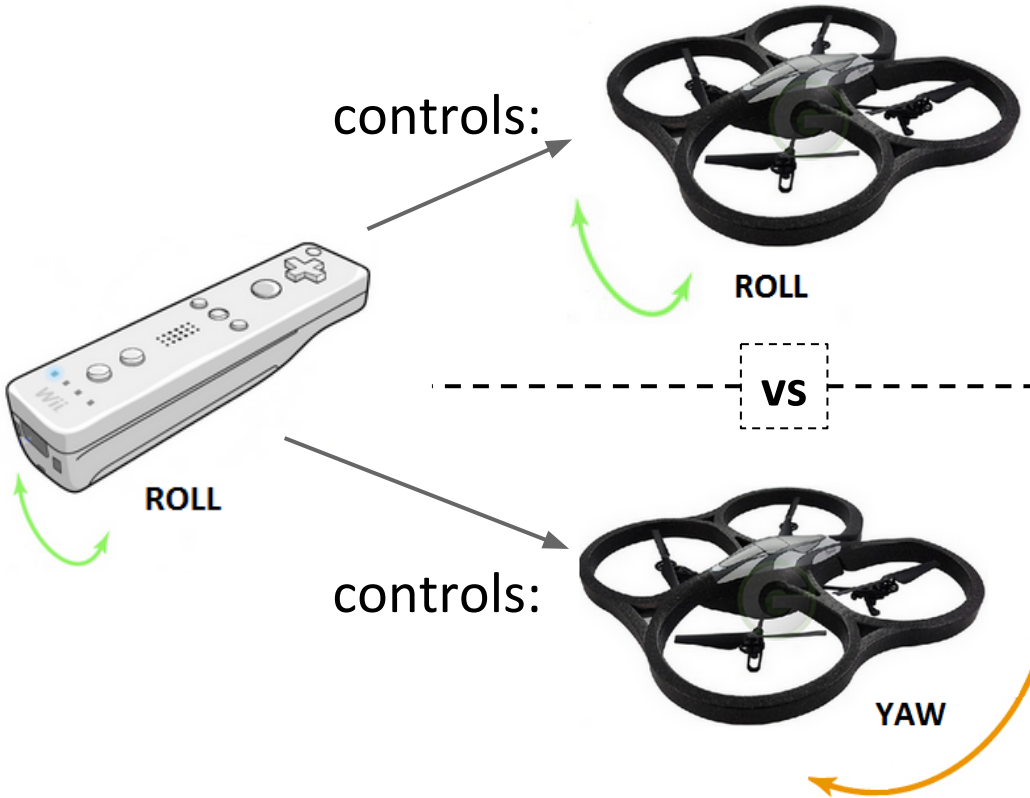
Project Description (Block Diagram of Networking)



Project Functionality - Composition State Machine w/ Preemptive & Reset Transition



Project Implementations - How to Turn



Pros:

- Game-like experience
- Quadcopter imitates WiiMote
- Faster to change direction

Pros:

- Camera always facing forward
- Feels more stable
- Less dependent on user being aligned with quadcopter

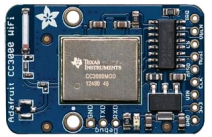
Weight Analysis: Payload max (theoretical) = 200g
(experimental) = 120g

Drone
(skeleton + cover):
338 [g]

http://www.amazon.com/

AR Drone Battery:
101 [g]

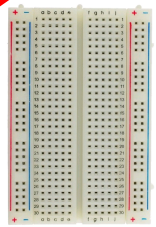
mbed:
21 [g]



wifi module:
5 [g]

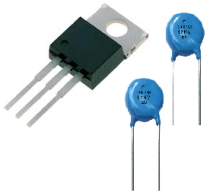
http://www.better-bargains.co.uk/

9V Battery:
46 [g]



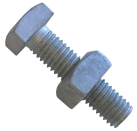
http://hiviz.com/

Breadboard:
15 [g]



Regulator
Circuit:
5 [g]

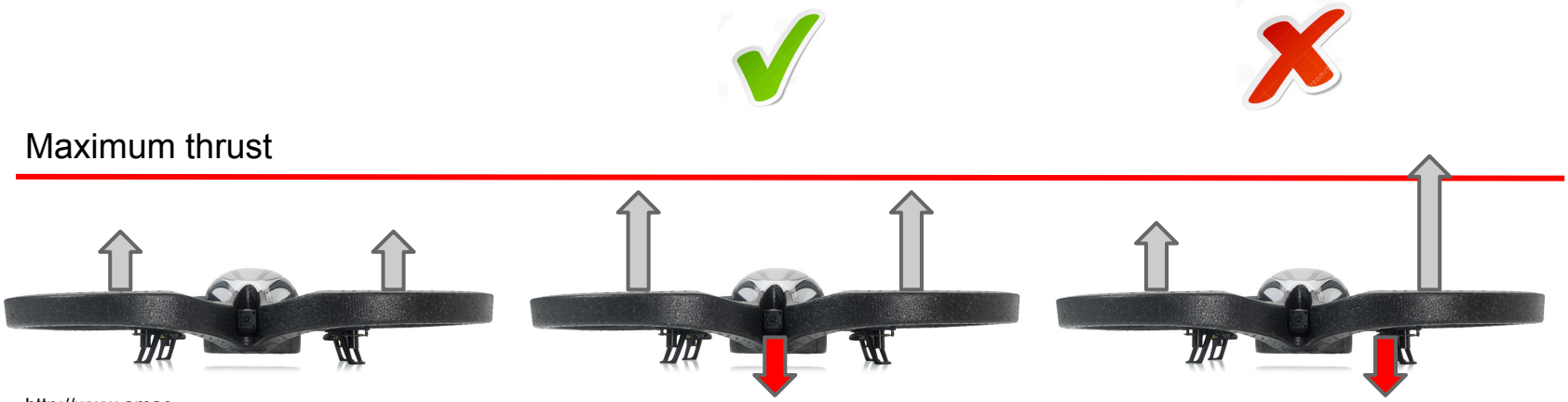
Sensors:
8.5 [g] each



nuts and bolts:
12 [g]

TOTAL PAYLOAD
~~= 138 [g]~~
= 92 [g]

Weight analysis 2 (distribution)



http://www.amac.ru/upload/iblock/1df/1df860b6944041b45a2d3de1a25133df.jpeg

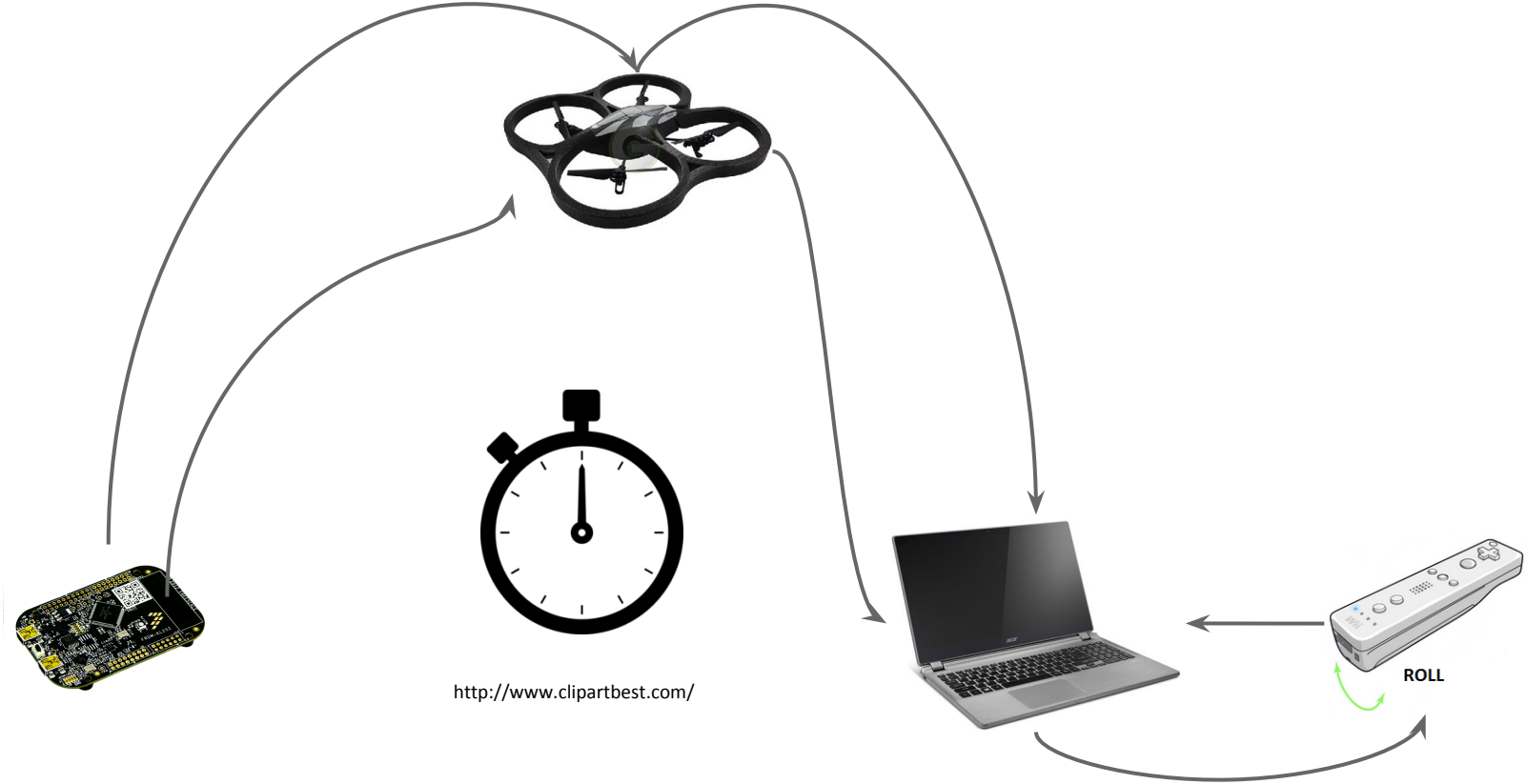
no weight

centered weight

off-centered weight

Keeping it real...time

Where rubber meets the road



http://www.clipartbest.com/

Conclusion

- ENORMOUS thanks to **Antonio Iannopollo** (our main GSI) for being with us every step of the way, as well as **Ben Zhang** and **John Finn** for answering any other questions we had.

- We are grateful to professors **Edward Lee** and **Alberto L. Sangiovanni-Vincentelli** for giving us deeper insights into the world of embedded systems, as well as solidifying our understanding of the relationship between modelling, design, and analysis.

- Questions?

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Resources

http://embeddedcode.wordpress.com/2010/12/07/wiimote-and-glovepie/

http://www.seeedstudio.com/depot/Freescale-FRDMKL25Z-p-1420.html

http://www.amazon.com/ADAFRUIT-INDUSTRIES-BREAKOUT-CC3000-MODULE/dp/B00GQM9IFY

http://ardrone2.parrot.com

https://www.sparkfun.com/products/8958

http://www.groupon.sg/deals/shopping/Groupon-Delivery/716917936

http://www.amazon.com/Bastens-battery-upgrade-Parrot-AR-Drone/dp/B004WPITUC

http://hiviz.com/kits/instructions/du-manual.htm

http://www.better-bargains.co.uk/duracell-9v-battery.html

http://www.clipartbest.com/cliparts/niB/gXj/niBgXjoiA.png