

# **Auto-Pilot**

**Autonomous control of a remote  
controlled helicopter**

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- Problem Statement
- Hardware
- Previous Work
- Approach
- Timeline

# Overview

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- Create a system that simulates an auto-pilot for mini R/C helicopter
- Send commands in real-time from PC
- Track helicopter using a camera
- Starting point for autonomy

# Problem Statement

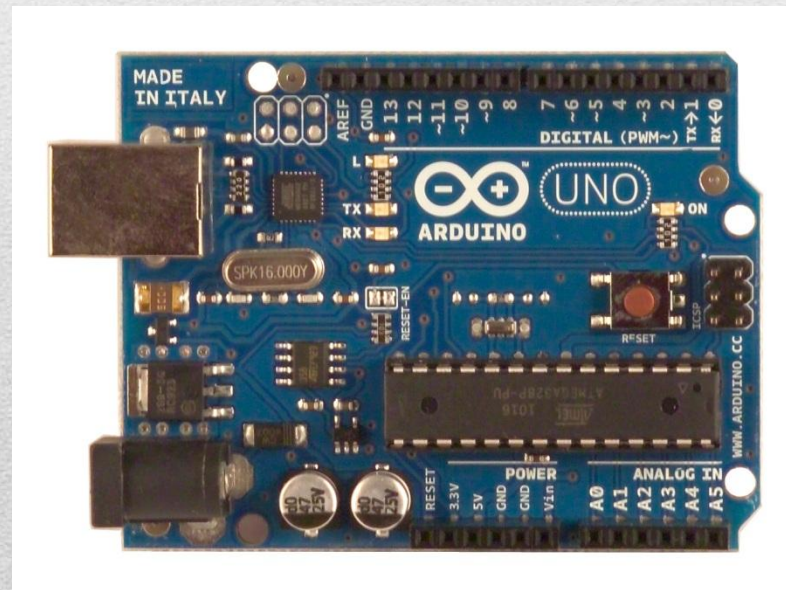
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- 3 basic movements
- Very stable
- Infrared



# Syma S107

- Inexpensive platform for making interactive apps
- Atmega328 micro controller
- Powered by USB
- Programming language is based on Processing

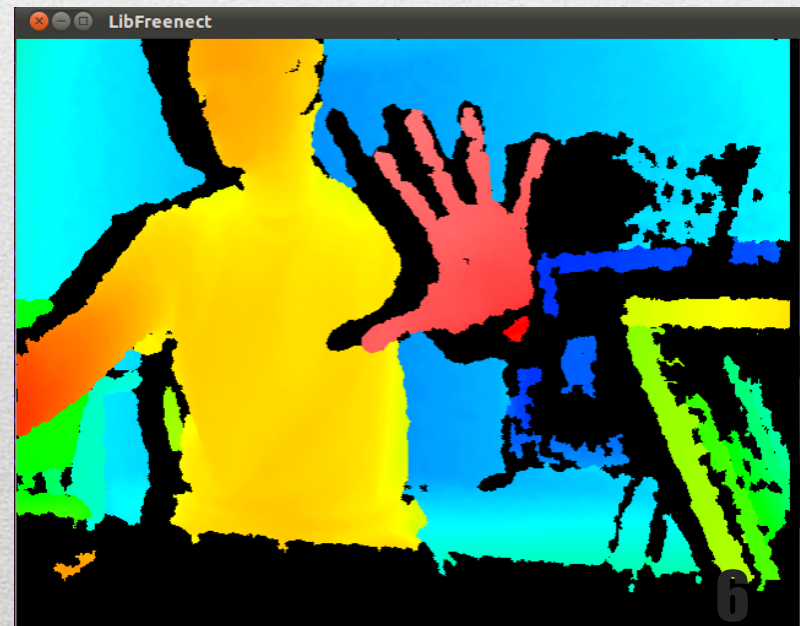


# Arduino

- Motion sensor for Xbox 360
- Gives 3d information
- Shows depth using infrared
- Can be used for tracking



**KINECT™**  
for  XBOX 360.



# Kinect

- Kinect has been used to track many different objects
- Arduino has already been used to control Syma S107
- Previous projects controlled mini helicopter using hand movements
- Results show that a strong LED needs to be used

# Previous work

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- Decode infrared protocol already used by the mini helicopter
- Send commands and control it using an infrared transmitter on an Arduino board
- Identify and track LEDs attached to the helicopter using a Kinect
- Use this information to control helicopter autonomously

# Approach

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# Timeline

Dates	Activity
6 March – 20 March	Research Arduino environment and the controls of the helicopter. Research object tracking.
21 March – 10 April	Research infrared protocol and create a system that can control the helicopter
11 April – 17 April	Gain familiarity with the Kinect and it's software
18 April – 15 May	Attempt to track the helicopter
16 May – 1 June	Build initial prototype system to control the helicopter. Complete Literature survey
15 June – 13 July	Improve system to do more advanced movements
14 July – 16 September	Testing and improvement of system
2 November	Project Completed
5 November	Complete website
19 November	Submit short paper

# Questions

