

# CSC 714 Project Report 2

## Team:

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## Motion Tracking with the RCX and Quickcam

**Project Url:** <http://www4.ncsu.edu/~jjwinega/csc714/>

### Solved Issues

- **Joe:** Built a rotating RCX with webcam mounted on top.
- **Joe:** Setup Inpd for communication with tower.
- **Joe:** Wrote wrapper functions for communicating with Inpd (Inpctl.h).
- **Joe:** Wrote RCX program to receive commands (stop, left or right) and rotate in the direction indicated (camtrack.c).
- **Joe:** Wrote a command-line program for sending commands via Inpd to the RCX to test communication and reaction in non-realtime (Inphost).
- **Dan:** Wrote image processing routines to find a specific colored object.
- **Dan:** Evaluated methods to track an object or motion, including XOR'ing images, searching for a square region of pixels with an average color matching the object, and searching only single pixels.
- **Dan:** Wrote controls to change the brightness & contrast of the images grabbed from the camera in order to improve image quality.
- **Dan:** Wrote code to select a target color from a color dialog.
- **Both:** Included Inpctl.h and libInp in camtrack. Make calls to send\_msg() each time the colored object is located to tell RCX to turn towards it.
- **Both:** Tested and debugged full setup until it worked correctly.

### Open Problems

- How to deal with the stiffness of the USB camera cable?
- Further research should be done on effective image processing techniques to track (or locate) a specific object.
- A configuration file should be created for the image processing software to save default values.