Gesture Based Control of the Ardrone quadcopter

Team - weiβbier
Daniel Macnish
Nikhil Somani
Motivation / Application

Was to control the x, y, and z velocities, as well as the yaw angle of the quadcopter using gestures measured from the quadcopter itself.

The gestures(marker/human face) were to be observed using the front facing camera.

ARToolkit Marker tracking

OpenCV face tracking
Approach

- Initial task was to achieve control of the quadcopter using a standard ARtoolkit marker in one axis.
- Progress to multiple axes.
- Change from a standard marker to facial recognition.
Results

✓ Simulated control of all three linear axes (x, y, and z) in RVIZ, using bag-files and real time data.
✓ Marker recognition, and corresponding control of the quadrocopter in x and z axes.

✗ In reality control of the y-axis (side-to-side) movement was not practical.
   • The primary reason for this was the camera field of view was too narrow.
✗ Facial recognition and tracking using the ARdrone's camera.
   • Time was not sufficient
Conclusions

• Using the current hardware on the Ardrone, control of the y axis is not stable using the front facing camera.

• With a higher resolution, wide angle camera y-axis control would be more practical.

• Would be interesting to explore yaw control.
Thanks!

Questions?