CSCI 5551 Fall 2015 Term Project

UAV Applications
Image Based Tracking of Mobile Object

John Erickson

eric0870@umn.edu

Computer Science and Engineering Department

The University of Minnesota at Twin Cities

Agenda

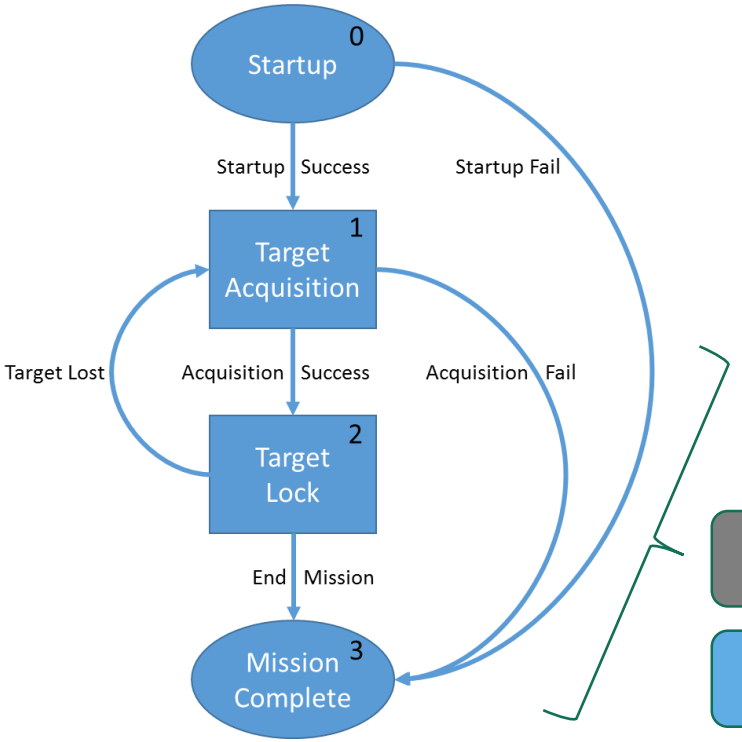
- Problem Description
- Implementation
- Conclusions
- Acknowledgements

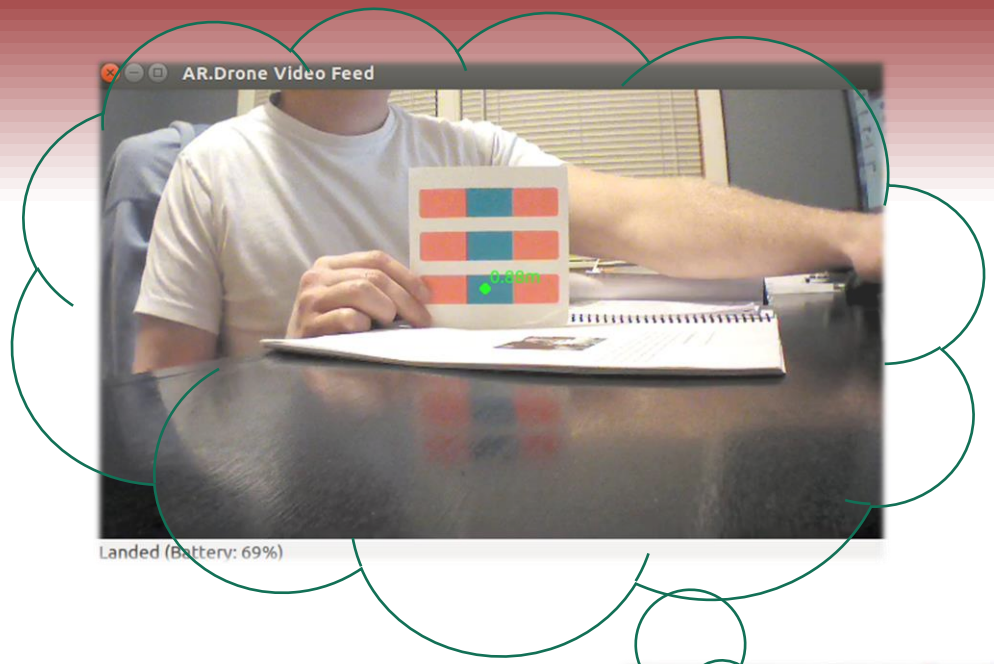
Problem Description

- Create Follow Me application to allow a drone to autonomously follow an object through space
- To meet project schedule, open source tools and COTS hardware leveraged
  - Parrot AR.Drone 2.0 quadcopter and SDK
  - ROS and Autonomy Lab
- Proof of concept via EZ-Builder

www.ez-robot.com

Implementation





Follow Me

AR. Drone Autonomy

AR.Drone SDK 2.0

ROS

Linux

Conclusions

- Challenges
  - Integration of open source tools
  - Drone flight stability (particularly for indoor flight)
- Assessment
  - Application well supported by community (framework and examples)
  - Opportunity to leverage open source software and affordable COTS hardware made for a great project application and learning experience
- Future Work
  - Add capability to acquire and track object based on digital image
  - Port application to mobile host (requires UAV with onboard user processor)

Acknowledgements

- AR.Drone SDK, Parrot
- ROS, Open Source Robotics Foundation
- Autonomy Lab, Simon Frasier University
- AR.Drone Tutorials, Mike Hammer
- EZ-Robot, D.J. Sures