Routonomous

MathWorks Minidrone Competition at
Nordics and Baltics 2021

Who We Are

Jan-Ruben Schmid

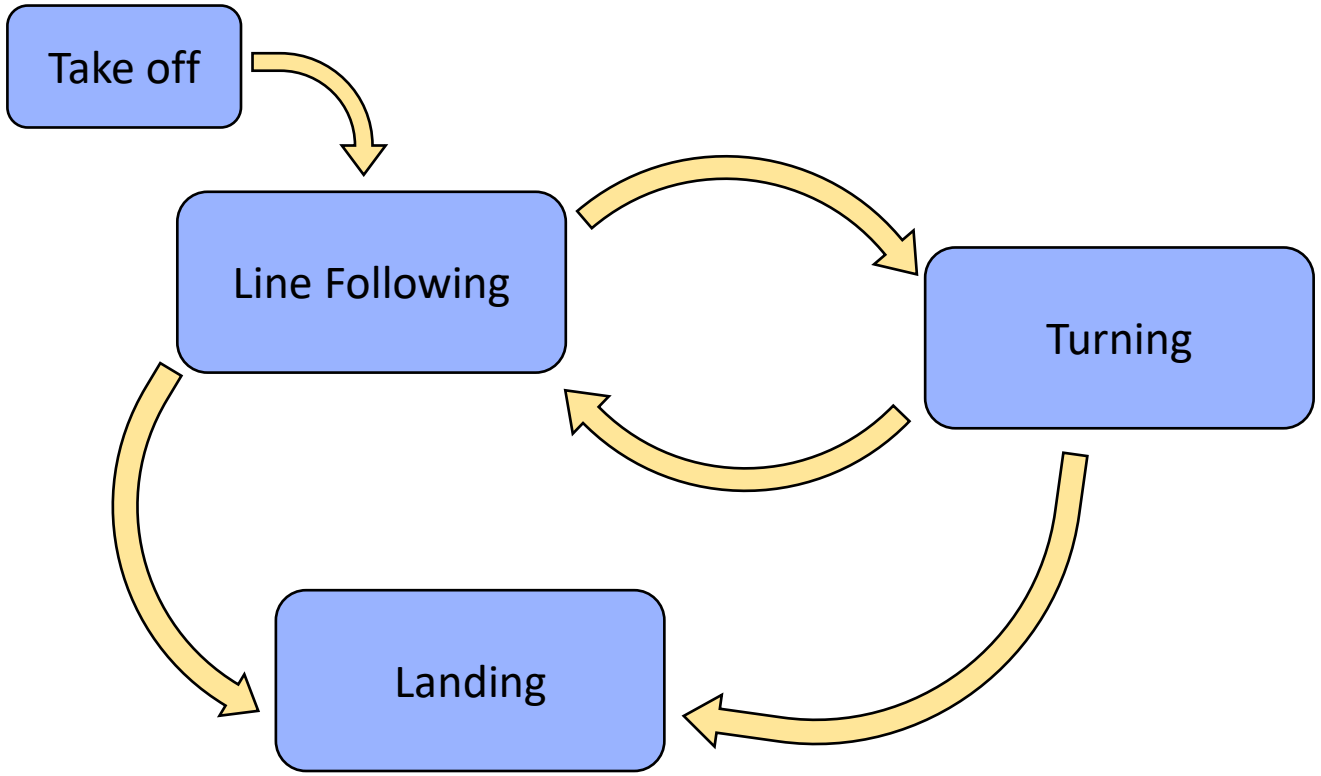
- MSc in Engineering - Robot Systems

Nathan Durocher

- MSc in Engineering - Robot Systems

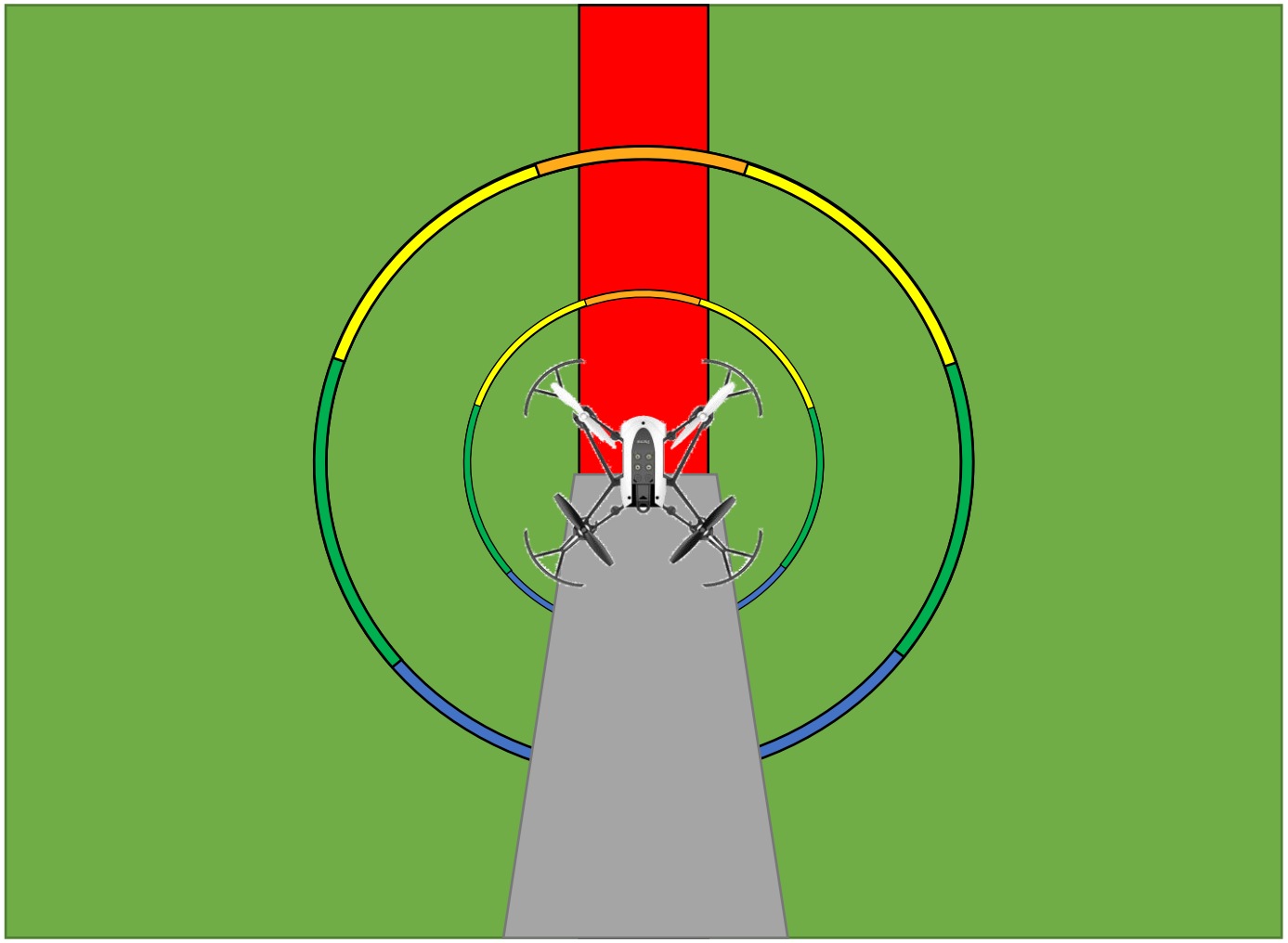
State machine

- Each behavior has different priority
- Based on image data

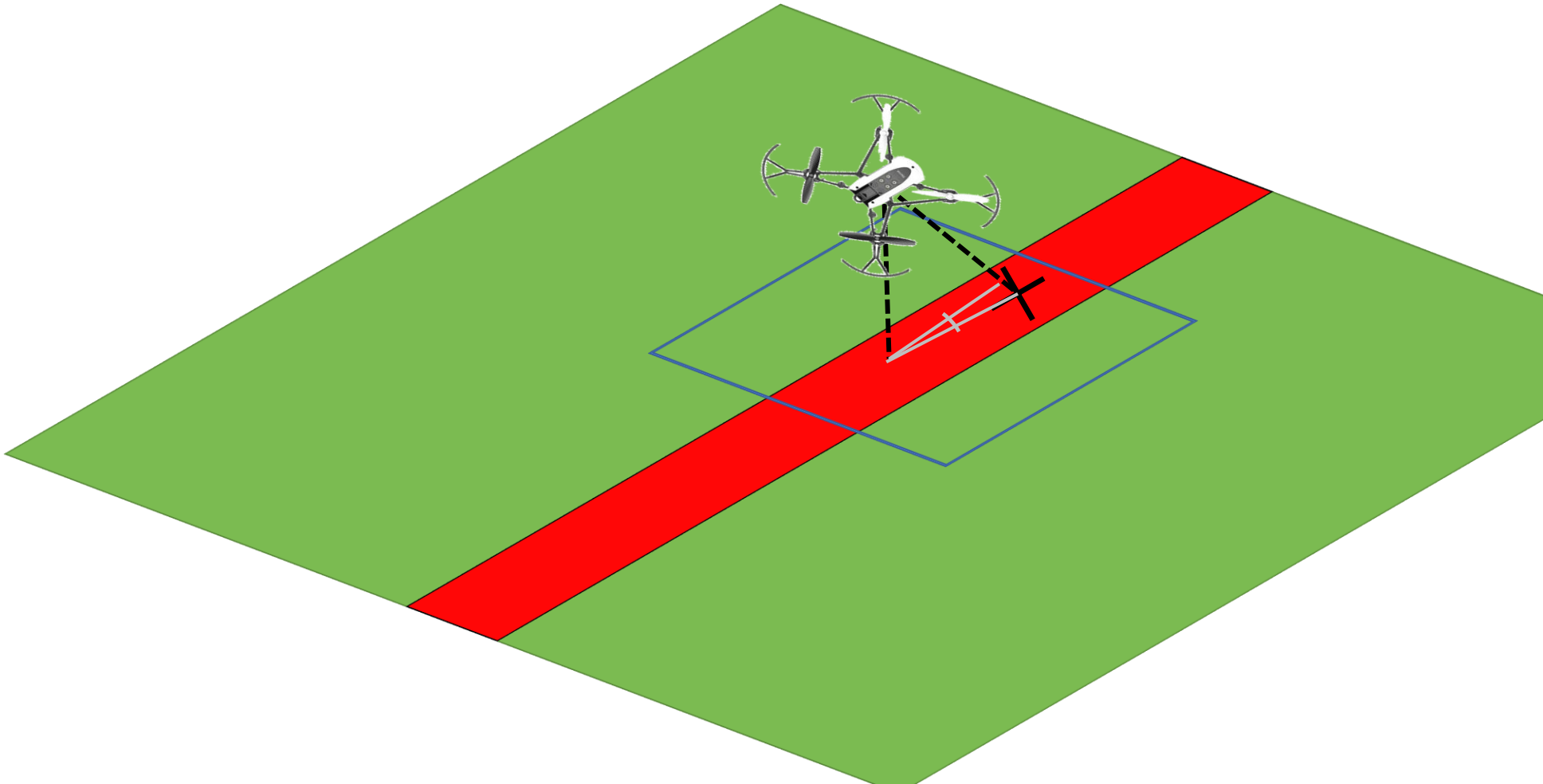


Behaviors
Line following

- Enclosure based line of sight guidance
- Weighted detection radius
- Highest red response provides next waypoint



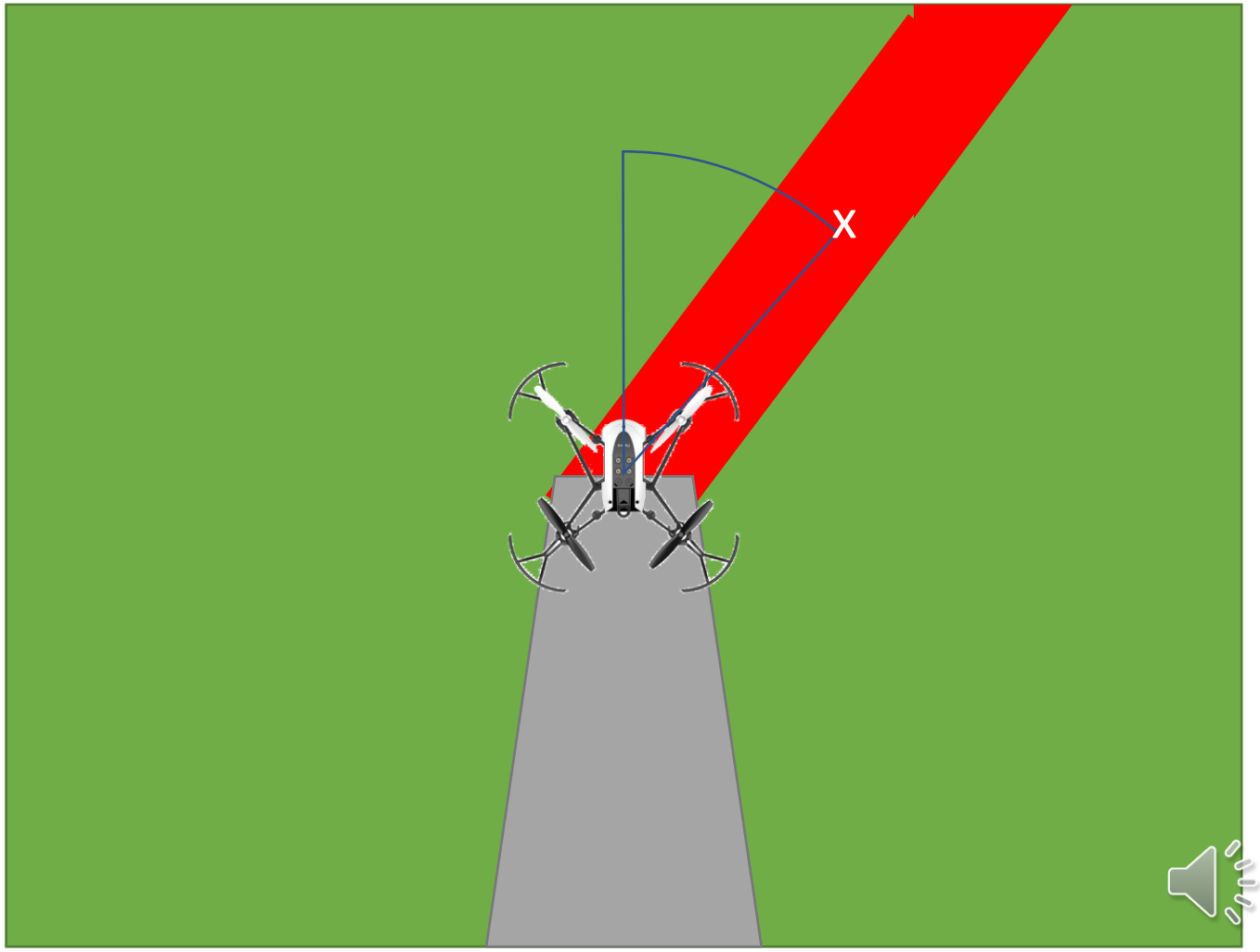
Behaviors
Line following



Behavior
Steering

- Mask out previous track

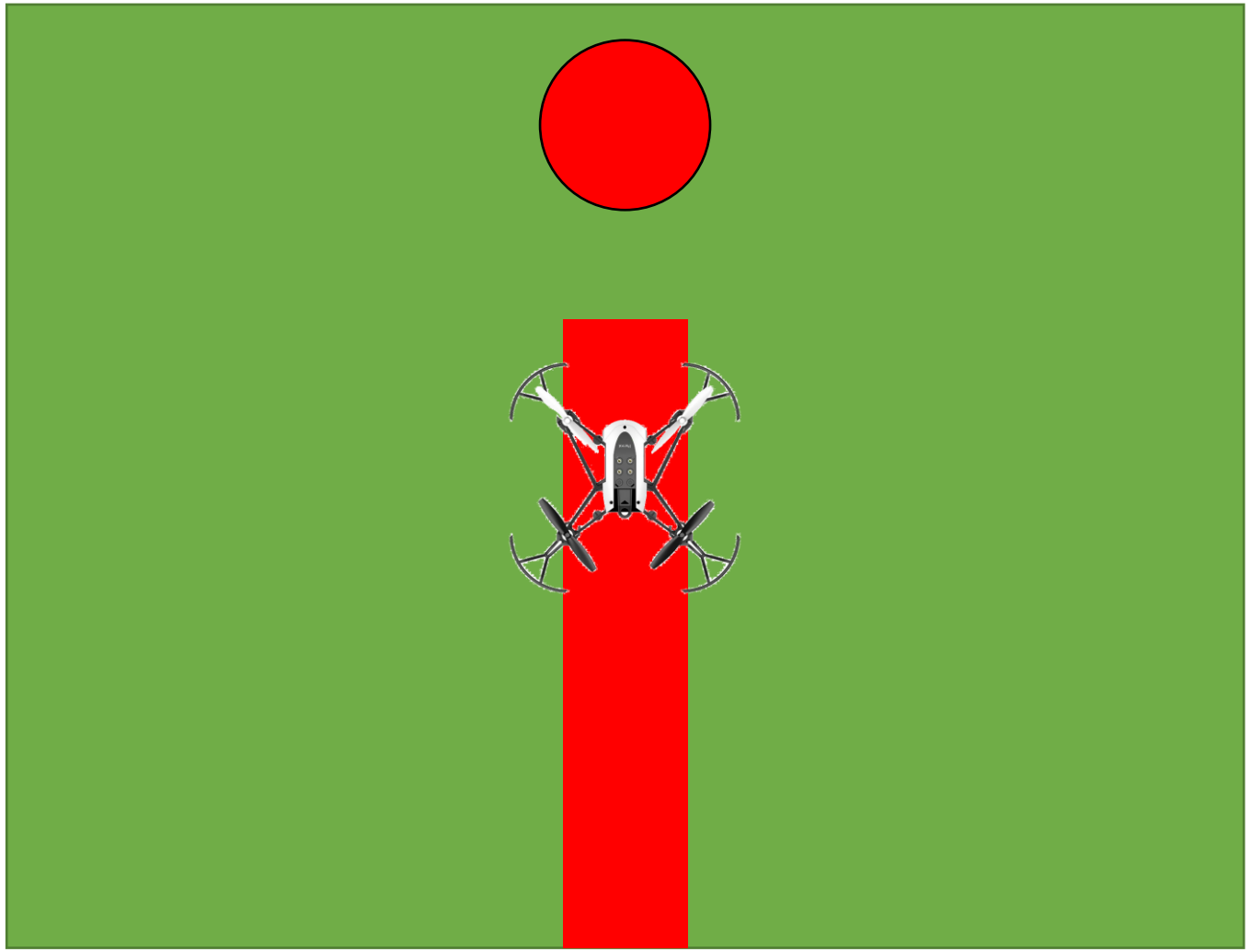
- Adjust yaw based on geometric center of visible line



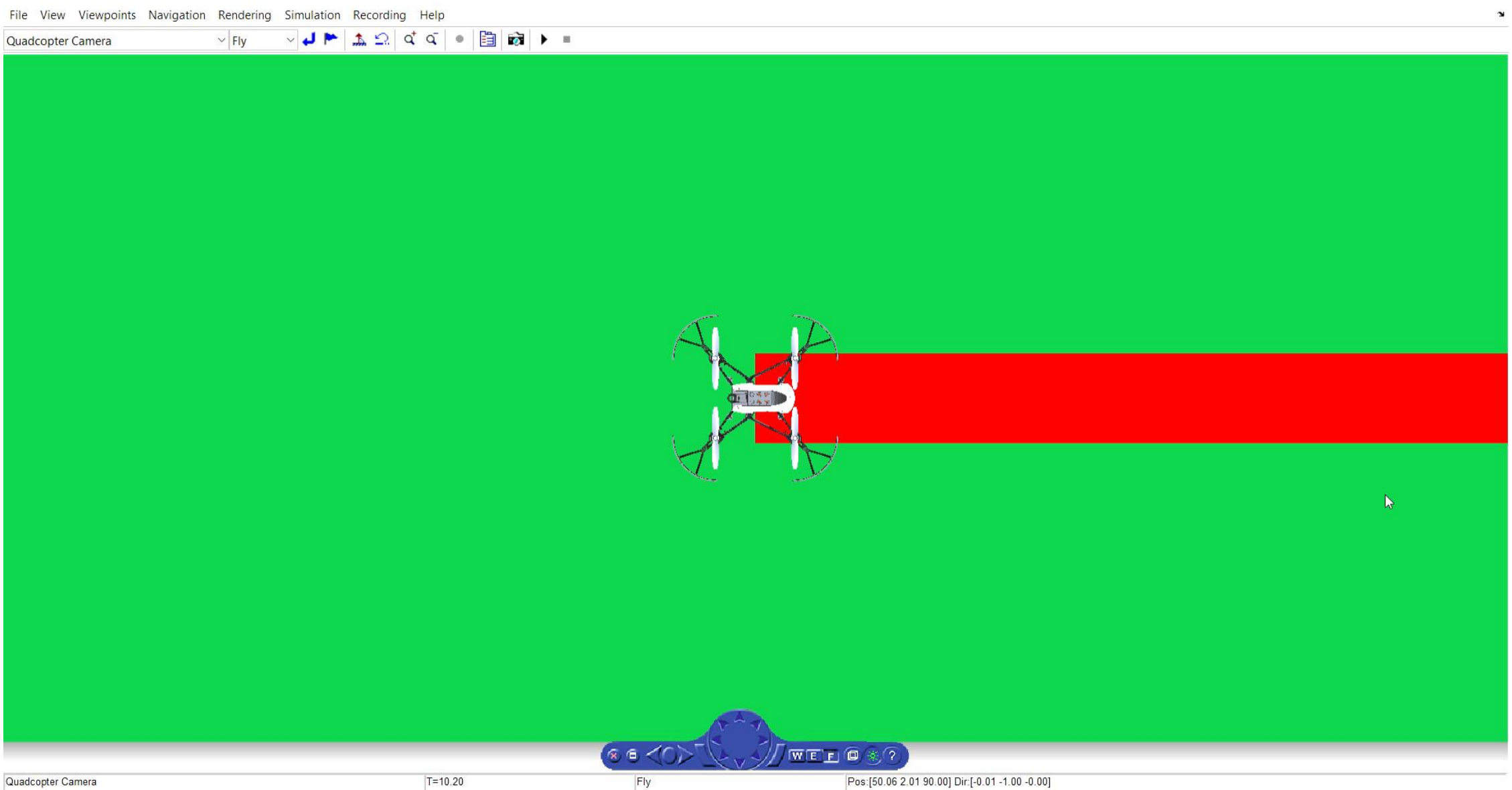
Behaviors
Landing

- Circle detection

- Landing begins when above the geometric center



Demonstration



Challenges & Learnings

- Determining proper guidance law
- Constrain and simplify drone model movements
- Extracting real time information from a dynamic environment