E90 Proposal

Indoor Aerial Robot Competition

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Proposal

For our E90 project, we will design and construct an aerial robot to participate in the first annual Aerial Robot Competition at Drexel University. The competition tests robots for autonomous and teleoperated performance in varying lighting conditions, wind conditions, and sound variations. The first part of the robot's operation consists of autonomous traversal of a slalom obstacle course. The obstacle course includes walls designed to interfere with each of the robot's main sensor systems. The second part of the competition requires the robot to drop markers on simulated victims using a teleoperated interface while maintaining neutral buoyancy.

The website recommends several key components for the manufacture of the aerial robot. We will evaluate these components and others to decide on a final configuration. Once we have working robot, Alex will focus on the control problems and decisions necessary to stabilize and fly the blimp. Zach will design and implement visual odometry and AI required for obstacle avoidance and autonomous navigation. Geoff will specialize in the circuitry, sensor systems, and electrical systems on the robot. Since we all have background spanning multiple fields, there will be significant overlap in each subtask. Together, we hope to develop a robot capable of winning the competition.

References

The competition website is available at the URL below:

http://www.pages.drexel.edu/~weg22/drexelAerialRobotCompetition.html