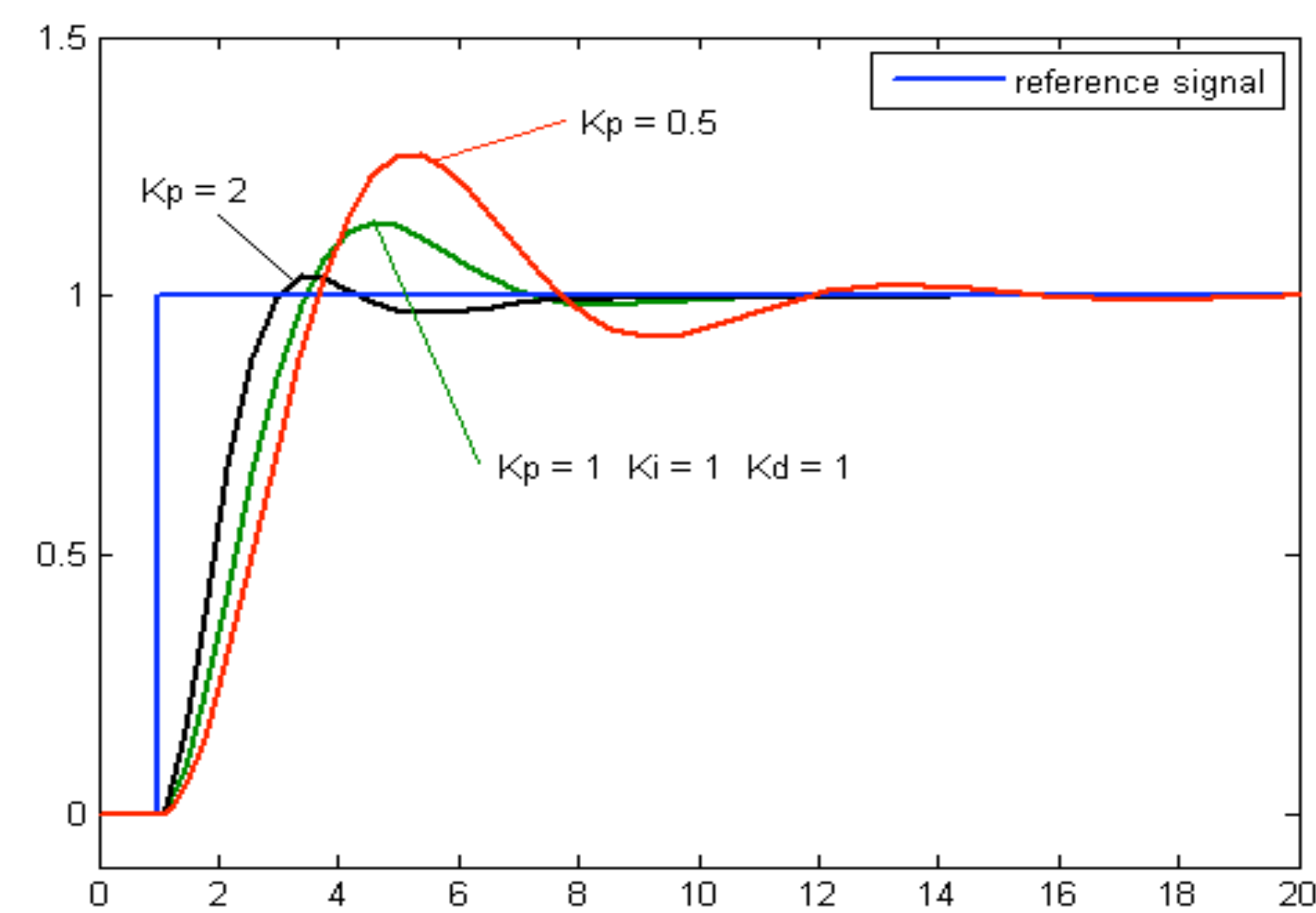
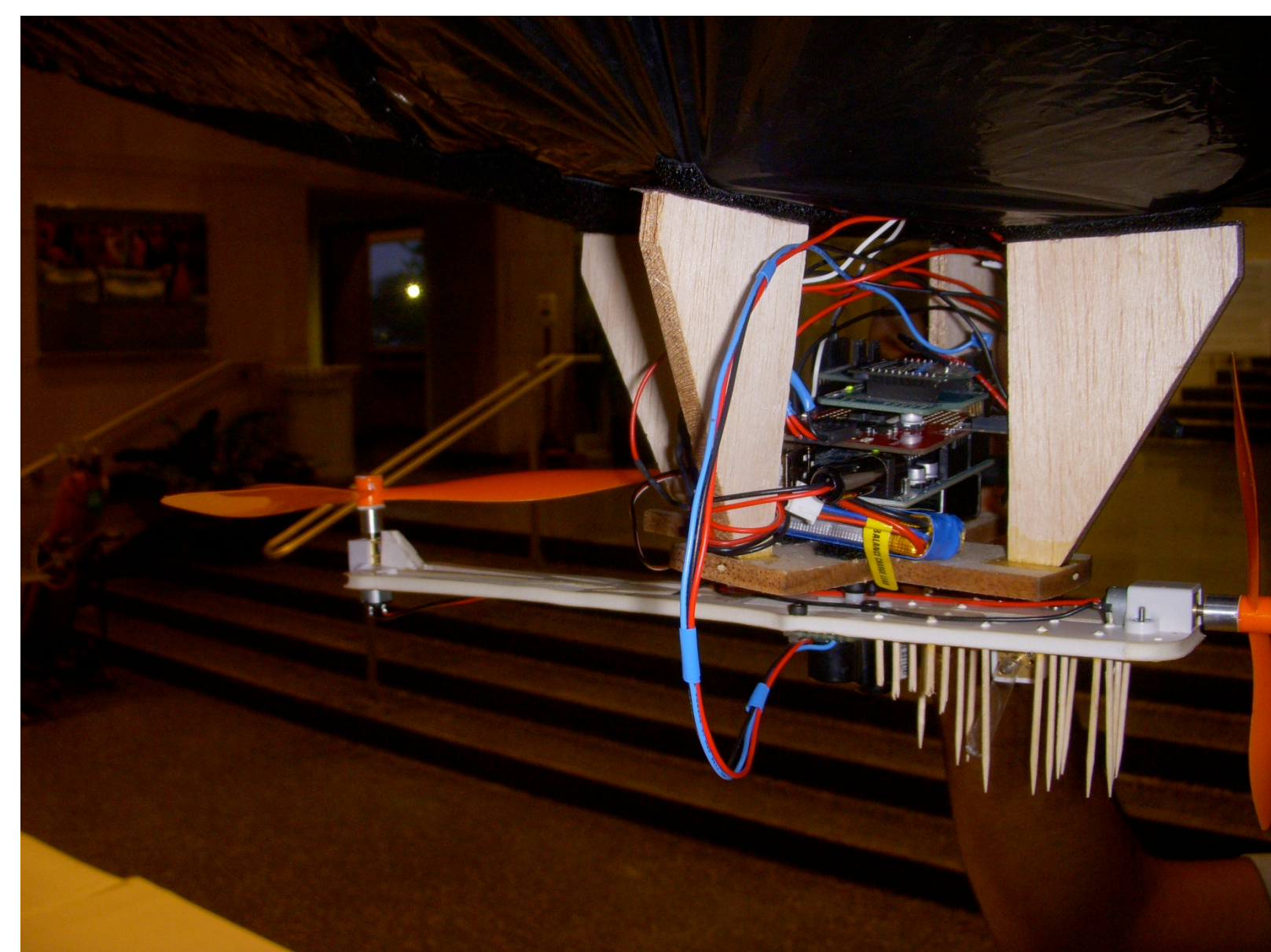
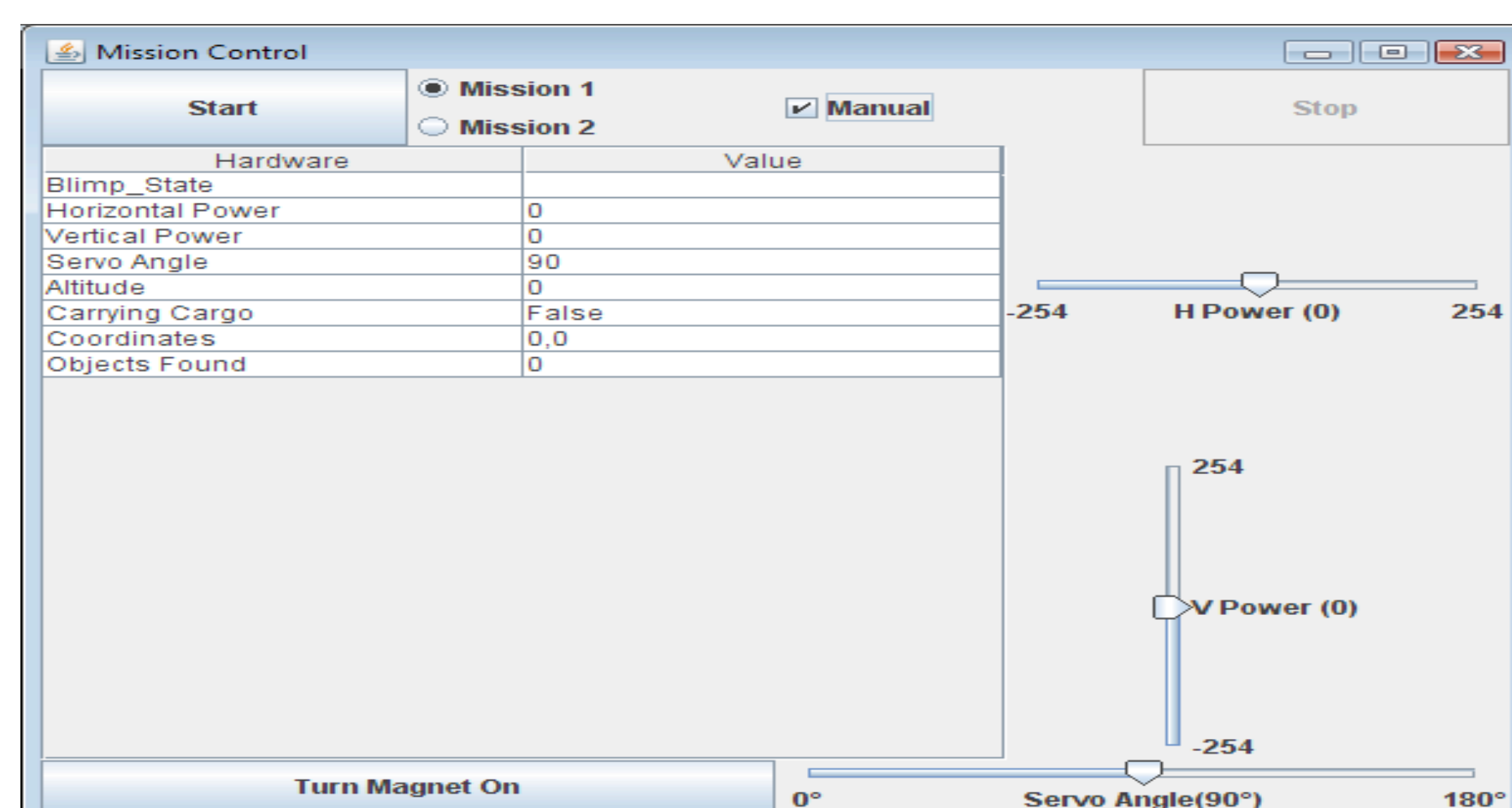


Blimp Hardware



PID (Proportional Integral, Derivative) Controller



Blimp Software

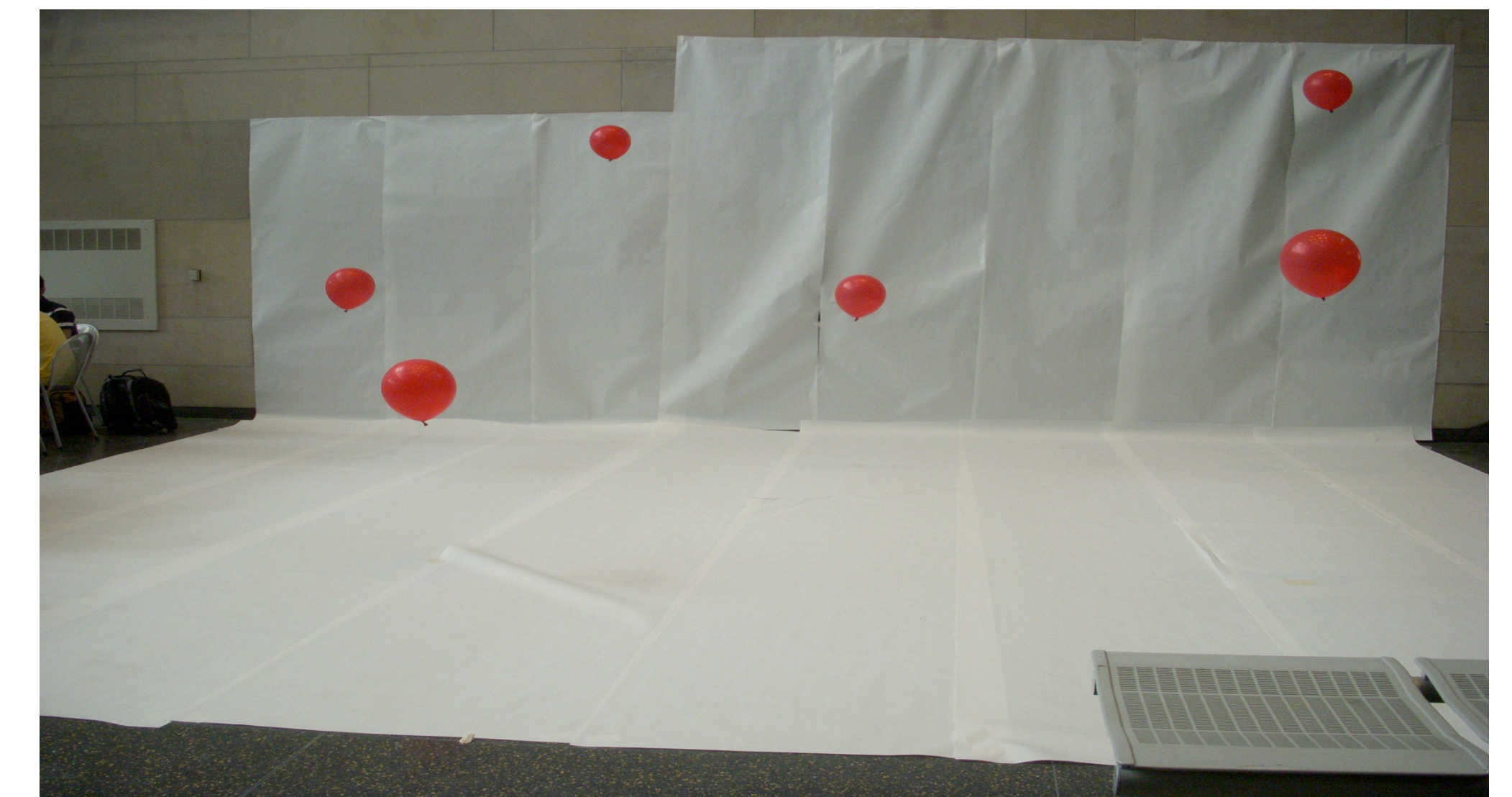
Autonomous Blimp Project

Edward Burns, Ryan Gandy, Benjamin Hample, Earl Huff, Andrew MacNamara, Kevin McGarry, Jonathan Palka, Charles Schwaab, Milkias Tadesse, Manharsinh Zala
 Department of Computer Science, Rowan University
 Email: {burnse15, gandyr17, hample04, huffe72, macnam53, mcgarr92, palkaj66, schwaa49, tadess02, zalam93}@students.rowan.edu
 Faculty Advisor: Dr. Adrian Rusu

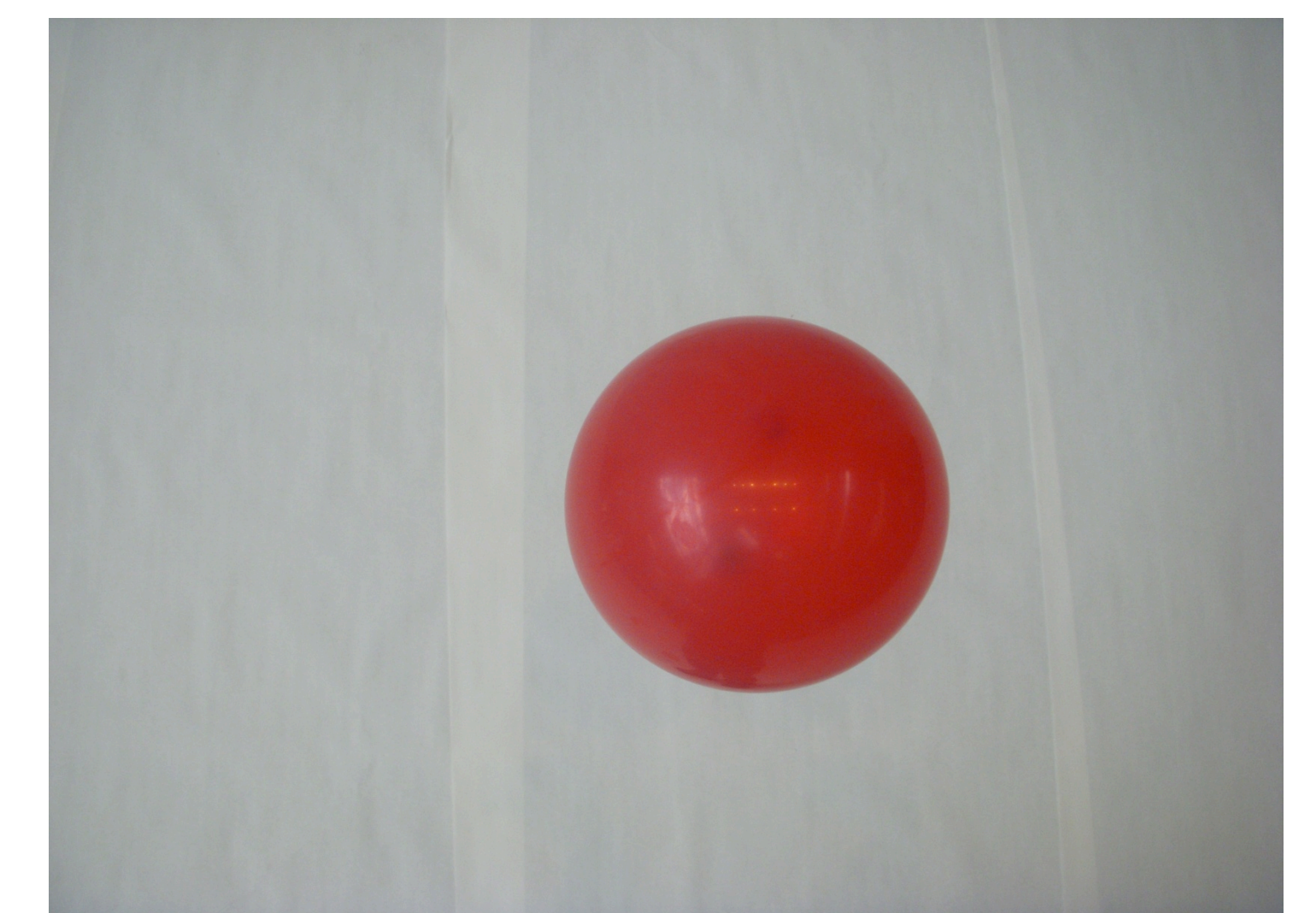
Karl Dyer, Julio Montoya, Frederick Powell
 Department of Mechanical Engineering, Rowan University
 Email: {dyerk18, montoy40, powell91}@students.rowan.edu
 Faculty Advisor: Dr. Hong Zhang

Abstract:

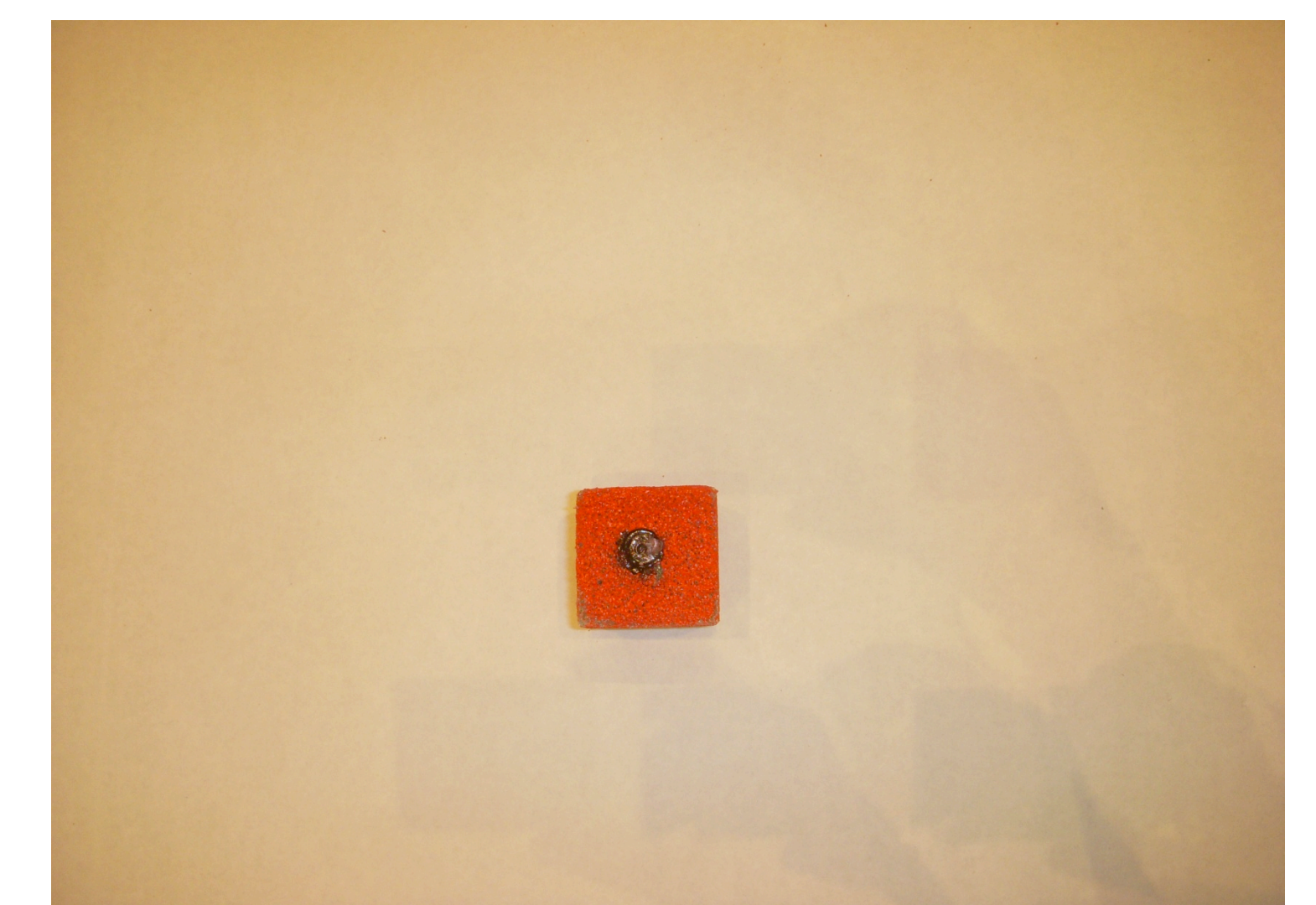
Unmanned Air Vehicles (UAV) are gaining wide spread popularity in the commercial and military industries of today. Autonomous control of these UAVs is critical to ensuring efficiency and effectiveness in specifically defined missions. Rowan University is hosting a Blimp Competition sponsored by Drexel University this 2010 Spring semester which defines various missions for blimps (UAVs) to accomplish in a specified time. This year the competition focus is on autonomous control of a blimp during each mission. Inter-department collaborations are always an excellent way to bring students together to complete a larger project; this competition created an excellent opportunity for two departments to join forces at Rowan University this year. A team from Rowan's Mechanical Engineering department (3 students) has collaborated with a team from Rowan's Computer Science department (10 students) to create an autonomous UAV (blimp) for the competition. The ME team designed, constructed and assembled the hardware while the CS team gathered the requirements, arranged a design, and implemented the software to autonomously control the blimp. The production of the software and hardware was done in simultaneously over the course of the semester. The design of the blimp was done electronically first before creating a working model and the hardware was carefully considered for efficiency during flight. The software was created with an emphasis on safety critical requirements and a risk assessed approach. During the entire project, teamwork and project management skills were utilized by both teams to effectively collaborate. Communication skills were also essential between the two teams, the professors involved and internally to the teams in order to contribute to the success of this project.



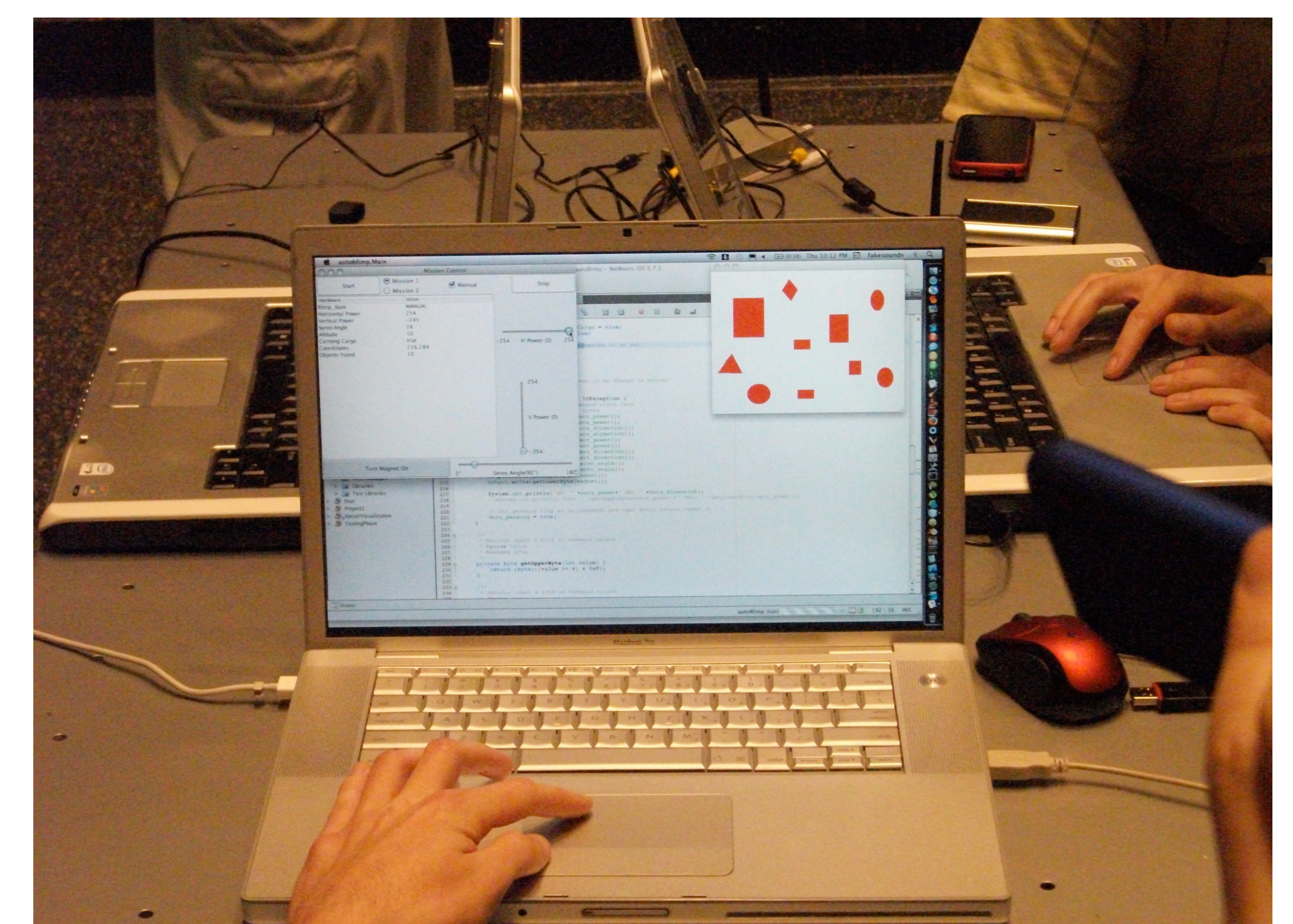
Competition Course Layout



Balloon Targets to Destroy



Cargo Objects to Rescue



Blimp Software