**FSC: Flight Simulator Chair**

**Background**
Flight simulation units have been around for decades and are most often used for pilot training and research in aircraft design and development, as well as in aircraft characteristics and control handling. Most flight simulations either project or utilize monitors as a graphical display for the user.

**Project Goal**
Our goal is to take the user experience to a new level by incorporating virtual reality and allow two types of flight control. The first is driven by remote control (RC) and the second is driven by virtual reality (VR) simulation. We will use compressed air as our driving force and integrate a control law to regulate air flow to two pneumatic pistons for roll and pitch movement.

**Objectives**
- Animate chair with 2 DOF (degree of freedom)
- Establish communication between simulation program and Arduino
- Integrate Oculus Rift virtual reality system

**Timeline**
- **Fall 2019**
  - Hardware troubleshooting and software design.
- **Winter 2019**
  - Redesign circuitry and mechanical systems as necessary.
- **Spring 2020**
  - Integrate VR system, improve quality of simulation experience.

**Project Status**
Remote control has been realized but requires further refinements to eliminate signal errors. Due to our unique propulsion system, communication between simulation program and Arduino is still undergoing design.

**Next Steps**
- Edit gain settings to achieve stable, critically damped controls system
- Continue research on simulation program

**Team Members**
Hannah Trinh: hannadt@uci.edu
Minsoo Choi: minsoc1@uci.edu
Alberto Garcia: agarciao@uci.edu
Ibrahim Hassan: iqhassan@uci.edu
Kevin Kwong: ktkwong1@uci.edu

**PROJECTED BUDGET: $2000**
- Controls $80
- Propulsion $150
- Available Funds $1770

Contact: Hannah Trinh hannadt@uci.edu