**Autonomous Satellite Recovery Vehicle (ASRV)**

**Abstract**

In collaboration with ERFSEDS, we would like to send a small satellite attached to a quad-copter as the payload for ERFSEDS rocket which will reach an altitude of 10,000 feet. The quad-copters objective will be to collect atmospheric data as it descends. Our plan is to 3-D print a new chassis for the quad-copters electronic components and arms that will allow the quad-copter to fold its arms inwards to meet the required space constraints. After launching the rocket, the satellite will be deployed at the target altitude and begin collecting data once jettisoned from the rocket. Once reaching 2,000 feet the quad-copter will be programmed to deploy a parachute. After reaching a safe velocity the arms will extend and autonomously navigate to a prearranged location. Flight planning will be done using the preexisting flight planning application. In addition to the critical components of the quad-copter, our design will integrate a number of other data collecting sub-systems currently being used in a weather balloon designed by the Society 4 S.P.A.C.E. team. These sensors will be able to collect pressure, temperature, humidity, wind, and video. This project will give us a better understanding of rocket propulsion systems and the effect of launch on the payload. It will also allow us to gain valuable research, data retrieval, team development and multi-club collaboration experience.