# Ángel Ortiz

Aerospace Engineer · Virginia Tech Graduate

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## Education

**Virginia Polytechnic Institute and State University** — *Graduated May 2017*

B.S. in Aerospace Engineering — *Blacksburg, Virginia, U.S.A.*

## Experience

**RASC-AL Commercially Enabled LEO / Mars Habitable Module** — *Blacksburg, VA*

Senior Design Project - Mars modifications & Financial Projections Lead — *Aug. 2016 - June 2017*

- Won first place overall, first place in undergraduate division and best in theme at the 2017 RASC-AL Design competition final, a university-level, NASA sponsored, full mission architecture engineering design competition.
- Led the Mars modification design with a focus on human spacecraft requirements addressed in the NASA Technical Standards for Human Integration.
- Created a profit projection tool in MATLAB that performs a 15 year revenue projection based on station operational costs and income from experiments to prove the commercial viability of the station.
- Worked closely with a team of 12 students to design a LaTeX report template and led the editing and development of the final report.

**VT Motorsports Formula SAE** — *Blacksburg, VA*

Active Aerodynamics Design Lead — *Jan. 2016 - July 2017*

- Responsible for the development of Active Aerodynamics, a new component of the aerodynamics package implemented for the first time in the 2017 vehicle, that aims to increase vehicle top speed by dynamic adjustment of the rear wing elements.
- Evaluated the viability and expected performance gains (+0.5s/lap) from this new system through the team's MATLAB track simulator and STAR-CCM+ full car model simulations.
- Conducted detailed CFD simulations to size the servo motors and actuators used to counter aerodynamic loads at top speed.
- Revised design through an iterative process using NX 10 CAD assemblies, small scale unit testing of servo controller scripting system and manufacturing tests for performing materials and components.
- Earned 5th place at Lincoln Nebraska and 25th at the Michigan International Speedway competition.

**Spacecraft Propulsion Final Project** — *Blacksburg, VA*

Vehicle Lead Designer — *Jan. - May 2017*

- Led a team of five with the goal of designing a surface to orbit payload delivery vehicle using existing technology and focusing on the propulsion system design.
- Performed an Analytic Hierarchy Process on common propulsion methods to rank them by performance which led to the selection of solid rocket motors and hydrazine thrusters as first and second stage propulsion for the vehicle.
- Designed the first stage nozzle, combustion chamber and tank system taking into account derived ISP requirements and maximum structural coefficient limits.
- Reduced first stage nozzle weight and improved thrust by 10% by using STAR-CCM+ simulations to analyze vehicle performance under Martian surface conditions.

**Open Jet Wind Tunnel at Virginia Tech** — *Blacksburg, VA*

Research Assistant — *June - Dec. 2016*

- Aided an ongoing study on tunnel flow uniformity by taking multiple sets of over 250 airspeed measurements spanning the open cross-section at varying speeds using NI-DAQ with custom made LabVIEW programs to analyze and plot the tunnel turbulent intensity in MATLAB.
- Led the calibration and testing of a force balance to be used in the development of a UAV aerodynamic testing lab for undergraduate students.
- Designed and implemented a new calibration methodology that decreased measurement uncertainty on the force balance by 7% across each axis and wrote an accompanying technical manual to describe the procedure.

## Technical Skills

- MATLAB
- CD-ADAPCO Siemens STAR-CCM+
- Siemens Unigraphics NX 8.5 - 10
- Linux Environment
- Simulation & Modeling
- C++
- Wind Tunnel Testing
- Machine Learning
- Python