

# Matthew Batchelor

Eagle Scout  
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## Education

**Rensselaer Polytechnic Institute, Troy, NY** August 2016 – Present  
BS Aeronautical Engineering -Exp. 2020      **GPA:** 3.50      **Honors:** Dean's Honor List

**Willamette High School, Eugene, OR** September 2012 – June 2016  
**GPA:** 3.85      **Honors:** Graduated with Honors Diploma, special honors in industrial and engineering technology

## Related Experience

- **NASA**, Goddard Space Flight Center, MD – Telecommunication Network & Technology Branch Intern  
June 2018 – August 2018  
Developed and refined a genetic algorithm in MATLAB to design and determine the efficacy of NASA's Near Earth Network ground stations through cost and scheduling support. A tool for plotting the inclination, relative latitude, and ground station visibility of L1 and L2 orbiting satellites was also developed for the Mission Design Lab. This was used in the design and planning of a proposed NASA mission.
- **NASA**, Wallops Flight Facility, VA – Near Earth Network/Balloon Program Intern  
August 2017 – December 2017  
**Near Earth Network:**  
Conducted study on simulations of multiple satellites per ground station aperture using STK, examined ACU options for possible replacement of existing ground station hardware, worked on Alaska Station 1 mount model corrections, and compiled typical daily and monthly data downlink volumes. The multiple spacecraft per aperture data is being incorporated in a paper for the Small Satellite Conference (see below).  
**Electrical Engineering Department:**  
Created MATLAB application for use by department engineers in spectrum graphing and analyzation, resulting in a cheap and effective solution for an involved task.  
**Balloon Program:**  
Conducted materials study of low-density plastics for use in balloon skin fabrication, providing data towards determining if mission exposure or storage compromises balloon skin material strength.

## Skills

- CAD: NX10, NX11, Rhino 5
- Programming: Python, MATLAB, RStudio
- Modeling: ANSYS Fluent, STK
- 3D printing
- Design and fabrication of prototype parts
- Shop & hand tools experience: mill, lathe, PlasmaCAM, CNC, welding, etc.
- Microsoft Office Suite

## Projects

### High speed electric car:

Led a team in designing, building, and racing a single person electric car against west teams. I was responsible for fundraising, as well as key design and implementation considerations such as our steering and unique electrical system. We won the high speed endurance race for the 2016 race season, going a distance of 59 miles in one hour with a top speed of 65 miles per hour.

### Scientific rocket payload:

Led a team of new Rensselaer Rocket Society members in the design, fabrication, and testing of a scientific rocket payload using NASA's project development structure. I was responsible for the CAD modeling and 3D printing of the payload chassis. The payload completed testing and was integrated into a rocket for launch.

### MATLAB spectrum analyzer:

Wrote a MATLAB application and GUI for the Electrical Engineering Division at NASA's Wallops Flight Facility. Produced from a list of features selected by lab technicians and engineers, the application replaces expensive and fragile hardware in cases where simple tests and analysis are needed. This streamlines engineer's workflow, saving them time and reducing unnecessary damage to other assets.

## Leadership and Activities

- President of Rensselaer Rocket Society
- NYLT Course Leader (Boy Scouts)
- RPI Interplanetary Society (RPI)
- MANE Student Advisory Council (RPI)
- Eagle Scout Project (Boy Scouts)

## Publications

Author with S. Schaire, S. Altunc, Y. Wong, O. Kegege, M. Shelton, G. Bussey, M. Murbach, H. Garon, Y. Dasgupta, S. Gaines, E. McCarty, S. McDaniel, W. Falser, P. Celeste, and T. Perrotto, "A Novel Approach for Optimizing Ground Stations in the Near Earth Network." *SSCI8-SI-07*