Arjun Gopal Krishna

Email: agkrishna97@gmail.com
Permanent Address: 28 Howard Avenue, Staten Island, NY 10301
Cellphone: (917) 710-0119 **Website:** arjunkrishna.com | Linkedin

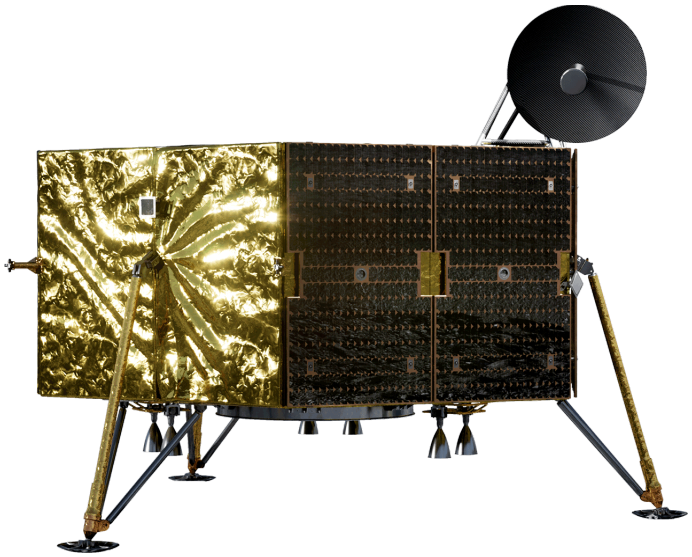
---

Masten Space Systems XL-1 Lunar Lander (Xelene) 2021-Present

As a Mechanical Engineer on the Structures Design Team, I was mainly tasked with designing the fixed landing gear legs for the XL-1. The XL-1 Landing Gear went through many iterations of design and simulation before settling on the current version. I used Solidworks to design and simulate the components that went into the assembly. This assembly is to be passive with no active deployment or mechanisms. The XL-1 is expected to carry 80kg of payloads to the lunar surface. During the final stages of the landing sequence, the XL-1 will hover at 1 meter from the lunar surface and then cut all engines. The lander will then drop to the surface where the energy absorption mechanism within the landing legs will be engaged to safely absorb the impact. I was also responsible for working on various concepts for a regolith collection device on the footpads that would engage upon landing.

Additionally, I was tasked with designing and simulating various secondary structures components. These are components and assemblies that are not directly related to the overall vehicle integrity and loading. These are usually items such as payload mounting brackets, propulsion mounts, GNC mounting brackets, sheet metal components, and other items that may help to mate sensors or other components to the vehicle. I was responsible for designing and analyzing the mounting interface brackets for the Heimdall Descent Imager Camera, Heimdall Workspace Imager Camera, and GNC Star Tracker Sensors. Additionally, I was responsible for designing mounts for the six Talos-150 engines on the XL-1, as well as a center plume shield for the bottom of the vehicle to protect against dust and debris during landing.

In addition to design and analysis, I was also able to coordinate with various vendors and machine shops to facilitate the manufacturing of the structural components. I helped to set up meetings and negotiated prices for bids and send out RFQ packages. I created, edited, and helped release engineering drawings for the primary and secondary structural components of the vehicle. This included the honeycomb panels, assembly clips, the launch vehicle adapter, and other smaller components. Through this process, I was able to gain a better understanding of GD&T and ASME Y14.5 standards.

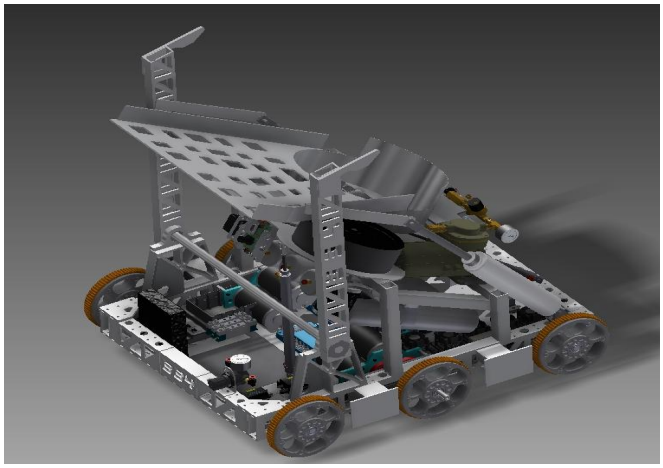


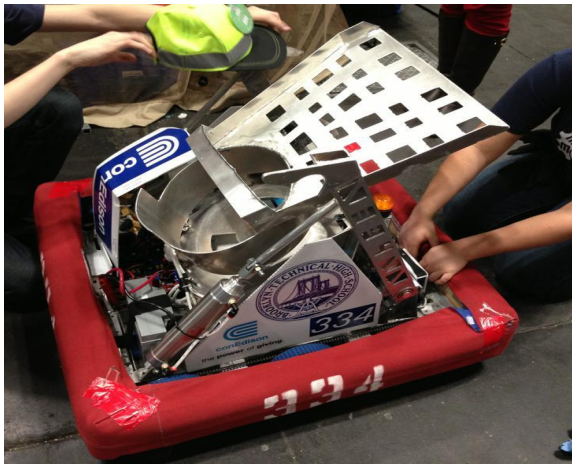
Team 334 FRC Robot "Mah-Geek" 2012

At the time, I was a freshman in high school. Though I wasn't involved with the overall "design" of the robot, I was introduced to various manual tools and assembly methods in the machine shop. This includes using a drill press, lathe, miter saw, and an assortment of hand power tools. This robot made it to the quarterfinals, and received the Creativity Award sponsored by Xerox.

Team 334 FRC Robot "Donatella" 2013

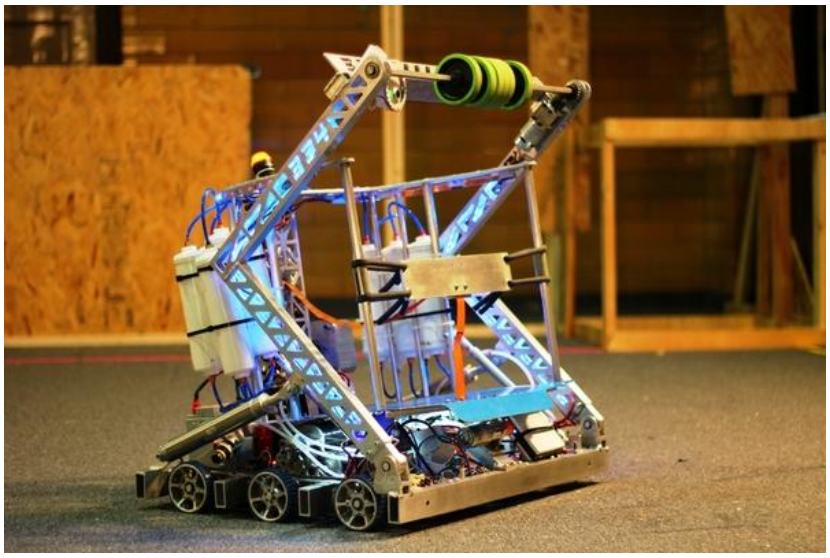
During my sophomore year, I became heavily involved with the robot CAD in addition to carrying out my machining duties. As CAD Crew Captain, I was responsible for designing, prototyping, troubleshooting, and communicating with the mechanical team members during the six weeks we were allotted to build the robot. I mainly worked on the arms, the chassis, the electrical panel sheet metal layout, and the top sheet metal fixture. Below is the CAD model as well as the finished product. I was also heavily involved with producing game strategies and scouting during competition. That year, we made it to the semi-finals in the NYC regional and won the Industrial Design Award sponsored by General Motors.





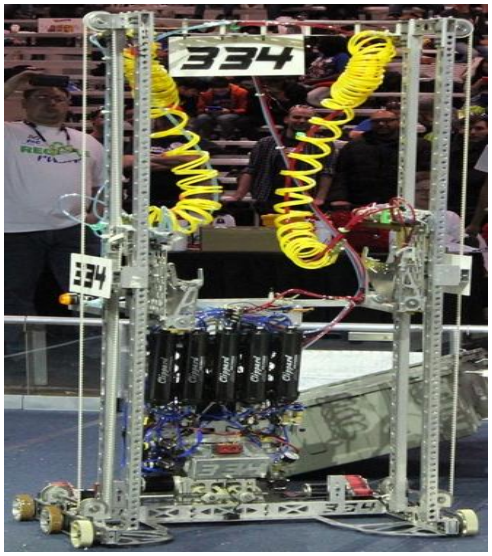
Team 334 FRC Robot "OBB" 2014

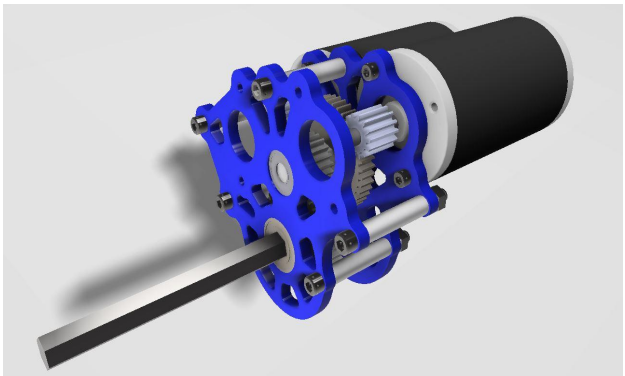
During my junior year, I continued being heavily involved in the CAD of the robot. I was responsible for designing the arms, parts of the chassis, and the electrical panel sheet metal layout. I was also responsible with manual assembly as well as machining parts with the laser cutter. I was also exposed to using a CNC machine during this year. During the competition, I was also lead strategist and was responsible for communicating the "game plan" with the robot operators from our team and other allied teams. It was during this year that we won the NYC regional and gained entry to the FRC World Championships in St. Louis, Missouri. There, we finished as division finalists. Below is a picture of the robot and here is the link to our release video: https://www.youtube.com/watch?v=VFUMrp5ir2I



Team 334 FRC Robot "Arnold" 2015

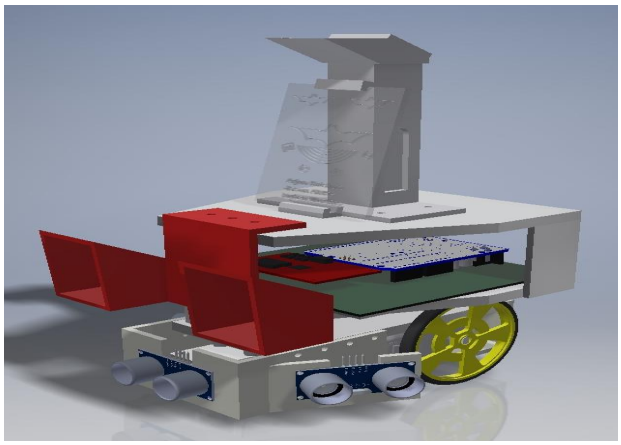
In 2015 as Captain, I was responsible for holding meetings with the different crew captains on the team, keeping our mentors updated on the robot status, and assisting the younger team members with the CAD as well as the machining and assembly of the robot (chassis design and electrical panel cutout). I was also responsible for designing the 12ft/sec transmission for this robot (shown below). After calculating the required gear ratios needed, I designed the transmission in Autodesk Inventor and had the plates cut via water jet at City Tech in NYC. Our robot made it to the quarter finals during the NYC regional. Upon graduating, I was able to secure a grant of $3,550 from Boeing for the team to use in their next season.

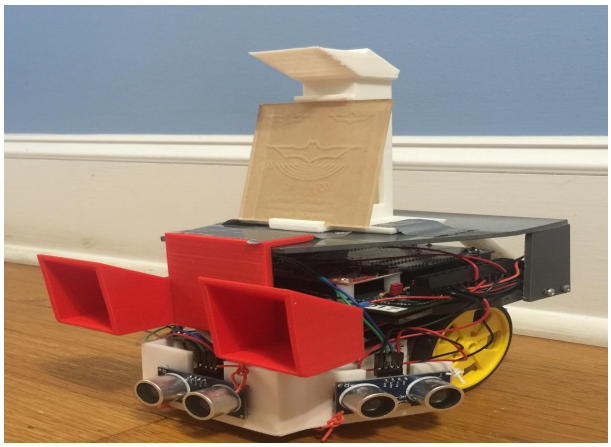




Stevens Institute of Technology E121 Engineering Design Robot "Echo" Academic Project

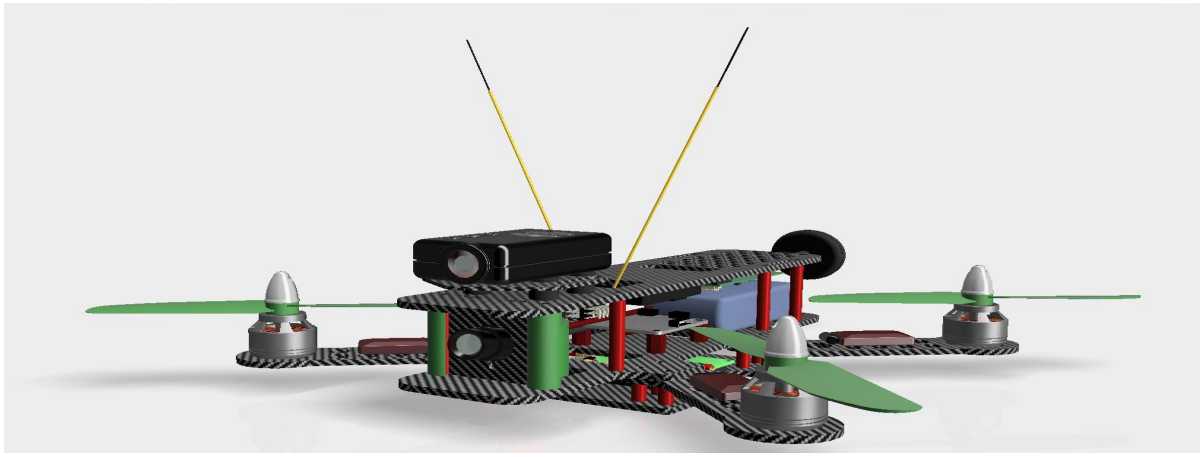
In this project, my group was tasked with designing a robot that could navigate through a maze using various sensors. I was responsible for the CAD, 3D printing, and assembly of the robot. I was also responsible for writing and debugging a majority of the Arduino C plus plus code.





Custom QAV 250 FPV Racing Drone "Archer Mark 1"

This is a project I decided to do outside of my academic curriculum. I designed a custom 250mm racing quadcopter, complete with a Mobius action camera and a FPV canted camera underneath. I wired, soldered, and programmed the main CPU. The frame was 3D printed by me out of ABS plastic. It was able to fly very well and footage can be seen on my website: https://arjunkrishna.com



NASA's 2019 RASC-AL Special Edition: Moon to Mars Ice and Prospecting Challenge (Project Name: *DEIMOS*)

For my senior design project at Stevens Institute of Technology, I chose to be a part of this NASA competition. We were tasked with designing, prototyping, and building a robot that could bore through 0.5 meters of simulated martian overburden and extract water from a frozen block of ice underneath. In addition, we were tasked with calculating what materials the robot was drilling through based off of the force being applied from our robot, filtering the extracted water, as well as documenting our build progress through technical papers and video deliverables. Out of around thirty schools to apply to the competition, we were one of only ten that were accepted. We were granted a $10,000 stipend from NASA split into two installments to build the robot. I was responsible for designing the frame of the robot in Autodesk Inventor, designing the mounting brackets, designing and pocketing parts of the drill mount, assembling the robot, writing portions of the technical paper, using the CNC to machine components for our linear motion assembly, as well as filming our progress. The two videos of our robot and our technical paper can be seen on my website at https://arjunkrishna.com. I filmed, edited, and even composed and recorded the music for these videos myself. I was also able to secure an additional $2,000 in funding from the Stevens Mechanical Engineering Department to be used for our travel expenses. Finally, I was also the main point of contact from the team when it came to articles written about the project at Stevens, as well as with the mechanical engineering department. At the competition in the NASA Langley Research Center, our robot placed 2nd overall and received awards for having the cleanest water, and most accurate digital core readout.