What makes you a leader in STEAM and/or space? \*

During the winter break of my freshman year, I witnessed SpaceX land a Falcon 9 on ‘Of Course I Still Love You.’ All my worries and problems disappeared for that moment, stunned with the significance of what I just saw. This moment showed me my passion: space exploration. I wanted to learn as much as I could about rocketry and bring together like minded individuals, but there were no space or rocket organizations on campus. From that revelation, I immediately founded a rocket club under SEDS, the world’s largest student-run space organization. The biggest unexpected challenge I have faced managing UNH SEDS was the reality that teams are comprised of individuals, and everyone has their own imperatives. At first, I assumed every team member had the same imperatives as me, which led to over-expectation and frustration. As my leadership skills developed, I came to understand these priorities and manage accordingly based on the individual. This mindset has brought the team closer together and has been the biggest impactor to our technical progress. This coupled with transparency and the implementation of clear goals has grown the club to the largest, most interdisciplinary engineering organization on campus. It is now (September 2019) a team comprised of 35 committed members ranging in 6 different majors and all years. A recent freshman came up to me during our last general meeting and thanked me for making this club, and that she feels at home with the team. That made me happy.

Tell us about any projects or work that you have done that include STEAM and/or space that would strengthen your nomination for this award. \*

UNH SEDS has accomplished a variety of engineering challenges/project. First, we worked with off-the-shelf engines and used in-depth MATLAB simulations for trajectory and dimension optimization. Then quickly moved into the development of Runaway, our hybrid rocket engine. We are currently working towards qualifying Runaway so that we can integrate it into a rocket for the Spaceport America Cup in June 2020. The engineering team is now multiple sub-teams including propulsion, frame, avionics, operations and thrust vectoring, of which I am the lead engineer (CTO) of all engineering efforts. I am most proud of the development of Runaway (with which I led) and its injector design for nitrous oxide. A hot fire is planned for the beginning of October 2019. For the summer of 2019, I was awarded with the Matthew Isakowitz Fellowship, a program started to honor an extraordinary individual whose passion for aerospace inspired all who knew him. Instead of direct commercial space internships weighing so heavily on the university an applicant attends, this program weighs on the passion they have for the industry. The program paired me with Rocket Lab in California as a propulsion manufacturing engineer. Being the only engineering intern during the summer, I gained experience throughout the entire production process of the Rutherford engine for the Electron launch vehicle. I primarily focused on creating tooling to improve the quality and runtime of the engine’s thrust chamber. This position taught me the importance of pushing forward and doing everything possible to progress together as a team.

Are there any other activities or work outside of STEAM and/or space that would strengthen your nomination for this award? \*

When I entered the University of New Hampshire, I decided to be member of Not Too Sharp, an all-male a cappella group on campus. I was a bass/beatboxer in the group for 2 years before classes/SEDS began to take away from the time I could commit to Not Too Sharp. My involvement in Not Too Sharp, though, was an amazing experience that instantly got me introduced with many happy, friendly individuals who made me feel a part of the UNH community right away. We did several shows a month, with one being the yearly ICCA competition in Boston. The group also taught me the importance of how not everyone are science nerds, some love business, communications or wildlife. All of us are necessary to make this world go around, though (not literally of course, nothing is overriding Kepler!)

How do you lead others in your community? \*

In May of 2019, I was elected as the ‘Member at Large’ for SEDS USA, the presiding organization for all SEDS chapters nationwide. I have taken on the development of a SEDS Wiki which will be a repository of knowledge between the chapters. The goal is to create a more intimate community with chapters helping each other grow and prosper. Directing the development of this tool has taught me the struggles with motivating people indirectly, but also the importance of knowledge transfer. All of us have information that is a commodity to others and sharing allows the entire SEDS community, present and future, to grow our base knowledge further and further. Once released, it will have a significant impact on the growth of our younger chapters. Leading this project and identifying the student leaders in business/engineering subjects around the country has been a great learning experience and has connected many individuals within the space community.