RT left competition rocketry to push our designs without the constraints imposed by a formal competition. Since 2018 the team has been entirely self-driven; we pursue projects that students are passionate about and are invested in over the longer term. Our team of 60 undergraduates learn how to translate concepts learned in class into the real world and develop essential soft skills. RT provides its members the opportunity to develop real world engineering, teamwork, and leadership skills that make them beneficial teammates no matter the setting.
Diversity

RT places an emphasis on diversity and inclusion so that any interested student can feel welcome. We especially want RT to be a space for traditionally underrepresented groups to become involved in engineering.

Gender
- Male: 41.4%
- Female: 55.2%
- Genderfluid: 3.4%

Race/Ethnicity
- White: 33.3%
- East Asian: 7.4%
- South Asian: 7.4%
- Hispanic/Latinx: 14.8%
- Black: 7.4%
- Multiracial/Multiethnic: 29.6%
- South Asian: 7.4%

Meet our Executive Board

Jorian Benke
President

Vaneeza Rupani
Vice President

Claire Johnson
Chief Engineer
Team History

2010-2014: Early Years
RT was founded in 2010 by a group of students who wanted to be the first collegiate team to launch to 100,000 ft. Another team beat them to this in 2013 and RT then switched to rocketry competitions.

2014-2017: Competitions
With the structure provided by a competition, RT was able to expand its operations and rapidly improve. RT placed 1st in the 2015 Intercollegiate Rocket Engineering Competition Basic Category and placed 2nd in the 2016 Spaceport America 10k COTS category.

2018-2021: Spaceshot
RT shifted its focus to pursue a passion project of the students: launching a rocket to space. The team rapidly increased the number of custom parts including developing custom avionics, fin cans, and solid propellant.

2021-Present: High Altitude & Liquid Propulsion
Post-COVID, RT came back strong, breaking the team’s altitude record with a launch to 32,000 ft in January 2023. A liquid propulsion team was also formed to begin engine development for hybrid rockets.
Our Process

Design
We select design requirements based on target altitude and areas of improvement of the previous rocket. Students research, simulate, and design systems. Iterations are made in CAD and are refined throughout the entire project.

Manufacture
Nearly every part that we fly is manufactured in house. Team members mix propellant, sew parachutes, solder PCBs, machine fins and so much more!

Test
RT has extensive testing campaigns that are repeated as designs are refined. We only have one shot at launch and we can’t be seriously questioning our design on the pad. Our testing ensures that when we fly, we have eliminated as much uncertainty as possible.

Launch
We launch at least one rocket a year, with additional test flights as necessary. For main launch, a small group of students takes a cross-country road trip with the rocket to the Friends of Amateur Rocketry site in California. The rest of the team meets them there for a few days of integration, followed by the launch and recovery.
The team is currently designing a two-stage solid-fueled rocket targeting an altitude of 185,000 ft. Project Medusa will launch in Spring 2024 and is the final rocket before Spaceshot.

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>Spring 2023</td>
<td>Medusa R&amp;D, CDR, PDR</td>
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<tr>
<td>Fall 2023</td>
<td>Medusa Manufacturing &amp; Testing</td>
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<tr>
<td>Spring 2024</td>
<td>Medusa Launch, Spaceshot R&amp;D</td>
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</tbody>
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The liquid propulsion team will be hot firing their first engine in Fall 2023. Their second engine is already being manufactured and will be fired shortly after.
Expanding operations

RT doubled in size in Fall 2022. We are looking to increase the number of projects that students can work on so that they get the most out of RT.

Competition Rocket

If able to, the team would work on a rocket to be entered in the Spaceport America Cup. It would be a hybrid rocket that to allow our Liquid team to start flying. This would also create more parts for the team to work on so students would learn more.

L1 Program

RT supports students earning their NAR High Powered Rocketry Level 1 (L1) certification through funds and a structured program. However, new students often wait two or more semesters to launch their L1s because of travel and materials costs. We would like to be able to offer this program to all interested students and have them launch within one semester.

L2 & L3 Programs

We would also like to start building team-funded L2 and L3 programs. L2s cost about $400 each but teach much than L1s. We do not want students to be dissuaded from taking their next step by the cost and lack of a support network.
Why us?

We give students the opportunity to develop essential skills that they can’t learn in a classroom such as creative problem solving, troubleshooting, and soft skills. Our members are not only getting real engineering experience, but they are learning to work as a team and collaborate with people from different backgrounds and experiences.

Most students join RT with little to no prior engineering experience. They leave with a solid understanding of how rockets work and, more importantly, how to be an effective and productive member of an engineering team.
**Budget Breakdown**

**Current Budget: ~82k**
- Travel & Logistics: 42k
- Spaceshot Rocket: 31k
- Certification Rocketry: 6k
- Liquid Propulsion: 3k

**Expanded Budget: ~143k**
- Travel & Logistics: 70k
- Spaceshot Rocket: 31k
- Certification Rocketry: 14k
- Competition Rocket: 28k
### Sponsor Opportunities

RT relies upon corporate sponsors and individual donors to continue launching. Interested in sponsoring us? Reach out to [rt-exec@mit.edu](mailto:rt-exec@mit.edu) about next steps regarding sponsorship. You can also make a tax-deductible donation; however, these do not include the benefits listed below, per federal regulation.

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Thank you to our 2022-2023 sponsors!