

# MVRT

## Grant Impact Report

Monta Vista High School  
Cupertino, CA



## Meeting Goals:

This year, MVRT is striving to encourage more of our members to join both the engineering and operations branch. Due to the pandemic, our meetings have been moved to an online structure and we have been trying our best to adapt to this new environment. By not having a build season this year, we have been working toward our goals of launching more of our outreach programs, creating a stronger bond between our veterans and rookies, and focusing on giving in-depth knowledge to all our members about our 6 divisions. We also plan on increasing our mentor involvement by having more check-ins with them and constantly updating them with what our team has been doing and receive feedback and what can be done. Although the pandemic has been tough on our team, we have been trying to take advantage of this unprecedented time so that we can not only positively impact our team but our community as well.

Our team measures our success rate by the numerical facts: service hours, number of outreach program attendees, number of projects and hours put to the team from the number of members, and so on. Similarly, MVRT measures success with our membership count trend and the retention rate of alumni as mentors. Every year, the number of members on our team increases. MVRT should have a member body including equal participation of boys and girls. Our goal is to bring equity within our team, and in order to achieve this goal, we host equity workshops to educate and inform our team about lgbtq+ and racial inclusivity in STEM. We also host a symposium, where women in stem come to our school and talk about their journey as a way to inspire the students. MVRT's history, 98% of our alumni have pursued STEM careers in high school, and they have all returned to the team to share their newfound insights. Overall, MVRT identifies the team's success by determining how well we execute our goals of having a major impact on our communities and members of our team.

## Team Activities During Grant Period (Utilization of Grant Funds):

With the requested funds, we will acquire mostly newly released general electrical parts, specifically sensors and other materials listed in our current program budget. We also would like to purchase more laptops that can support our CADing software so we can machine-build pieces of the robot. Parts needed also include motors, tools, pneumatics components for mock electrical boards and systems, and router accessories. These components are needed for our build and training seasons. We also need to pay for machining and welding services for our FRC robot.

We have many other programs such as Hongyun Art--our series of courses that teach artistic applications of Arduino, scratch, java, and python--and Ohana--our program dedicated to empowering special-needs students to acquire STEM knowledge. We also participate in at least 10 demos a year at corporate and public events and have a Sisters in STEM program, which focuses on increasing female involvement in MVRT. We recently launched a new outreach program as well called, Equity/Pace, programs which are dedicated to providing STEM courses for underprivileged students. Our program is a nine-week course that covers the fundamental concepts in Chemistry, Biology, and Physics through labs. With the funds that we receive from corporations, we plan to incorporate the money into all of our outreach programs. We would also like to use the funds to get material and equipment for lessons and labs and create new workbooks for students to work from.

## Success & Challenges:

MVRT received funding from our sponsors last March to help cover the costs of building a robot and to help cover travel costs of competitions. With the funding we received, we were also able to purchase new tools to upgrade our old ones and make a few capital purchases. The Monta Vista Robotics Team has existed for over 25 years, so naturally, a lot of our tools were rusty. With the money that we were able to gather, we used it to purchase new tools and materials, such as new electrical crimpers. In addition, the capital purchases we made was a 3-D Printer and a CNC for the team. As we move into our 2020-2021 season, we look forward to working with our sponsors towards building successful robots in the future as our season has moved online due to the pandemic. Throughout the entire year, MVRT hosts numerous outreach events to collaborate with other teams and help middle and elementary school students foster a passion in STEM such as funding programs designed to help younger children discover excitement in the fields of Engineering and Robotics. This previous year has been no exception. Utilizing the funds, we were able to continue our ThinkFIRST programs which teach 5th graders basic engineering through hands-on activities. We have also been able to maintain six FLL teams as well as co-host the annual Cupertino Fall Festival. Furthermore, outreach events benefit our members by exposing them to public speaking and interaction with people of diverse ages and backgrounds. We are excited to continue our long partnership with Western Digital to mentor and inspire the next generation of engineers and leaders.

## Detailed Accounting of General Grant Expenditures:

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MVRT is always tremendously grateful to all our sponsors, and we make it a priority to recognize our sponsors' support. We refer to them on our apparel and other marketing merchandise. We feature our sponsors on booths at every competition and demonstration we attend. Some of these include Santa Clara County Fair, Silicon Valley Fall Festival, and Maker Faire. Additionally, our sponsors are mentioned on all our FRC robots and are announced during local and regional competitions. At events, MVRT speeches always highlight our sponsors and the immense impact of their support on our team.

## COMMUNITY SERVICES

### Taiwan

MVRT invited over 25 international students over the summer of 2016 to tour our facilities and learn about the FIRST Robotics Competition. In early 2017, we continued the program and invited a new group of 30 international students to tour Monta Vista once again. MVRT also held a demo for the Taiwan Exchange Students. We are now supporting them as they start their own FRC team. The team is currently meeting on a daily basis based on the coach's responses and has had a successful kickoff. They are meeting for Build Season and we are in constant contact with them for them to be ready for this season. MVRT has also invited 25 new international students during the season this year to tour our facilities. We hope to continue a strong relationship and have them visit our facility every year and host a demo.

### Sisters in STEM

Sisters in STEM (SiSTEM) is a program founded by our female veterans in 2016 to combat the lack of girls in STEM and encourage more females to join the team. Many girls felt discouraged to be a part of the team, especially in the engineering divisions, and MVRT often experienced low retention rates of female members. To combat the lack of diversity in STEM, the SiSTEM initiative was introduced. MVRT recognized the gender gap that currently exists in engineering fields and provided a solution to the problem. With this program, we have had an 80% increase in female attendance and member retention and an increase in overall team morale. With more people involved in our design and execution, our team has improved as a whole, as has our community.

### PACE & STEM4KIDS:

Pace and Equity are programs founded with a mission of expanding the world of STEM to those in our community to those who are underprivileged. We also wanted to provide more STEM education opportunities for special needs students. Through these programs, we hope to expand our mission to help provide equal opportunities to everyone in our community.

## FIRST LEGO League (FLL)

FLL is a program that MVRT sponsors for middle school kids interested in STEM. MVRT members have mentored 60 FIRST LEGO League (FLL) teams since 2003. Through FLL, we teach students engineering and robotics skills. Our FLL students develop skills essential to flourish in the FIRST Robotics Competition, including team management, leadership, and communication, while their coaches develop mentorship skills that can be applied to their activities on our team.

## Hongyun Art

One of our most unique and innovative outreach programs is Hongyun Art—a series of classes based on teaching kids STEM through art. We worked with Hongyun Art, an art studio, hosting camps for Scratch and Python, and are in the works to start weekly classes. We plan to add courses in Java and implement Arduinos soon. Overall, the partnership is fulfilling to both sides, as MVRT students are able to gain insight in art and creativity while Hongyun Art students can learn STEM skills.

## Ohana

MVRT formed a partnership with the Ohana Club, a club at Monta Vista dedicated to providing special education students with as many skills as possible, to teach students STEM concepts in an interactive, hands-on way. Throughout the years, our curriculum has evolved and improved based on feedback from both the Ohana students and the Ohana officer team. The program was founded in 2012 and has grown to have over 60 special education students participating in the program.

## ThinkFirst

MVRT stepped in when the Cupertino Union School District canceled the GATE program in 2005. To fill in the gap left by GATE, we offered the community free STEM education by holding weekly classes at local middle and elementary schools, developing a curriculum to teach basic engineering skills. The program has since taught over 300 students, many of which have joined FIRST programs. Through this program, students honed their communication and management skills and furthered their own understanding by teaching others.