



# MMRT NEWSLETTER

THE MCMASTER MARS ROVER TEAM'S MONTHLY NEWSLETTER

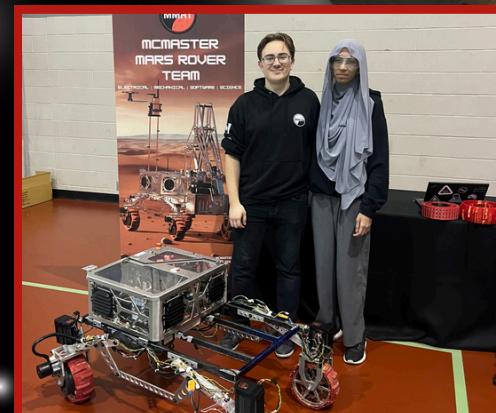
## ADMINISTRATIVE UPDATES

This month, our team proudly hosted its **first high school STEM workshop**, Martian Mineral Recovery, in collaboration with **McMaster Engineering Community Outreach**. The workshop gave students a hands-on introduction to **robotics** and **programming** by challenging them to build and control their own robotic arms to sort Martian minerals. From breadboard wiring and mechanical assembly to software integration and testing, students experienced the **engineering design process** firsthand. This initiative reflects our commitment to inspiring the next generation of innovators through meaningful, **experiential STEM learning!**



*Martian Mineral Recovery - Students participating in our workshop!*

Additionally, our team participated in the **6th annual FIRST Robotics Competition** hosted at McMaster University. In a showcase featuring Mac Eng student groups, we engaged with high school students, families, and community members to demonstrate opportunities beyond high school robotics and highlight the hands-on, multidisciplinary work that goes into building our fully functional rover. The event served as a valuable platform to connect with future engineers, share our passion for space exploration, and inspire continued involvement in STEM through post-secondary education.



*FRC Showcase - Team Members Representing MMRT*

## SUB-TEAM UPDATES

### ELECTRICAL

The Electrical Team is reviewing PCBs for both the new OBC and the RAD system. A new encoder PCB for RAD has been designed with improved connectors and components. These boards have been ordered and are expected to arrive shortly. The team is also testing and debugging custom remote kill switch boards for system safety.

### MECHANICAL

The Mechanical Team is progressing well on several fronts. Larger wheels are being printed to improve terrain handling, and swerve drive components are arriving and being assembled. RAD mounts are currently being installed, and design work on the science module is underway, focusing on structural integrity and sensor integration.

### SCIENCE

The Science Team has begun designing and modeling the science module, featuring a simple arm and sensor mounting board. Hydrogen and ozone sensors are now operational and undergoing testing. The team is also conducting research on Martian geography and environmental hazards, and has completed the setup of an ArcGIS mapping program to identify competition landmarks.

### SOFTWARE

The Software Team has integrated inverse kinematics for Cartesian control into the arm using Movelt and is implementing motion profiling for RAD stepper motors. LoRa communication between the base station and rover has been successfully tested. Firmware and ROS software for the VIPER power management system have been developed to monitor voltage and current over CAN.