# Team 1-Rover Ova

For movement -rocker mechanism,can cross 30 cm obstacles, wheels have hub motors, travel upto 45 \* slope, wheels have independent steering,

For delivering objects-(basket for keeping things )- and end effector for lifting things upto 5 kg

For power – 2 lithium polymer batteries(4s and 6s)- 2hr battery capacity

For navigation-zed2 camera , independent gps system and doesn’t need operator

The manipulator- has 6 degree ofmotion- uses spur , worm , cycloidal gearbox

For communication- uses wifi system- antennas provide communication upto 1 km,- rc transmitter-

Laboratory module-scooping end effector to collect soil samples- uses hopper mechanism to load soil

# Team 2 – ITU rover team

Chassis is made of aluminium which makes it durable

To travel uses rocker suspension system- brushless dc motors are used so that provide greater speed than traditional motors

Steering system – each wheel rotates independently – pid controlled bldc motors

Power-lithium ion battery (24V)

Communication – 2.4 Ghz wifi system, and a directional antenna

Cameras-usb and fpv cameras

Good interface of simulator of the competition

Grippers use 6 degree movement system- robotic arm is very precise

Very less time taken to get ready for missions due to single cable line system

Can take sample 3 times so test performed are more accurate

Biosensors used to detect glucose-raman spectrometer to detect lipids(a strong indicator of life)

Ai is been used with microscope – atmoshpheric sensors are used such pressure humidity

OVERALL , the scientific aspect of rover is great and remarkable with great details mentioned.

# Team 3 –Yildiz Rover

Chassis- light weight aluminium-rocker suspension system made of tough carbon fibre

Movement – 45 \* climbs

Uses brushed dc motors so less efficient

Power – lithium ion battery

Communication- upto 2 kms -5.8 Ghz

Between electronic devices by CAN protocol(controller area network)

Steering system- motors controlled with pid-

Cameras- zed2 cameras to detect- reover needs to get closer so not a good detection system

Sensors-imr, lidar, rtk gnns, wheel encoders for navigating rover

Gripper- 6\* freedom ,uses linear actuator , stepper motor and magnetic encoders- can lift 5 kg

Collection of samples with a spoon not that accurate

Research- good database of rock colours and sample to identify it .and has all the required sensors

Good for research but slow in mobility and tasks such as picking, great communication technologies

# Rover 4 –titan

Movement – rocker bogie system – greater incline of 60 degree-non mneumatic tires

Gripper system-less freedom in movements and slower mechanism

Hydrogen peroxide test for protein(for presence of life)

Raman spectrometer test( to look for amino acids)

2.4 Ghz communication system- uses open cv technology in cameras which if an advantage

# Rover 5 – ADASTRA

Chassis – has good stability- has rocker bogey system

[TPU (Thermoplastic polyurethane)](https://www.bing.com/ck/a?!&&p=ef9df12863e94ce5JmltdHM9MTcwNjU3MjgwMCZpZ3VpZD0zNmM2ODNhZC1jYTY3LTZlM2ItM2Y4NC05M2VlY2JkNTZmNjMmaW5zaWQ9NTIyNQ&ptn=3&ver=2&hsh=3&fclid=36c683ad-ca67-6e3b-3f84-93eecbd56f63&psq=tpu+wheels+fullform&u=a1aHR0cHM6Ly93d3cuc3dlZGV3aGVlbC5jb20vZW4vcHJvZHVjdHMvd2hlZWwvd2hlZWwvdHB1LSh0aGVybW9wbGFzdGljLXBvbHl1cmV0aGFuZSk&ntb=1) wheels – advantage widthstand high temperature

Electronics-pcb and transmitters

Gripper- stm32 (stress control motion)

Research-computer vision to determine amines, ph level of soils whether life can exist, chrystal structure to indicate change in environment

3D point cloud with gps is impressive

Interactive display on rover –

Has redundant system in case there is problem in rover, integrating machine learning and creating heat maps

# Team 6 Anveshak

Movement-It doesn't look like it has good rigidity and moment of inertia. Simply put it is limping. Aluminium plate at the arm looks heavy

For movement -rocker mechanism, can cross obstacles

Robotic arm- 5\* of freedom lesser than the others-use of worm gears

For maintenance task-parallel 4 bar system to grip – lift upto 6 kg, does maintenance task very well

Communication 2.4 Ghz

Research – has all onboard sensors, great database of rocks and soil-uses a depth camera

Overall –okay robot , wheels move in uni direction and mobility not that great .

# Team 8 ROBOCOL

Movement-Uses ony 4 wheel – not good for movement

Functional pulley system used

Raspberry pi4 electronic system

Lithium polymer batteries

Gripper system – taking too long time and not accurate

Cameras – uses 4 camera- a real sense camera

Average research tech used

# Team 9 REXUS

Chassis – aluminium rod chassis can move upto 25 \* only – would not be able to cross terrains and inclines

Only 4 wheels – rigid movement system

Robotic arm – 4\* of motion uses stepper motors

Thus less scope of movement of robotic arm

Maintenance task needs gripper which is still nod made

Temperature, humidity . and other environment sensors are there

No good research to find whether life exist

# Team 10 Mavrik

Good grippers for maintenance tasks- can lift every substance on mars

Movement -6 wheels , working independently

Uses GPS systems and cameras for navigation , self correcting technique is commendable

Research – protein detection for life

Model doesn’t look robust , windy conditions can inflict a damage