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Speaker Summary

The speaker started out talking about the robots that were in development at JPL for the Mars 2020 mission. These robots are designed to be able to go over rough terrain and take data and measurements. Next, the presenter talked about Team-CoSTAR. His team is competing in the DARPA challenge of subsurface exploration. The first goal is cross-domain mobility, which means that the robot must be able to travel over many different types of terrain. The second thrust is the extreme navigation. The robot has to be able to map its environment, which has a lot of noise, but at the same time be lightweight and robust. The third thrust is resilient communication. The robot must be able to maintain communication at all times in the cave. The fourth thrust is mutli-robot situational awareness, and the fifth is collaborative autonomy. The robot must be able to map its environment and find objects. The last thrust is the robot must be able to do mission planning.

The strengths of the work are that the robot can roll or fly. In other words, the robot is able to roll when it is able, in order to save battery, but it can also fly in order to be able to navigate the area. Another strength is the robust autonomy structure, which allows it to plan its motion and map its environment. In order to do this, the presenter said they had implemented SMAP, SLAP, and SLAM protocols.

The weaknesses of the work are that their sensors are going to be facing a lot of noise. This is going to cause a lot of problems with getting the correct reading from their sensors. Another weakness is that they plan to use multiple robots to accomplish their mission, and are unable to just create one robot that is able to do everything. Another weakness is that the team is cutting battery life very short, as they are forced to roll in order to save battery. The rolling and flying combination is an impressive design, but the fact that they have to resort to this design is a weakness.

The opportunities for future work are designing this system to explore things other than caves on earth. The system can be modified and used to explore the moon's surface, for example. Being able to easily map the moon or another planet would be a big help in the further explanation of other moons and planets. Other opportunity is improving their communication so that they do not have to use drones as communication links.

The speaker knew very well what they were presenting. That was good as they were able to explain it very well and field questions about their work. This made for a good, informative presentation. A bad part was that the presenter did not keep good track of

their time, so they were forced to rush through the second half of the presentation. This lead to them not being able to communicate as much information about the second half of the presentation as they could have been able to, had they not had to rush.