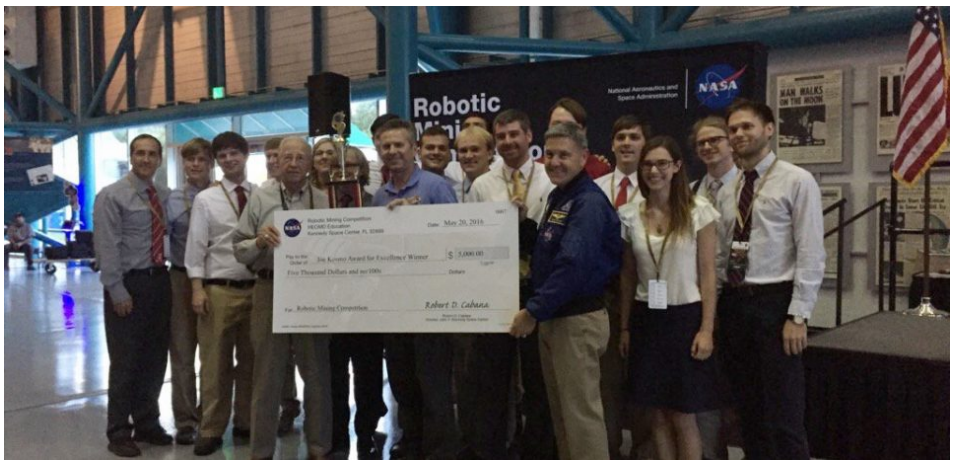

Alabama Astrobotics Wins NASA Robotic Mining Competition 2016

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May 23, 2016 @ 21:58 |

Alabama Astrobotics, a robotics team at The University of Alabama in collaboration with Shelton State Community College competed in NASA's Robotic Mining Competition 2016 at Kennedy Space Center and won first prize. This is consecutively second time and total third time out of seven when this team won the first prize in NASA's Robotic Mining Competition. Alabama Astrobotics in collaboration with Shelton State Community College is now the only team to win this NASA contest in consecutive years.

Alabama Astrobotics secured first place by scoring 90.45 points at the NASA Robotic Mining Competition 2016 out of 45 other college teams to build a robot capable of navigating and excavating simulated Martian soil. There was five scoring phase namely: Outreach, Systems Engineering Paper, Presentation, Social Media Public Engagement and Mining. Oakton Community College and Iowa State University came on second and third place respectively with score 79.25 and 72.43. (Check full score-sheet (http://www.nasa.gov/sites/default/files/atoms/files/rmc2016_totalscores.pdf))

45 university teams of USA participated in the mining contest during the third week of May at the Kennedy Space Center. On May 20, the last night of the competition, NASA officials announced Alabama Astrobotics scored the maximum points in the competition, winning the Joe Kosmo Award for Excellence.

"Every year the level of competition improves across the board," Ricks said. "What separated the UA robot from the others is that it performed well in all three areas: digging and collecting; robot mass; and autonomy. That combination was unequaled by the competition."

Robots are judged not only on how much simulated soil they can dig and deposit into bins but also on their ability to operate on their own, or autonomously

also on their ability to operate on their own, or autonomously.

The robots are also judged on their size and weight, and Alabama Astrobotics built a robot that performed well in all three areas, said Dr. Kenneth Ricks, UA associate professor of electrical and computer engineering and team adviser.

The team placed first in the categories of mining, autonomy and technical presentation. In all, the students won $10,000 for use on next year's robot.

(http://robotglobe.org/wp-content/uploads/2016/05/team-Astrobotics-at-RMC.jpg)

Team Astrobotics at RMC2016

What was the Challenge?

This Competition was for university-level students to design and build a mining robot that can traverse the simulated Martian chaotic terrain. The mining robot must then excavate the basaltic regolith simulant and the ice simulant (gravel) and return the excavated mass for deposit into the collector bin to simulate an off-world, in-situ resource mining mission.

The complexities of the challenge include the abrasive characteristics of the basaltic regolith simulant, the weight and size limitations of the mining robot and the ability to tele-operate it from a remote Mission Control Center.

The On-Site Mining category will require teams to consider a number of design and operation factors such as dust tolerance and dust projection, communications, vehicle mass, energy / power required, and autonomy.

NASA will directly benefit from the competition by encouraging the development of innovative robotic excavation concepts from universities which may result in clever ideas and solutions which could be applied to an actual excavation device and/or payload retrieval mission.

The unique physical properties of basaltic regolith and the reduced 3/8th of Earth gravity make excavation a difficult technical challenge. Advances in Martian mining have the potential to significantly contribute to our nation's space vision and NASA space exploration operations.

As part of the competition, students are required to design a robot capable of navigating through and excavating 10 kilograms of simulated Martian regolith, a layer of loose material that covers a solid rock.

The robot is allowed two competition runs of 10 minutes each to move across the arena, through an obstacle area, excavate as much regolith as possible, and return the collected regolith back to the starting area.

Astrobotics Robot for RMC in action (testing):

The Astrobotics team of 40 members received funding from the Alabama Space Grant Consortium, NASA, Dynetics, Fitz-Thors Engineering, the UA College of Engineering, and the UA Student Government Association.

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