

The Auburn University Robotic Mining Competition team is a diverse group of dedicated students focused on learning through experience, practicing intentional innovation, and developing year-over-year design improvement. Founded in 2014, the team brings together a group of students from a variety of academic disciplines under one umbrella of design and manufacturing excellence. Designing and creating our robot allows students the opportunity to see our education in action in a way that many do not see inside the classroom. War Eagle!

We are CWRUbotix, the one and only undergraduate robotics club on CWRU's campus. We like long walks on Floridian beaches (with robots*), and working hard to create functioning robots for a variety of robotics competitions. Our primary goal is to provide an ideal environment for undergraduate students interested in robotics, where they can innovate, design, and create, regardless of their prior experience level. We focus on teaching our members useful, marketable, skills such as SolidWorks, C++ coding, soldering, and basic machining. Our members then wield these skills; designing, coding, and building multiple successful robots each year. Currently, we attend NASA's Robotic Mining Competition, and an assortment of National Robotics Challenges. *With our mining robot from the NASA Robotic Mining Challenge, designed to dig up Martian soil.

This will be the second year the College of DuPage attends the NASA Robotic Mining Competition. The team participates in a few robotics competitions throughout the year in addition to giving back to the local community through various outreach projects promoting engineering and technology. The leaders of this year's NASA robot include Maxwel Cichon, Nathan Hinz, Edie Kocher-Cowan, Katharine Lewis, Alec Steinkraus, and Devon Weaver. The aim of the team and its leaders is to build upon last year's inaugural NASA experience while offering every interested club member the opportunity to be involved in the robot's creation, from design to manufacturing to testing of the completed product. This year's group has grown significantly, with hard working and dedicated members who have exhibited exemplary teamwork and motivation. We look forward to representing the College of DuPage proudly at the upcoming NASA competition.

Team Blasterbotica will be representing the Colorado School of Mines. We as a team are dedicated to technical excellence as we explore technologies for in-situ space resource utilization. Additionally, we are committed to community outreach and educating others, especially the next generation, on the importance of space exploration. We are looking forward to competing in this year's Robotic Mining Competition to demonstrate our solution and see how our peers approached this problem. This year our team is comprised of Lexi Humann, our lead engineer, Chris Pumford, Camden Nahorniak, Jeffrey Nichols, David Schack, Holden Steppan, Ross Bunker, Katy Schneider, Josh Nelson, Cory Varney, Warren Lockwood, Nathan Young, and Jonathan Melton. Our faculty advisers are Dr. Randy Haupt, Dr. Ozkan Celik, and Dr. Angel Abbud-Madrid.

Team Bio:

Embry-Riddle Aeronautical University in Daytona Beach is the world's largest, fully accredited university specializing in aviation and aerospace. The Robotics Association at Embry-Riddle, also known as RAER, has been a part of the Robotic Mining Competition at Kennedy Space Center since its inception. The team consists of team members ranging from freshman to graduate students, as well as multiple different majors.

The Florida Institute of Technology team A.R.E.S. channels the talent of undergraduate mechanical, aerospace, software, and biomedical engineering students into the NASA Robotic Mining Challenge. The goal is to continue FIT's proud history of sending outstanding teams and robots to the RMC. Our team members have diverse backgrounds, coming from the U.S., Jamaica, India, and Trinidad and Tobago, but they share the passion for space exploration and engineering. The core team works towards the RMC as their senior design project, with Sophomores and Juniors contributing out of enthusiasm. The team is dedicated to design and build a robot that is not only able to win the Challenge, but also to drive forward the state of the art in designing planetary exploration robots. The team is led by project manager Leyane Mohammed and systems engineer Domenick Albanese. The robot's structure including the mining system is designed by Nate Voris, Zoher Kothari, John Breen, Jake Netzley, and Lakshmi Narasimhon.A.V. The electronics are handled by Khalphani Green, Spencer Lower, Adrian McHargh, and Mark Thames. Pablo Canseco and RD Allado are developing the communication system to be used during the competition.

Seven years ago, the Iowa State Robotic Mining team, Cyclone Space Mining, began when nine students took the challenge to build a robot for the first Lunabotics Mining Competition, in 2010. Their robot, ART-E, short for Astro-Robotic Tractor for Excavation quickly became a line of well-designed machines destined to make Iowa State University a top ranking team at NASA's yearly competition.

Since the team's first competition, Team Cyclone Space Mining has had a strong presence winning many awards and setting numerous records. In 2012 and 2013, the team won 1st place in the Mining portion of the RMC. Additionally, in 2013 the team earned the overall Joe Kosmo award. In 2014, the team's rover was the first to be fully autonomous which earned the highest point total in the history of the mining competition. At the 2015 RMC, Team Cyclone Space Mining experienced difficulties with the controls in the arena. Despite the difficulties, the team earned 7th place for the Joe Kosmo Award, 3rd place in Outreach, and 1st place in Social Media.

This year, spectators can expect Cyclone Space Mining to come back strong with a fully capable and competitive robot.

The Kent State Robotics Team consists of about ten members. The team is fairly new, having only started in spring of 2014. The team is very diverse, encompassing eleven different majors including: Computer Science, Industry Technology, Mechatronics, Math, Software Application, Computer Engineering Technology, Electronic Engineering, Technology, Mechanical Engineering, Business Administration and German. Kent State also participates in a competition each year held in November, hosted by the Association of Technology, Management, and Applied Engineering. However, the NASA Robotic Mining Competition is the team's main focus each year.

Kent State is very excited to be hosting mining teams from last year's competition for the first annual Practice NASA RMC this February 5th and 6th on their campus. It is the Kent State Robotics team's second year participating in the NASA RMC. This year, the team is working to achieve autonomous operations through the use of Allen-Bradley PLCs and is also reworking their design from scratch.

MSOE NASA Robotics Mining Competition

Advisor: Dr. William Farrow

Team Lead: Amber Korn

Senior Members: Trevor Cwiok, Sean Donovan, Jan Filip, Cameron Graves, Nathan Gray, Darryl Gullekson, Amber Kent, Kyle Korn, Torsten Molina, Elliott Rashed, Gerardo Sanchez, Trevor Zarek

Underclassmen Members: Khoua Chang, Michael Hinaus, Karly Kasten, Aaron Koepke, Elizabeth McBride, Casey O'Connor, Athena Olson, Eric R. Presuhn, Divin Ramachandran, James Santy, Brandon Schumacher

Team Biography

The Milwaukee School of Engineering (MSOE) has been participating in all but one of the competitions since its founding year in 2010. This year marks a new structure to the makeup of MSOE's team positioning it to be even more competitive at this year's and upcoming RMCs. The team is comprised of 24 undergraduate students under the guidance of two faculty members. Thirteen of the team members are seniors, working the project for Senior Design Course credits, form the core cross-functional design team. The design effort has been divided into four sub-teams including chassis, material handling, drivetrain, and power and sensors each headed by senior. In addition to the seniors, 11 ambitious "shadows" assist the design and four have taken on leadership roles to strengthen the organization of the team.

State Space Robotics Team is the first interdisciplinary robotics team of its kind at Mississippi State University. We were founded in 2013 by a small but dedicated team of engineering students wanting to prepare themselves for the exciting future of robotics. Now in our third year, State Space Robotics is passionate about designing and building original, innovative, and effective robots that conquer each competition's challenges in unique ways.

However, State Space Robotics is about more than just a competition. We are dedicated to making a difference in our community through service as well as by working with youth organizations like the Boys and Girls club and FIRST Robotics. Through this, we hope to teach students of today about how they can become the future of science and engineering!

Team Biography:

An international and interdisciplinary team comprised of fourteen computer science, electrical engineering, mechanical engineering, and mechanical engineering technology students, the Montana State University 2016 NASA Robotic Mining Competition team has been working together as a group since August 2015 to design and build the competition robot. Team members are as follows: Ronald Alles, Mujtaba Al-shikh, Alex Calderwood, Owen Curtiss, Carl Fee, Matt Griffin, Sarah Juedeman, Masaki Norton, Will Rynearson, Tyler Stewart, Angus Tomlinson, Zach Tompers, Una Trivanovic, and Joe Whitney. All the team members are undergraduate students ranging from freshmen to seniors, some participating as volunteers and some fulfilling their engineering capstone requirements. Guided by said capstone course requirements and RMC-veteran advisors Mike Edens, Kevin Repasky, and Hunter Lloyd, the team has come together to brainstorm, design, and finally build a robot that can compete based on a relatively new set of objectives and arena design. The team has worked from the ground up rather than modifying an old robot in order to satisfy the capstone requirements. As a team, we have been working successfully and harmoniously together, and we are looking forward to the competition!

Team Photo:

From left to right: (back row) Mike Edens, Ronald Alles, Joe Whitney, Carl Fee, Alex Calderwood, (front row) Zack Tompers, Sarah Juedeman, Angus Tomlinson, Mujtaba Al-shikh, Matthew Griffin, Tyler Stewart.

Introduction

The NASA Robotic Mining Competition team (NRMC) is a student run club at Montana Tech! We want to provide a method for Montana Tech students to gain experience in their fields of study and attract employers from various industries: aerospace industry, mining industry, and other industries to recruit at Montana Tech.

Club Structure

Montana Tech's NRMC team is split into different sub divisions: electrical engineering, mechanical engineering, computer science/software engineering, materials engineering, marketing and the outreach division. Each division has a team leader which sub divides the work up. Each division meets once a week for 1 to 3 hours.

The entire Montana Tech NRMC team does meet once a week as well to allow for adequate communication between each division. Ideas, progress, fundraising and outreach opportunities are discussed at this meeting. The meeting is designed to keep everyone informed and to hold people accountable to deadlines. The meetings are also designed to keep everyone encouraged so people remain motivated to stay in the club.

A third meeting is held once a week between all of the team leads and the president and vice president of the club. This meeting is designed to help assist team leads develop positive leadership skills. The meeting also helps the club allocate excess resources to struggling divisions. Our greatest resource is cross disciplinary people. We place cross discipline team mates on projects that will accelerate progress so each division can meet its dead line.

Opportunity for Freshman

Montana Tech's NRMC team loves recruiting freshman students. Some freshman students aren't sure which discipline they want to study for the next four years. NMRC gives them an opportunity to get their hands dirty by allowing them to become involved with each division. Freshman students are allowed to take part of any project currently being worked on or take on full projects on their own. We are there to help them. If the freshman does take on a full project of their own, it usually entails improving last years design. Otherwise, they work under another student on this years design.

Conclusion

Montana Tech's NRMC team is motivated to build the robot. However, we don't take things too seriously. Sometimes we break things. Sometimes our perfect designs don't work and sometimes we are surprised when they do. Some days we get a lot of things accomplished. Some days we just need a place to relax after we take a test. We are looking forward to a very good time in Florida.

NYU Tandon School of Engineering's "Team Atlas" embarks on an exciting year of innovative design and impeccable execution as NASA's Robotic Mining Competition approaches. Team Atlas has shifted its strategy toward 'building for the future,' focusing on recruiting the fresh talent of its underclassmen, many of whom are freshmen and sophomores. These students will spend the next few years of their education learning to work, design, study, and build together in pursuit of greater success at NASA's Robotic mining competition. The members of Team Atlas are majoring in a variety of different fields including Mechanical Engineering, Electrical Engineering, Civil Engineering, Computer Engineering, Computer Science, Applied Physics, and Mathematics. Past accolades include the Judges' Innovation Award, Third Place in the Team Spirit category and Sixth Place in Mining. This year's team captain is Nicholas Reid a senior studying applied physics and computer science. Haldun Hadimioglu, the Program Director for the Computer Engineering Department of NYU, is the team's Faculty Advisor. Team Members include Nicholas Reid, Koushik Paul, Kevin Veerasammy, Andrzej Jackowski, Malia Manzur, Devon Simmons, Orion Doscher, Brian Kao, James Chu, XiTang Zhao, Nicole Nadim, Yoon Cho, Cesar Sindoni, Frederick Bills, Kamanie Balram, Chris-David Fleurant, Derek Layne, Tiffany James

Re-founded in 2014, Bison Robotics is a competitive organization at North Dakota State University. The students in the organization work to inspire their community to pursue knowledge in Science, Technology, Engineering and Mathematics (STEM) fields through engaging, hands-on activities. Bison Robotics further works to spark creativity and teamwork among its members through exciting events and competitions. Bison Robotics provides an excellent opportunity for members to build robots, make friends and serve their community.

PSU NASA RMC Team Bio + Photo

The Penn State NASA Robotic Mining Competition Team is starting fresh in the 2015-16 academic year. We emerge from strong interest in the competition which sparked a very quick-to-jump decision from the PSU RMC Team lead, Paul D'Antonio to register. Beginning in September, Paul began a recruitment run, approaching a number of engineering groups/clubs on campus. Recruitment season (ongoing) led to the adoption of a number of talented engineers who are with us today. Freshmen Abby Tarosky and Reno Zaffina, as well as juniors Derek Von Nieda and Chris Burge are part of a very strong effort to design and build a robot before May, while completing a number of other competition requirements.

In September, we were also able to pick up our invaluable Faculty Advisor, Jamal Rostami, who is a professor in Mining Engineering at PSU. Rostami brings a wide range of knowledge to the table for us and shows much enthusiasm and support for the group.

Future plans for the Penn State NASA RMC Team include further recruitment and the assembly of our robot by carefully thought-out design plans. Our goal for the 2016 NASA RMC: Make it to KSC with a functional robot. We have every intention of making that happen.

(WORD COUNT: 204 - Feel free to make edits if it must be 200.)

Top photo below includes members who are on the roster. (Left – Right, Paul D'Antonio, Derek Von Nieda, Chris Burge, Jamal Rostami)

Bottom photo includes our full team as it stands today. (Left – Right, Paul D'Antonio, Abby Tarosky, Reno Zaffina, Chris Burge, Jamal Rostami)





Greetings, we are a group of mechanical engineering students from the Polytechnic University of Puerto Rico. We have come a long way on our journey to become professional engineers and now we are facing our greatest challenge so far. Designing a mining robot that could help gain knowledge and understanding on Mars is a very satisfying achievement for all of us. We are hoping to gain as much knowledge as we can from this challenge since the design covers a wide spectrum in mechanical engineering topics. Also this design is not only meant for the competition, it is also our Capstone Project. With the success of our design we will be able to call ourselves professional engineers.

Purdue Lunabotics Team Bio

Purdue Lunabotics designs and builds robots for space exploration. The team is returning to compete in the 2016 NASA Robotic Mining Competition with a brand new robot, re-designed for improved performance over our entry in the 2015 competition. Our team consists of around 60 students from the mechanical, aerospace, electrical, computer, industrial, and biomedical engineering disciplines. These members are broken into 4 major subteams: Drivetrain-Structures, Excavation-Deposition, Electronics, and Manufacturing. Our members have been hard at work with efforts to design, fabricate, test, and optimize our systems to create a product with the potential to explore and exploit the resources of other worlds for the benefit of mankind. Our team is passionate about the work we do and not only wants to perform well at the competition in Florida but seeks to make an impact on the course of future space exploration.

SDSM&T Moonrockers

The SDSM&T Moonrockers formed in 2009 and have competed five years in NASA's Robotic Mining Competition. For the seventh annual competition at the Kennedy Space Center, the SDSM&T Moonrockers team is being led by Electrical Engineering senior, Devin Kroeber. The multidisciplinary team is comprised of students from Electrical Engineering (Adrian Vopnford), Mechanical Engineering (Jacob Green, Sam Hill, Dan Hodges, Erik Figuracion, Mathew Gordon, Jonathan Stelzle, Joree Sandin, Adam Holzer, and Charles Hartman), Computer Engineering (David Donahue), and Computer Science (Alex Muchow). Advising the team are Dr. Jason Ash (Mechanical Engineering) and Dr. Charles Tolle (Electrical and Computer Engineering). During the sixth year of the competition the Moonrockers placed 11th overall. The SDSM&T Moonrockers are extremely grateful for funding and supplies provided by the South Dakota School of Mines & Technology Student Association, Dakota High Voltage Testing & Maintenance, Power Grid Engineering, Misumi, Robotech, Aquarius Technologies, Dale's, and the NASA South Dakota Space Grant Consortium.



The SDSM&T Moonrockers are pictured; Front Row (L to R): Jacob Green, Erik Figuracion, Jonathan Stelzle, Adam Holzer, Joree Sandin, Alex Muchow; Middle Row (L to R): Sam Hill, Mathew Gordon, Dan Hodges, Charles Hartman, Devin Kroeber; Back Row (L to R): Jason Ash Charles Tolle

Temple RMC

Lead Faculty Advisor: Dr. John J. Helferty

Student Team Leads: James Novino

Team Biography:

The Temple University RMC team was started seven years ago at Temple University located in Philadelphia, Pennsylvania. With the support and guidance of Electrical Engineering professor Dr. John Helferty, teams of students have represented Temple University at every RMC competition held over the past seven years. This year, the team consists of two veteran RMC participants and six new participants. Lessons learned at previous RMC competitions have had a large role in shaping the design of this year's robot. The team is divided into an Electrical Engineering sub-group, and a Mechanical Engineering sub-group. While the detailed design tasks are divided, the team unites around the common goal of building an autonomous robotic excavator capable of navigating the harsh terrain and efficiently mining large quantities of regolith. The RMC project at Temple University has been a fantastic outlet for students to explore their passion and creativity in the field of robotics. The team looks forward to continued involvement in the RMC competition at NASA Kennedy Space Center.

The UNC Charlotte team – the 49er Miners – represents the departments of Electrical and Computer Engineering, Engineering Technology, Mechanical Engineering and System Engineering, all of the William States Lee College of Engineering. The team is focused on making last year's robot autonomous, with some mechanical improvements, and is led by Kristi Barnes. The localization sub-team is developing a vision based location system as the basis for their autonomous control of the vehicle; they are William (Bill) Wilson, Michael (Ben) Lackey and Josue Uriostegui Bautista. The navigation sub-team [William (Seth) Faulkner, John (Alex) Fisher and Stuart Gambill] are challenged with moving the robot from its current location (as determined by Localization) to their desired location. The excavation subsystem design is being improved by Thomas Forrester, Steven Padgett and Polydor Kabengele. The students are advised by Dr. Aidan Browne, from the Department of Engineering Technology and Construction Management, and Dr. James Conrad from the Department of Electrical and Computer Engineering; they both bring automation, controls, and robotics experience to the team through their industry backgrounds and FIRST Robotics.

The University of Akron

UA Robotics

The University of Akron Robotics Team launched the same year as the NASA Robotic Competitions. Attending every competition since, UA Robotics has used the innovative spirit of our students to continually grow the program into what has become today. The team has grown to be a 20 member, diverse group of students including chemical, biomechanical, electrical, computer, and mechanical engineering majors. Engineering in the workplace demands a high level of communication and cohesiveness to find solutions when faced with an obstacle. Recognizing this, the UA Robotics program has been structured to prepare its students for the future of the workplace by putting an emphasis on collaboration and the sharing of knowledge to meet goals as a team. With a heavy involvement in outreach, the team dedicates countless hours to help educate local youth of future opportunities in STEM, and inspire them to find a passion for the sciences. Through involvement with the UA Women in Engineering program, Akron City Schools, and other organizations, the program is proud to help inspire young minds to get involved in the scientific community. Our mission statement is to continually expand our knowledge of what is, to reach new understandings of what could be.

Alabama Astrobotics is a robotics team at the University of Alabama directed by faculty advisor Dr. Kenneth Ricks. The team began operations in 2010 with only five students and has grown to now involve 45 graduate and undergraduate students in a multitude of disciplines including aerospace, computer, electrical, and mechanical engineering, computer science, math, and physics. The team is a collaborative effort between the University of Alabama and Shelton State Community College and serves its community and campuses throughout the academic year with multiple outreach events and technology demonstrations. Alabama Astrobotics participates in various space-based robotics competitions each year including the NASA Robotic Mining Competition (RMC), the NASA Sample Return Centennial Challenge, and the PISCES Robotic International Space Mining competition. Alabama Astrobotics is a charter participant in the NASA RMC having participated in all seven competitions, and is the only team with two overall first-place finishes, 2012 and 2015.

Aurora Robotics is the University of Alaska Fairbanks team in the 2016 NASA Robotic Mining Competition. We've previously competed in the 2013 RMC (13Kg mined), RMC (78Kg mined, and Judges Innovation Award), RMC 2015 (less than 10Kg mined) and the 2014 PRISM challenge. You can recognize our robot by our horizontal body plan, which puts the tracks nearly 150cm apart; or by our use of PowerWheels motors from a Barbie Jeep and custom 3D printed gearboxes. We use a prototyping-based breadth first iterative design strategy, rapidly building and testing a number of strikingly ugly prototypes to validate design ideas before building the final hardware. Workspace is provided in the advisor's personal workshop, which has 3D printers, lathes, welders, and scrap metal. Team Captain: Arsh Chauhan, CE. Software: Arsh Chauhan, CE; Mike Moss, CS and Dr. Orion Lawlor, CS. Advisor & bolt sorter: Dr. Orion Lawlor, CS.

Space Hawgs Bio

The University of Arkansas Space Hawgs is a multidisciplinary team comprised of Mechanical, Electrical, and Computer engineers. The project scope of this year's team is to improve upon the previous year's design. Mechanical students are developing a more effective support for the current excavation system; this new support will allow the team to better control the dig depth capability of the robot without making it harder to collect the full amount dug. This year's team is seeking fully autonomous functionality which will require added electronics. These include new sensors and an added camera.

This year's robot represents a continuation of last year's design, and an improvement of the functionality of those ideas discussed. All members of this team are committed and ready to tackle the challenges posed by this year's competition.

The CU Boulder 2015-2016 NASA RMC Team is a diverse group of students working together with Professor Nikolaus Correll to produce a winning autonomous robot. The team's goal is to create a robot that can efficiently and successfully overcome all of the obstacles of the competition. The team's approach is to create each part of the robot in the simplest possible way to foster reliability and repeatability in a competitive setting by using tried and true algorithms, mechanical systems, and electronics. We believe that by not reinventing the wheel we can more efficiently use our resources to create and improve our robot.

University of Florida

“Team AggreGator”

Lead Faculty Advisor: Dr. Michael Griffis

Student Team Lead: Issa Gabriel Malke (Hawsho)

Team Bio:

"We are Team Aggregator. We have participated in the NASA RMC for the past three years, making drastic improvements in our designs each time. Our team consists of a handful of dedicated undergraduate and graduate engineers. What we lack in experience, we make up in with hard work and dedication. This year has been our best yet and we're sure it will pay off at the competition."

Team Members from Left to Right:

Row 1: Ronald Wilson, Jesus Pintado, Carolina Gomez, Michelle Palumbo, Issa Malke.

Row 2: Shashank Sharma, Scott Goddin, Shital Kasabwala, Nickolas Dyer, Dr. Griffis, Oleg Timuta, Vaibhav Gupta

Not present in the photo: Nick Landy

Team Biography

Chicago Engineering Design Team (EDT) is an engineering and robotics organization comprised of students from the University of Illinois at Chicago. It was founded in 2000 by a small group of students who wanted to utilize knowledge gained in the classroom to explore the field of theoretical and applied robotics. The mission of the organization is to provide practical applications for all aspects of engineering including, but not limited to, the fields of electrical engineering, mechanical engineering, and computer science. EDT aims to accomplish this goal by engaging members in creative design projects which offer comprehensive knowledge of design and fabrication processes. Additionally, these projects provide students with an essential understanding of what it is like to be part of a productive interdisciplinary team. The Engineering Design Team also stresses the importance of reaching out to the Chicago community by promoting science, technology, engineering, and mathematics within the city and surrounding areas. Although EDT is a small organization we believe that our work reaches far beyond the walls of our shop and has the potential to benefit not only our members but the world as a whole.

Illinois Robotics in Space (IRIS) is a multidisciplinary student organization formed to compete in the annual NASA Robotic Mining Competition. IRIS provides an opportunity for University of Illinois students to experience the development of innovative robotic systems in a peer-based learning environment, fostering systems thinking and collaboration through development, manufacturing, and operation of complex, space-oriented robots in a systems engineering framework. IRIS's hands-on learning environment extends into the Champaign-Urbana community through educational outreach projects and demonstrations that promote science, technology, engineering, and mathematics and inspire interest in the next generation of students about robotics and space exploration.

The University of Iowa Robotics Club is a second year organization composed of students studying various engineering disciplines from biomedical engineering to computer science, and open to all students from the University of Iowa. We made it to competition in our first year, and are an up-and-coming rookie team that looks forward to learning and improving in the years to come. Our design focus is on building a strong, reliable rover that we can learn from and improve upon every year.

The UK Senior Design Team is comprised of six student members, Michael Branson, Matthew Girard, Mark Simonds, Ponya Soth, Yu Lin and Zunchen Huang. The members are Electrical or Computer engineers with a passion for robotics and visual processing. While our passions are similar, our education is vast. Some members have had extensive classes in computer programming while others have focused on hardware and mechanics. Since this is the first year for the University of Kentucky to enter the Robotic Mining Competition, we are designing a robotic vehicle scratch which we hope will be expanded upon by future UK teams.

We are the Robotic Exploration of Space Team (REST) from the University of Michigan. We are all fairly new to robotics but this year has been a great learning experience for us. We are a team of undergraduates and graduates who have an interest in robotics and developing hands-on skills for working with robotics. We are looking forward to the competition and wish everyone the best of luck!

UNH LunaCats

The 2016 University of New Hampshire (UNH) LunaCats is an interdisciplinary team of about 10 members representing the Mechanical Engineering, Electrical Engineering, and Computer Engineering majors. The team of graduate and undergraduate students are devoted to the design and construction of a robotic excavator. They also are very involved in the local community by the hosting groups of local students for engineering activities, participating in technology events on and off campus, and volunteering for FIRST robotics events.

As a 6th year veteran team, the UNH LunaCats have a rich history with NASA RMC. This history includes placing as high as 3rd place in mining, winning Efficient Use of Communications Power Award twice, and most recently, earning 5th place overall. Looking to build on past success, this year's team is aiming for a fully autonomous entry.

University of North Dakota Team Biography

The University of North Dakota (UND) Robotics Team is a multidisciplinary team consisting of freshman through graduate members in the disciplines of: mechanical engineering, electrical engineering, and computer science. The team is under the advisement of Dr. Jeremiah Neubert, Dr. Surojit Gupta, and Dr. Niama Kaabouch. UND is a veteran participant of the NASA Robotic Mining Competition, and has competed every year since 2010. Through teamwork and thoughtful analysis, the team has produced innovative robot designs every year. The UND Robotics Team also serves the campus and community through many outreach events each year. UND has demonstrated success in previous years of the competition, including: the Joe Cosmos Award in 2011, second place in the on-site mining award in 2011 and 2013, and first place in the outreach project report in 2015.

Space exploration and settlement is the future for mankind. Our group is committed to building, learning, and innovating technology to make the future possible. We use NASA's Robotic Mining Competition to help make this possible as our ideas and techniques will help move mankind toward becoming a space bearing species.



Team Biography

The Utah Robotic Mining Project is pleased to return to represent the University of the Utah in the 2016 NASA Robotic Mining Competition. This is the second year that the University has fielded a team, and we are excited come back with a new design building on what we learned from our first year. After achieving third place in the onsite-mining category during our rookie year we have high hopes to do even better this year with a fully autonomous robot. The team includes students from many disciplines including computer engineering, mechanical engineering, mining engineering, materials science, computer science, and electrical engineering. Several team members are continuing to participate from our first year, and this project has been a success in supporting a few seniors with work for their senior design project. The team would like to thank our sponsors Utah NASA Space Grant Consortium, Millcreek Engineering, Northrop Grumman, and our other sponsors for providing the resources necessary to make the project a possibility. The Utah Robotic Mining Project is looking forward to having a wonderful time this year and coming back in future years to continue all of the engineering, innovating, and learning that this competition provides.

UVM Robotic Mining Team 2015

Senior UVM Engineering students have been working to design a competitive mining robot as their Capstone project for the past three years. Previous teams have worked to design and fabricate the mining module and electrical systems. This year's team is working to develop the current offload system and upgrade the drive train in a way that integrates with previous teams' work. This will be the second year that a team from UVM will participate in the NASA Robotic Mining Competition.

The team Badger Robotic Mining Team originates from the University of Wisconsin – Madison. The team began when Tashi Atruksang, an undergraduate student studying Engineering Mechanics and Astronautics created the team. The team grew as students became aware of the team and the competition. Students from various fields joined. The overall mining team was separated into 3 sub groups: Mechanical, embedding and programming team. The main faculty advisor for the team, Aaron Nimityongskul, created an engineering course for the project where participants could earn credits for their time spent on the project. The team also received various donations including a generous donation from the Space Science and Engineering Building to fund the organization. The team is currently located in a lab room in the Mechanical Engineering building. The team is still learning the ropes about robotics as well as managing an org, but they are all also very enthusiastic and excited to participate.

The Virginia State University Mining Robot Team consists of nine engineering/technology students and two engineering faculty advisors. Dr. Jinmyun Jo, an associate professor and Dr. Nasser Ghariban, the department chair in Department of Engineering and Dr. Peng Cheng, an assistant professor of Department of Technology are the faculty advisors. Steven Brown is a Computer Engineering student and serves as the team leader who manages overall activities including documentation, reports and safety. Gregory Nowlin is a Mechanical Engineering Technology student and serves as Technical Officer who focuses on documentation, design, control, construction and testing of the robot as well as safety and environment issues. Ronald Hodges is a Computer Engineering student and serves as Secretary who is in charge of deadlines, reports, ordering, electric/electronic systems, programming, and team coordination. Frentrell Bratcher, Te'Shad Chambers and Emmanuel Nickersen are Computer Engineering students and are responsible for programming, wireless communication, electric/electronic systems. Benjamin Stansfield and Nathan Carrington are manufacturing engineering students and are involved with programming and CAD-design. Walter Manlan is an Electrical Engineering Technology student and designs/constructs electric/electronic systems.

VT Astrobotics is made up of 35 undergraduate students studying engineering, science, and business with a passion for synthesis of space exploration and robotics. Twelve seniors in Mechanical, Mining, and Aerospace Engineering are working on this project for their capstone design, while the remaining students are volunteers. The team designs, fabricates, and programs all aspects of the robot in-house here at the Joseph A. Ware Advanced Engineering Lab on campus. The team also plans and coordinates outreach efforts to inspire the next generation of roboticists and space explorers. The combination of these disciplines working towards a common goal makes VT Astrobotics a unique experience.



We the members and associates of the Washington University in St. Louis Robotic Mining Club have established this organization to design innovative robotic excavation platforms in order to remotely recover and utilize extra-planetary materials. The products we deliver are capable of traversing planetary terrains, subsurface excavation, and resource recovery. We design, test and manufacture these technologies to contribute to NASA's and the nation's vision of a bright future in space exploration, and to secure humanities foothold in the solar system. WURMC strives to fulfill these goals through the application of systems engineering to the process of design, development, and testing of robots constructed to compete in NASA's Robotic Mining Competition.

Nonsense Factory Team Bio

The Nonsense Factory is a team consisting of three Robotics Engineering Seniors, Nick Woodward, Jack Rivadeneira, and Paul Peterson; one Mechanical Engineering Senior with a concentration in robotics, Eleanore Carson; and the Faculty leader, Professor Michael Ciaraldi at WPI. The team is competing the in RMC as a part of their Major Qualifying Project, which is designed to be the culmination of their experience at WPI. The team hopes to have a strong performance at the competition and is excited to put their skills to the test once more.



2016 NASA Robotic Mining Competition

Wright State University Team Biography

Wright State University's RMC Team is comprised of five undergraduate engineering students, under the advising of Dr. Scott Thomas. With experience advising more than 75 senior design projects over 22 years, Dr. Scott Thomas can provide insight into how to create and maintain a successful team. The four mechanical engineers include Josh Rowe, Andrew St. John-Grubb, Andrew Kinnison, Ron Picard and the computer science undergraduate student is Logan Rickert. Josh Rowe has over a year and half of experience in design and modeling working for Wright Patterson Air Force Base's Materials and Manufacturing Directorate. Andrew St. John-Grubb has over three years experience in robotics, with a focus on fabrication. Andrew Kinnison, the team lead, has gained technical engineering experience both in the private and public sector working for Emerson Climate Technologies and Wright Patterson Air Force Base. Ron Picard has similar experience working for Ferco Aerospace Group and Wright Patterson Air Force Base, gaining experience with stress concentrations and software development. Logan Rickert is a freshman Computer Science major, with experience coding in over 5 different software languages and a multitude of platforms. Each team member aims to develop skills spanning multiple engineering disciplines using a systems engineering approach.

The CUNY York Robotics team is made up of seven Physics major, one computer science major, and two faculty advisors. The faculty advisors are Daniel Phelps and Charles Hobbs. The newest member of our team is Jonathan Chery, the computer science major who will be working on the software for the Yorkbot. Shamit Sharif has two summers of undergraduate research under his belt and will be second member of the software team. Elliot Wiseman spent a summer working with Shamit on a major particle physics project lead by a professor Lynch, and he will be the working on hardware modification for the Yorkbot. Narendra Gurcharan has designed and lead a team to construct a fully functioning trebuchet, and he is in charge of redesigning the robot . Juanpablo Rodriguez is our Jack of all trades, and will working with both the hardware and software teams. While Amandeep Singh and Yvon Pierre-Noel are aspiring engineers and they will be helping with construction.. Finally we have Matthew Khargie, who is leader of our team and a veteran of the Nasa Robotics Mining competition.