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سایت آموزش مهندسی مکانیک ایران

NASA's MOONBUGGY STUDENT COMPETITION

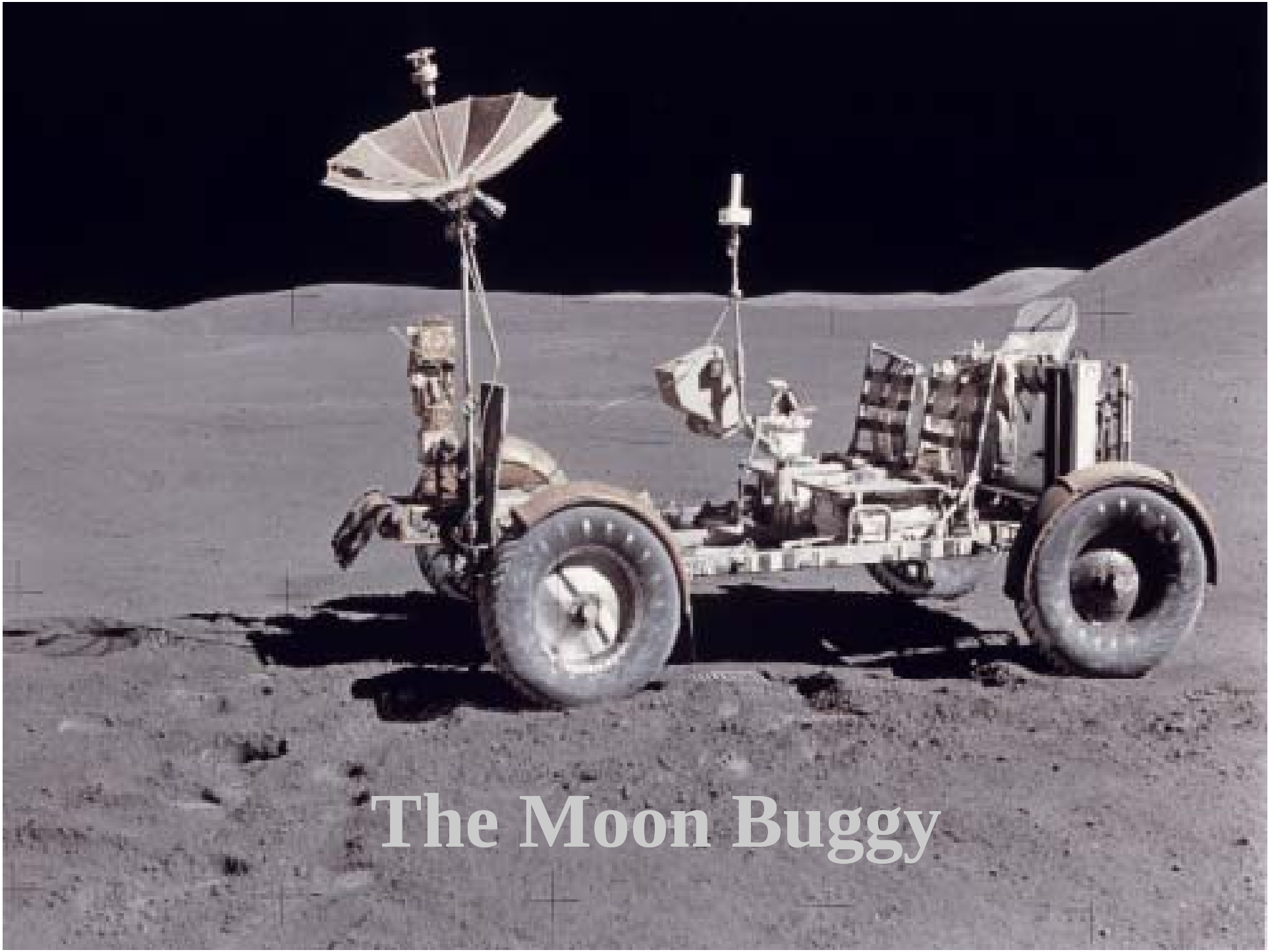
On the Grounds of the U.S.
Space & Rocket Center
Huntsville, Alabama

April 8, 2000

Participated by the Senior Design Course Students of the
Department of Mechanical Engineering
Purdue School of Engineering and Technology
IUPUI

Moon Buggy Background

- First Moon Buggy, actually called a lunar roving vehicle, was conceived in 1969
- Used in the Apollo Missions 15, 16 & 17
- Used to gather rock specimens from craters and the lunar surface


The Moon Buggy

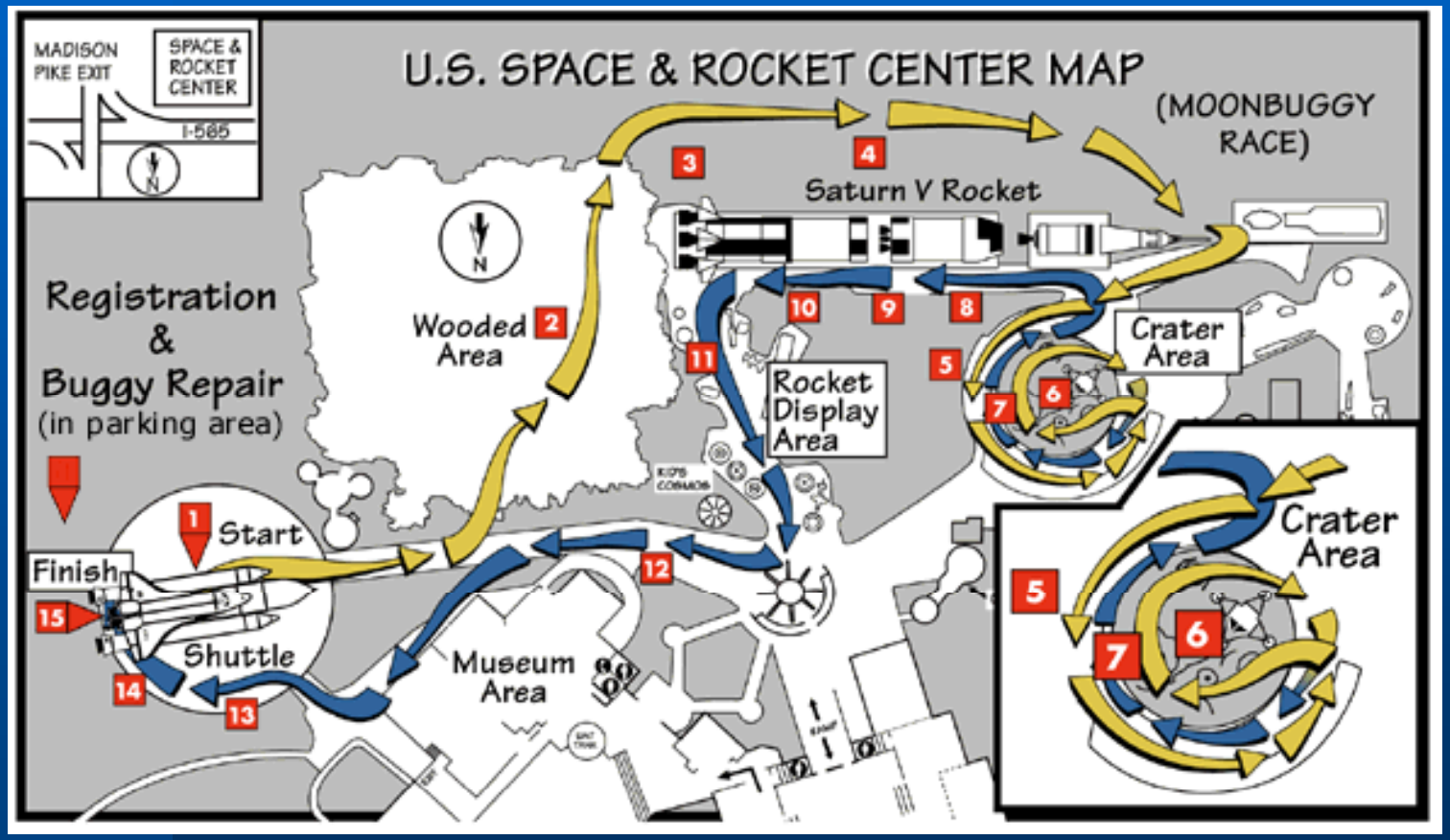
IUPUI Moon Buggy History

- ME 462 Senior Design Course Project
- Dr. Pidaparti is the faculty advisor
- IUPUI first entered the competition in 1999.
- Dr. Pidaparti wanted to have the existing buggy redesigned for better performance in 2000

- Team Members, 1999
  - Tom Mulflur
  - DeAnne Powers
  - Craig Kelle
  - P. Kumaran
  - Daniel Ward
  - Lee A. Siow
- Team Members, 2000
  - Chris Mathis
  - John Paschal
  - Natalie Shepherd

Spring 2000 Redesign

The Great Moon Buggy Racing Course




http://moonbuggy.msfc.nasa.gov/
Here is a look at some of the obstacles that the Moon Buggy must be able to traverse

Reason for Design

- To compete with other schools across the nation in an annual race
- To learn the design process from conception to development
- To develop relations with fellow students focused on a common goal
- Apply creativity, imagination and problem solving skills
- To win the race next year in Huntsville, AL ! ! !
- **GO IUPUI ! ! !**

Design Requirements

- Human powered with no energy storage devices in propulsion
- Unassembled size of 4’x4’x4’
- Riders must be at least 15” above the terrain at all times
- Turning radius must be less than 20’
- Maximum width of assembled version is 4’
- Vehicle must have fenders, U.S. flag, simulated batteries, TV camera, antenna and electronic controls

Additional Design Requirements

- Able to withstand large impacts from terrain
- Safely navigate lunar course
- High top speed for flat section with high torque at low speeds for inclined sections
- Exceptional braking and steering ability
- Noble design worthy of victory

MoonBuggy Design & Race Competition Experience 2000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Acknowledgements

- Special thanks to Carrier Corporation for their generous donation in sponsorship of the IUPUI MoonBuggy Design
- Thanks to the Department of Mechanical Engineering for the travel support to participate in the race at Huntsville, Alabama