



AAPG

Research LAUNCHER Program

About You

First Name: Michael Last name: Nash

Company/University: The University of Oklahoma

Check which apply to you: Student Non Student Independent Researcher Professor Corporate Research Other

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Country: USA

Email: michael.nash@post.com Fax: ()

Short Bio: (250 words or less)

Pursuing a Ph.D. in Mechanical Engineering with emphasis in robotics and automation engineering. Target careers involve research and development in robotics technologies, and teaching.

Project Description

1. Name of project Robotic Security Rover

2. Brief synopsis/areas of geosciences or engineering (50-75 words)

Description:

A rover that cannot get mechanically 'stuck' (e.g. Tipped over or hung up on its side) with a mechanically-oriented camera system so no matter if the thing is driving on its 'top' or bottom, the camera will be right-side up. Cameras are on a 180 degree rotated servo so when they flip to right-side-up they revolve 180 to face back to in front of the vehicle

An autonomous or remotely-operated 4x4 rover highly resistant to inoperable orientations with its dual-sided-drive design.

A camera at both the front and rear attached to a boom that can extend from either side removes top, bottom, front, and back designations to create a simply universal rover capable of operating in dynamic environments with unexpected obstacles and terrain features.

The four-wheel drive system is able to drive through unstable terrain with ease, and can climb obstacles up to a third the diameter of the wheels.

Additional wheel types are available for swapping out in the field as the situation may dictate:

- Rubber all-purpose tires for urban, dirt, grassy field, or woodland environments
- Spiked metallic wheels for icy (or otherwise slick), snow, or swampy environments
- Hollow metal “mars rover” wheels for sandy desert terrain

3. Bullet list of 5-7 main outcomes/goals. Robotic “Perimeter Patrol” ideal for security in remote areas, and also where there are terrain issues. Ideal for monitoring in situations where it is important to be able to change directions and remotely guide the rover

4. In two or three sentences, describe why your research is important. Please mention who will benefit from your work.

This design is an improvement over other designs – more functionality, durability, flexibility, and lower cost. It can also take samples and be used for surface geochemistry and water quality testing of effluent.

5. Timeline with milestones (12 month/18 month) _____

1-3 months: design / 4 – 6 months: develop prototype / 6 -9 months: test / 9 – 15 months deploy and produce

6. Funding amount needed to achieve first basic goals within 12 months. Please provide a brief summary overview of your budget. List costs of 5-10 main items. \$2,500 for initial design: includes materials; prototype cost: \$4,500; testing / deployment (includes travel): \$4,000; production of 6 to test in separate locations: \$12,500

7. In the process of gaining background knowledge in the field of your proposed research, who did you find to be the top two or three researchers? What are the main concepts that are being explored? Please briefly describe. Similar in concept to the multi-directional rovers / crawlers that are capable of being reprogrammed remotely, including the types of tasks they can perform, and the kinds of data recorded

8. Please provide a photo of yourself and a photo related to your proposed project. It will be very helpful in publicizing your project and potentially securing funding.

9. Who will benefit? Anyone with remote operations

AAPG Research LAUNCHER supporters receive

The opportunity to work directly with you and receive reports, information, and findings, depending on the level of support.

The Deal

The researcher agrees to:

- ❖ Develop a brief public presentation on the research to be made available to AAPG
- ❖ Share an annotated bibliography and review of relevant published articles
- ❖ Present research findings on project at an AAPG Forum, GTW, or Research Symposium
- ❖ Write a detailed report on the results of your research to be made available to LAUNCHER supporters
- ❖ Write an extended abstract on the results of your research to be made available to AAPG

Thank you for submitting your research proposal to the AAPG Research LAUNCHER Program. Your proposal will be reviewed and upon acceptance you will be contacted by AAPG Education/Research. If your proposal is accepted, we will publicize your proposal and encourage

fundes to contact you directly. AAPG does not guarantee funds nor have any connection with the success or failure of the endeavor. The goal is to support scientific research in the petroleum geosciences and engineering and launch the next generation of geological advances.

Michael Nash July 14, 2014
Research Candidate (print) Date

AAPG Education/Research (print) Date

Michael Nash *July 14, 2014*

Research Candidate (sign) Date

AAPG Education/Research (sign) Date

AAPG Education/Research

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