About Us

We design, develop, and provide advanced autonomy software technologies and robotic prototypes for space, defense, & commercial applications.

Innovative and Systems-Focused (My Passion)

- Our mission is to provide breakthrough solutions for the greatest challenges facing space robotic exploration, science, and sustainability.
- We are experts in systems engineering and robotics (Add pictures for below)
    - with a focus on mobility and manipulation in challenging environments, novel mechanisms, and systems for exploration, excavation, site preparation, construction, and In-Situ Resource Utilization (ISRU).
- Founded in 2005 as a spin-off from Carnegie Mellon University's Robotics Institute in Pittsburgh, our products, services, and ideas are backed by over 15 years of experience performing R&D for NASA.
- ~~Founded in 2005~~
    - ~~A spin-off from Carnegie Mellon University's Robotics Institute in Pittsburgh, Pennsylvania, ProtoInnovations was created to provide innovative robotic systems for science, exploration, and a sustainable human-presence in space.~~

Products and Services (Portfolio)

We are able to provide a wide range of products and services to fit your needs

- Design
    - Autonomy, perception, and control architectures
        - Sinkage masks
    - Novel mechanisms and modular robotic systems
        - Bevameter
    - Mobile robots
        - MAS (navy robot)
        - K10mini w/ pneumatic excavator and with stereo cam side by side
    - Heavy-duty manipulators and wheels
        - K10mini dozing and trenching
- Engineering (resuse same images?)
    - Robotics
        - Reuse LATUV? (KREX with rubber wheels)
    - Software
        - (computer?)
    - Mechanical and Electromechanical
        - IRLW
- Flight-Forward Testing (reuse testbed images)
    - Small rover
    - Large rover

        - Single-wheel
        - Mixed-terrain performance evaluation

Projects (Awards)

- 2022
    - Software Control Algorithms and Architectures for Autonomous In-Situ Resource Utilization Surface Operations
        - Protoinnovations in Pittsburgh, Pennsylvania, is working on software to enable robotic rovers to perform autonomous excavation, transportation, and deposition of lunar soil, called regolith, which would help enable in-situ resource utilization (ISRU) missions on the Moon or Mars. This development may have possible implications for other ongoing NASA ISRU activities.
        - https://www.nasa.gov/spacetech/sbir_sttr/nasa_awards_accelerate_small_business_tech_for_earth_space
- 2021
    - Dynamically Reconfigurable Software and Mobility Architecture for Autonomous Planetary Rovers
        - Advanced mobility software controls for extreme terrain navigation and continuous surface operations.
- 2020
    - Rover Slip Estimation and Traction Control for Optimal Mobility in Lunar Environments
        - ProtoInnovations selected to advance traction control and improve the driving ability of robotic and crewed rovers for sustainable exploration of the Moon under the NASA Artemis program.
        - https://www.nasa.gov/directorates/spacetech/NASA_Increases_Investment_in_US_Small_Businesses_to_Mature_Lunar_Capabilities_for_Artemis
    - Intelligent Robotic Lunar Wheel with Accurate and Robust Real-Time Mobility Assessment and Response Capabilities
        - Wheels for assessment and response to off-road terrain conditions
- 2019
    - Rover-Based Non-Prehensile Manipulation for Improved Mobility, Scientific Exploration, and Terrain Shaping on Planetary Surfaces
        - Software control architectures and algorithms for terrain manipulation
- 2018
    - Tensegrital Wheel for Enhanced Surface Mobility
        - An inventive system for wheeled mobility that exploits the geometric and mechanical attributes of tensegrity to engage with the terrain in
    - Retractable Robotic Anchor for Hard Rock and Granular Soils
        - An innovative retractable robotic anchor that works in hard rock and granular soils

Partnerships

- U.S. Government (NASA, VIPER, NAVY, DoD)
- Private Industry
- Academic Institutions (UWM, MIT)

Careers:

- ProtoInnovations is developing the next generation of autonomous and semi-autonomous robotic systems for the lunar surface and beyond. As a critical part of this small company, you will be pushed to your intellectual and creative limits as we develop cutting-edge technologies for mobility and manipulation in space.
- Open Positions:
    - Robotics Engineer
    - Senior Robotics Engineer

Contact us

Six images for the carousel:

1.

Notes for improvement:

1. Better images and background (dark background with contrasting foreground sections/cards)
    a. Find good pictures (Sam)
2. Redistributing/reducing text (add pictures) (Sam will rephrase text)
3. Logo, text overlay on images
4. Add section for partners and career
5. Add phase 2 contracts to the awards section (Sam will add content)