

SPACE ROBOTICS & ADVANCED AUTOMATION

In space, reliability is everything. SoftServe designs and validates technologies that withstand the extreme challenges of lunar, planetary, and orbital environments — so your mission never fails.

From science-driven PoCs to full-scale deployment of intelligent robots and autonomous systems, we help organizations achieve mission success on time and within budget. SoftServe enables real-time decision-making, human-robot collaboration, and safe, scalable, resilient operations in space by leveraging:

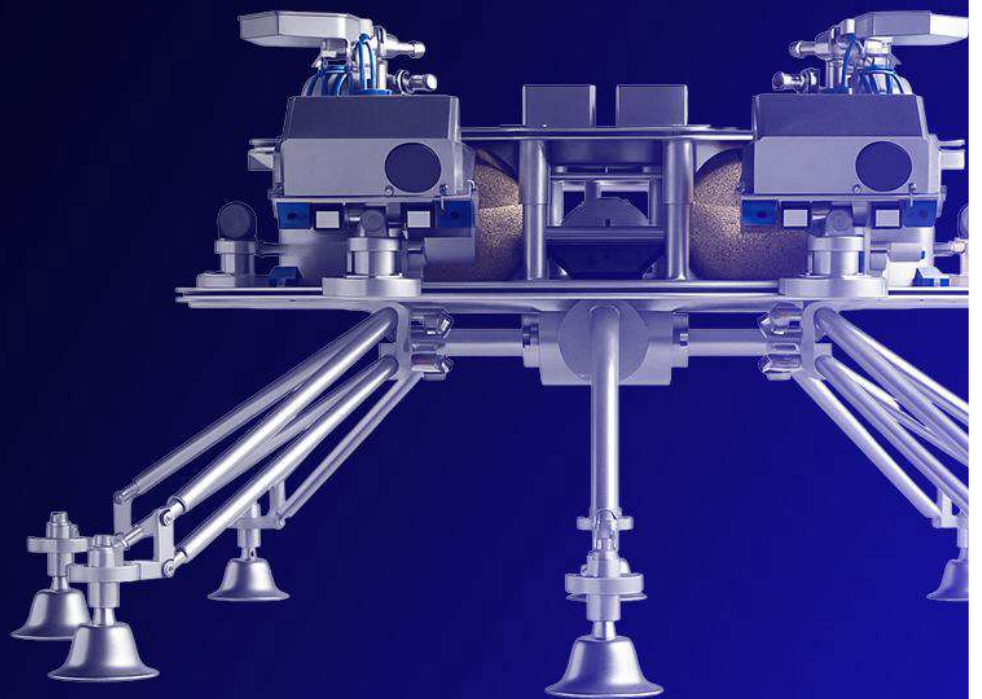
Physical AI

Simulation-first approach

Digital twins

Sensor fusion

Seamless hardware-software integration



The Growing Demand for Space Automation

- Harsh, remote, and unpredictable environments demand autonomous operations.
- In-space, satellite servicing, and planetary exploration efforts are driving the need for AI-driven automation.
- Costly and limited human presence in orbit and deep space requires robotic augmentation.
- Robotics deliver speed, precision, and resilience that human-only missions cannot achieve at scale.

Value we Deliver



Automate
manually controlled tasks to enhance safety and efficiency



Scale
operations with precision using intelligent systems



Accelerate
innovation with AI-driven simulation and physical AI frameworks



Reduce
risk and cost with simulation-first workflows and modular designs

Business Impact*

Up to

30%

Reduction in operating costs and improved mission planning with a simulation-first approach

Up to

15%

Lower mission risk and overhead with intelligent, autonomous robotics systems

Up to

30%

Faster time-to-market with pre-built accelerators

* Figures are indicative and calculated based on benchmarks from terrestrial projects.

Robotics for Space Operations



Satellite-Based Observation

We transform satellite data into reliable, real-time insights using advanced edge computing. Post-processing toolchains refine raw imagery into precise, ready-to-use information, enabling faster and more confident decisions for Earth monitoring, space missions, and orbital robotics.



Lunar & Planetary Robotics

We provide advanced flight control, physics-based simulations, and data solutions to improve robotic exploration and space system performance. Our accelerators support safe, efficient extraterrestrial mining, while XR simulators and teleoperation frameworks ensure reliable remote mission control.



Sustainable Space

Our autonomous proximity control allows robots to approach, inspect, repair, or refuel satellites without constant human input. These solutions make exploration, servicing, and on-orbit maintenance more efficient while reducing waste and supporting sustainable space use.

Robotics & Physical AI Space Capabilities

Autonomous Robots & Humanoids:

Autonomous robots, rovers, drones, orbital vehicles, and humanoids powered by physical AI perform exploration, construction, maintenance, and logistics across lunar, planetary, and orbital environments. They operate in fleets, using 3D mapping, obstacle avoidance, motion planning, and predictive maintenance to execute complex missions.

Fleet Mission Planning & Completion:

Coordination and planning systems simulate, optimize, and manage multi-robot missions across space environments. By modeling dynamics, communication delays, and resource constraints, they enable efficient task distribution, synchronized execution, and resilient fleet performance under extreme conditions.

Simulations & Digital Twins of Space Systems:

High-fidelity simulations and digital twins test and refine autonomous space robotics before deployment. Using tools like NVIDIA Omniverse™, Isaac Sim™, Cosmos™ and Replicator, we generate synthetic datasets and realistic lunar or orbital environments to validate performance.

AI-Driven Perception & Sensor Fusion:

AI, vision, and multi-sensor fusion (camera, LiDAR, radar) power environmental analysis, anomaly detection, and adaptive decision-making.

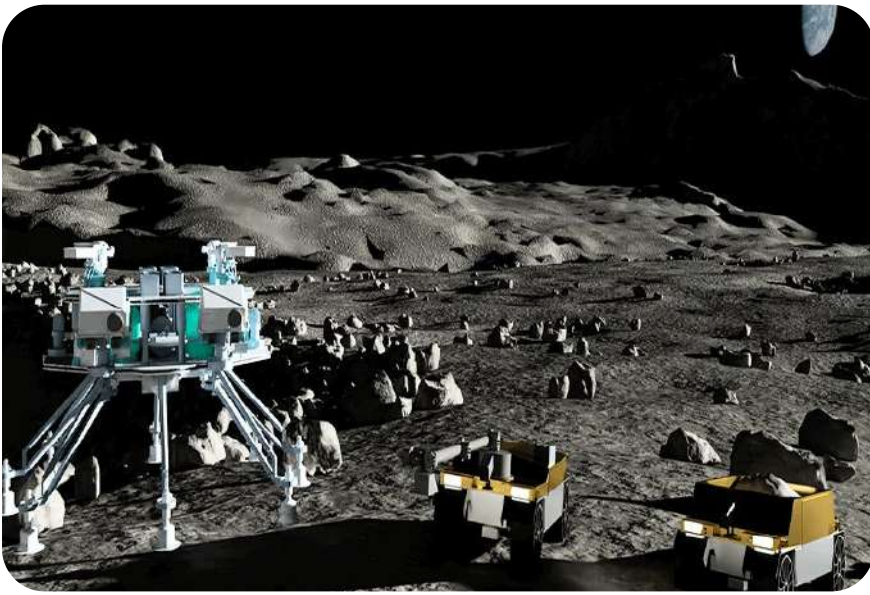
Satellite Data Analysis:

Transform raw satellite imagery into actionable intelligence for space missions and Earth observation. Advanced processing pipelines handle cloud removal, object segmentation, fire detection, and vegetation health estimation.

Edge AI & Embedded Processing:

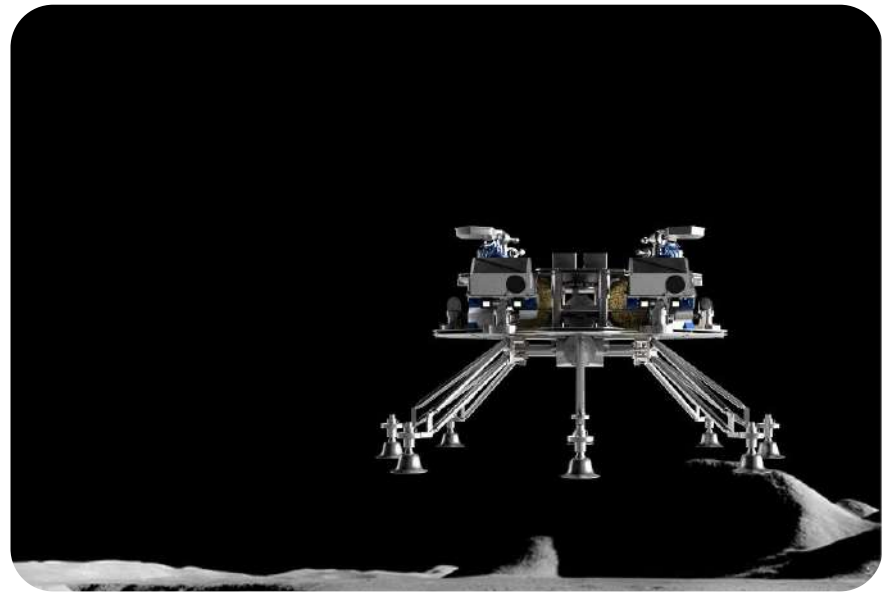
Onboard AI enables real-time control, autonomous decision-making, and reliable operation in communication-limited or high-latency environments, ensuring adaptability and mission resilience.

Solutions for Space Missions



Multi-Robot Collaboration

A multi-robot simulation ecosystem coordinating excavators, haulers, and thruster-driven drones with AI-powered navigation make efficient lunar resource extraction possible. High-fidelity simulations in NVIDIA Omniverse™ and Isaac Sim™, combined with advanced terramechanics, physics modeling, and co-simulation tools, ensure mission feasibility in Moon-like environments. New robot types or functions can be easily added, enabling scalable and adaptable operations for future lunar missions.



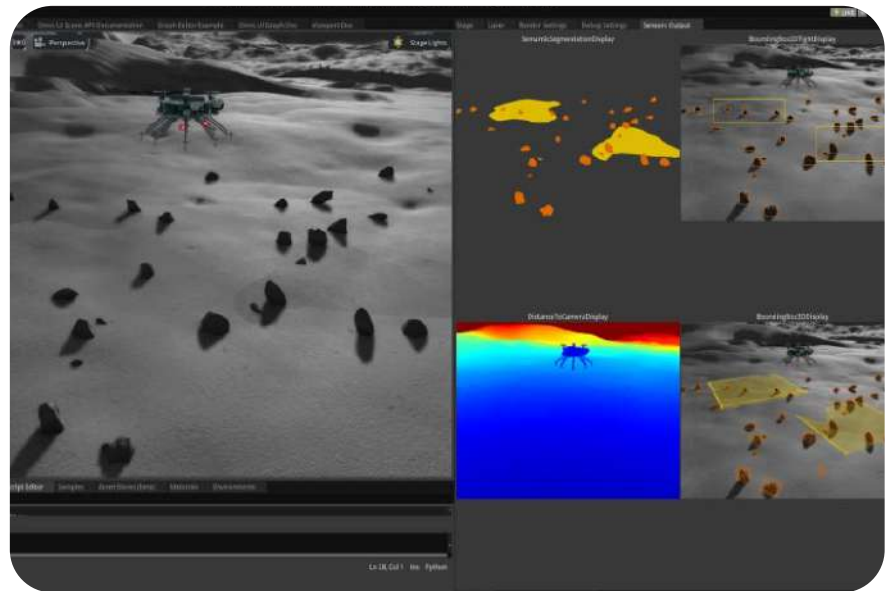
Lunar Hovering Drone Simulation

Propulsion-engine lunar mobility solution for autonomous exploration, capable of hovering, terrain mapping, and scientific analysis in the atmosphere-free lunar environment. The space system integrates monocular cameras, an IMU, and sensor fusion for SLAM-based navigation, point cloud mapping, and fully autonomous mission orchestration. It also supports operations in extreme terrain, such as craters and caves, with safety and robustness built in.



Moon Scooping

Lunar regolith excavation with a mobile platform featuring a robotic arm, scoop, and vibratory mechanism for icy soil excavation and ice detection. A simulation-first approach with NVIDIA Omniverse™ and Isaac Sim™, combined with terramechanics modeling and robotics perception, validates excavation performance and estimates scoop-regolith forces. Real-time energy monitoring ensures efficient operation in moon-like environments, with built-in adaptability to variable soil hardness and cratered terrain.



Modeling on Synthetic Terrain

High-fidelity synthetic lunar environments that enhance lunar drone mapping and navigation. The solution automatically randomizes conditions, adjusting drone positions, stone quantity, shape, and size to generate diverse test scenarios, validate mapping algorithms, and enable reliable obstacle detection for safe landings. This approach reduces development time while boosting mission robustness across varied lunar conditions.

Solutions for Space Missions



Geo Spatial Digital Twin Platform

Digital Twin platform turns 2D and 3D maps into interactive MR experiences for both Earth and space applications, enabling visualization and simulation of complex environments. Users can explore urban landscapes, monitor oceans and wildfires, or plan lunar and planetary missions, overlaying multiple data layers for actionable insights.



Humanoids on the Moon

Humanoid robotics for lunar missions, using NVIDIA's AI supercomputing, OVX™, on-robot runtime, the GR00T N1 model, and VR/XR tele-operations. These semi-autonomous robots can handle assembly, maintenance, and scientific tasks, navigating and grasping objects on their own. This reduces humans' extra-vehicular activity (EVA) time and makes operations safer and more flexible.



Orbital Servicing & Satellite Maintenance

Orbital servicing with intelligent control for robotic systems built for precise satellite inspection and component handling in microgravity. With onboard autonomy and co-simulation technologies, these systems enable predictive maintenance, extend satellite lifespans, and provide reliable support for complex in-orbit operations.



Regolith Conveying Solution

Sustainable lunar oxygen production with a low-mass, simplified system for in-situ resource utilization. The solution addresses challenges like limited testing, production quality, harsh space conditions, and the complexity of scooping and processing lunar resources to support long-term operations on the Moon.



Crewed Missions Support

AI-powered robotics, simulations, and digital twins help astronauts safely handle high-risk tasks. These systems support crewed missions with habitat maintenance, cargo handling, and even emergency response. Whether autonomous or remotely operated, they reduce risk, improve efficiency, and keep missions running smoothly.



Onboard Compute for Advanced Control

Onboard computing solutions that give space robots advanced control, autonomy, and real-time decision-making. By processing data locally from sensors and navigation systems, we enable faster response times, greater reliability, and reduced dependence on ground control.

Why SoftServe

32 Years

Award-winning service, across multiple industries

30%

Of the robotics team hold ScD or PhD degrees

20+ Years

Employee involvement in space-related projects

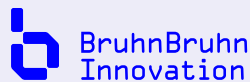
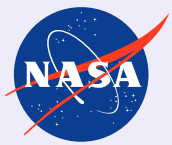
15 Years

Lasted the longest space mission supported by SoftServe experts

Strategic Alliances



Proud to Collaborate



Prefixa



About SoftServe

SoftServe is a premier IT consulting and digital services provider. We expand the horizon of new technologies to solve today's complex business challenges and achieve meaningful outcomes for our clients. Our boundless curiosity drives us to explore and reimagine the art of the possible. Clients confidently rely on SoftServe to architect and execute mature and innovative capabilities, such as digital engineering, data and analytics, cloud, AI/ML, robotics, automation and physical AI.

Our global reputation is gained from more than 30 years of experience delivering superior digital solutions at exceptional speed by top-tier engineering talent to enterprise industries, including high tech, financial services, healthcare, life sciences, retail, energy, and manufacturing.

Visit our [website](#), [blog](#), [LinkedIn](#), [Facebook](#), and X ([Twitter](#)) pages for more information.

Ready to Bring Robotics & Advanced Automation to Your Space Mission?

[CONTACT US](#)

[SPACE ROBOTICS SERVICE PAGE](#)

Austin HQ

201 W 5th Street, Suite 1550
Austin, TX 78701 USA
+1 866 687 3588 (USA)
+1 647 948 7638 (Canada)

London

30 Cannon Street
London EC4 6XH
United Kingdom
+44 333 006 4341

softserve