HUSKY™
IN THE WILD

CUTTING-EDGE PLANETARY ROVER SOFTWARE
UNIVERSITY OF TORONTO

Timothy D. Barfoot, Braden E. Stenning, Jonathan D. Gammell, Chi Hay Tong, Colin McManus, Laszlo-Peter Berczi, Gordon R. Osinski, Michael Daly and Cameron Dickinson

Barfoot's research centers on the development of aerospace algorithms that allow robots to operate without the benefit of GPS or other global positioning assistance. This research will enable further, and more accurate, exploration of other planets. Husky's rugged capability has enabled the research team to complete field trials on realistic planetary terrains. "Before we had the Husky we simply could not conduct our research," (Barfoot).

http://asrl.utias.utoronto.ca/~tdb/bib/barfoot_icra13.pdf

DRILLING INTO ALBERTA'S TAILINGS DEPOSIT PONDS
UNIVERSITY OF ALBERTA

Nicolas Olmedo, Integrated Reliable Oil Sands Systems Lab (IROSSL)

Oldmedo's research investigates oil sands tailings deposits to gain a more thorough understanding of the safety and transformation of tailings deposits over a period of time. "Traditional methods for soil collection are completed by human operators - they are labor intensive, expensive, unreliable, and not accurate," (Olmedo). Husky is used for its precision, continuous reporting with accurate data points, and addresses the need and importance of constant interaction with the surface of the tailings deposit pond. This research will impact the development of parks and housing on existing land.

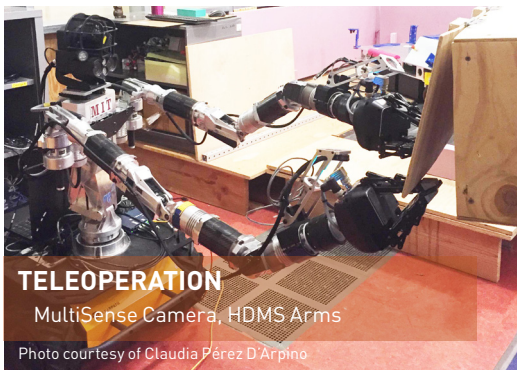
http://cedb.asce.org/cgi/WWWdisplay.cgi?289816

LAND MINE DETECTION ROBOT
COIMBRA UNIVERSITY

Dr. Lino Marques, Goncalo Cabrita

Mine detection is traditionally a manual process conducted by humans in the field. As such, Marques recognizes the growing demand for robots in mine detection to significantly reduce mine-related accidents. "Without the Husky, we would have to develop our own mine detection robot from scratch, which we did not have the time or resources to do," (Cabrita). Husky provides robustness to efficiently execute research, and has allowed the team to conduct field testing within the first 6 months of receiving the platform.

http://lse.isr.uc.pt/news/customerspotlightbyclearpathrobotics



HUSKY MOBILIZES BOMB DISPOSAL RESEARCH
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Julie Shah

Julie Shah's research investigates robotic intervention in deadly bomb disposal situations. The team integrated Husky with RE2's Highly Dexterous Manipulation System and is using the setup to test their teleautonomy interface which will be vital in expanding the capabilities of operators in emergency situations. "Husky provides a less expensive but very capable mobile base to prove out the concepts and technologies," (Shaw). In dealing with improvised explosive devices seconds count. These seconds can be saved by addressing the quality of communication between humans and robots.

http://www.clearpathrobotics.com/blog/husky-mobilizes-mit-bomb-disposal-research/

HUSKY™
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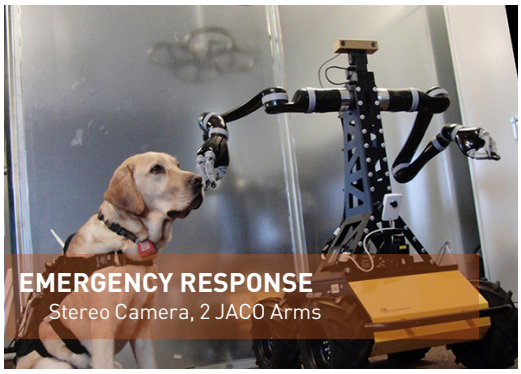


COMBINING MOBILE ROBOTS, DRONES AND DOGS
SMART EMERGENCY RESPONSE SYSTEM (SERS) TEAM

North Carolina State University, University of Washington, MIT

The Smart Emergency Response System (SERS) Team is investigating how humans, robots and dogs can work together in disaster scenarios. Their goal is to save as many lives as possible in an emergency by coordinating ground and aerial autonomous vehicles, drones, human-operated robots, and trained search-and-rescue dogs equipped with real-time sensors. Integral to their research is Husky which provides a level of ruggedness needed for disaster and emergency scenarios.

http://www.clearpathrobotics.com/blog/emergency-response-teams-combine-mobile-robots-drones-and-dogs

3D MAPPING OF HARSH & STEEP ENVIRONMENTS
UNIVERSITY OF TORONTO

Patrick McGarey, Francois Pomerleau, and Timothy D. Barfoot

Despite continuous advancements in planetary and terrestrial robotic exploration, unmanned rovers continue to face challenges with navigating harsh environments and steep terrain. Researchers at the University of Toronto Institute for Aerospace Studies have developed a tethered climbing robot that incorporates a Husky with a freely rotating tether arm. The tether-assisted robot, called the Tethered Robotic Explorer (TReX), is capable of traversing and 3D mapping steep terrain, and is intended to be used for cliff exploration, dam safety inspection, and disaster response.

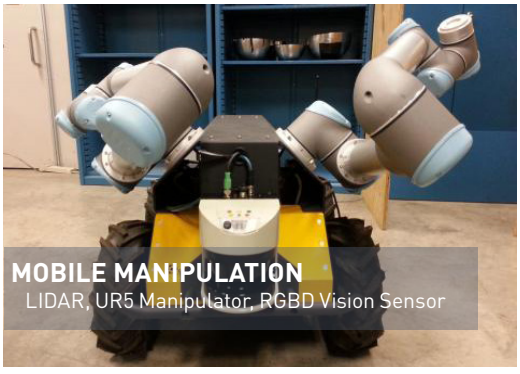
http://fsr.utias.utoronto.ca/submissions/FSR_2015_submission_46.pdf

TRACKING AND GESTURE RECOGNITION SOFTWARE
CHARLES RIVER ANALYTICS

Tom Moore, Camille Monnier

Charles River Analytics' research and development is centered around Minotaur - a vision-based software system that allows a robot to accompany humans on foot and follow gesture commands. The Minotaur project advances human-robot collaboration and co-operation on the battlefield as well as in law enforcement and emergency response. The research team chose the Husky for its rugged outdoor-capable design and its ability to easily interface with hardware and the widely-used Robot Operating System (ROS).

https://www.cra.com/



NUCLEAR MATERIALS HANDLING AND INSPECTION
UNIVERSITY OF TEXAS AT AUSTIN

Nuclear Robotics Group

The Nuclear Robotics Group at the University of Texas at Austin has been tasked by the Department of Energy with developing an autonomous system for the retrieval and handling of nuclear materials and the inspection of contamination events. The research team turned to Clearpath's robot integration experts who helped mount two UR5 manipulators on the Husky platform, creating a unique, industrial grade dual-arm system. The robot, named Vaultbot, will help propel the team's research towards its ultimate goal of deploying life-saving autonomous robots.

http://robotics.me.utexas.edu/news.html