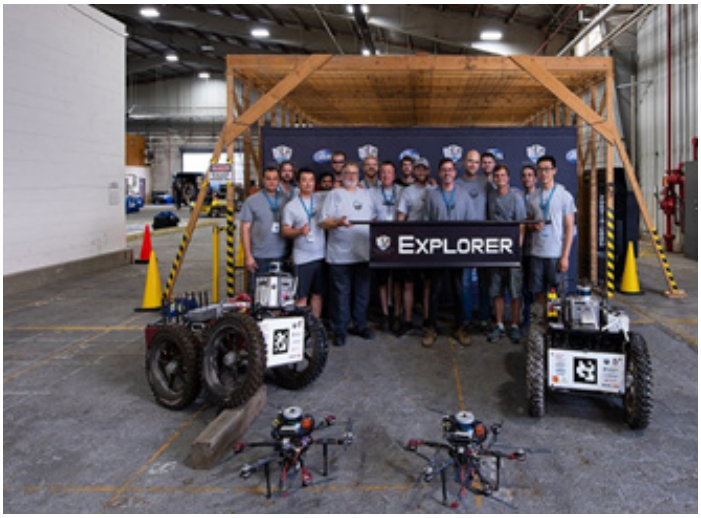
Carnegie Mellon Robotics Team Wins 2019 DARPA Competition
MicroStrain sensors helped show the way!



Team Explorer, from Carnegie Mellon University and Oregon State University, deployed both ground and aerial robots to autonomously map and search underground mines and outscored 10 competing teams at the initial scored event in the DARPA Subterranean Challenge. The August 2019 event, dubbed "The Tunnel Circuit", required that teams deploy aerial drones and robots in the National Institute for Occupational Safety and Health research mine, near Pittsburgh.

Teams were required to detect and locate certain artifacts, within less than 20cm (8") of their actual location. In the course of two days' runs, Team Explorer pinpointed 25 of these artifacts, 14 more than any other team. "Successful completion required multiple robots, both drones and ground vehicles," observed Sebastian Scherer, co-leader of Team Explorer. His partner, Matt Travers, a systems scientist at CMU's Robotics Institute, added, "our team has a wealth of experience in operating robots in mines, enclosed spaces, and in coordinating the actions of multiple robots. All the teams worked very hard to get here and each took a slightly different approach to the problem. We're really proud of the performance by our team members and our robots."

MicroStrain's GX5-15 inertial sensors provide inertial measurements and aided navigation systems for both robots. The sensors are housed in a small, lightweight, robust package. The result enables smaller and lighter autonomous vehicles. Team Explorer's demonstrated ability to locate objects reflects the accuracy of the GX5's navigational data. Several other teams, including those from Colorado State, and teams from Australia and Czechoslovakia are using GX5 Series sensors in their robots. LORD Corporation is a participating sponsor for each of them.

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MicroStrain Application Brief: DARPA Sub-T Challenge 2019

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Carnegie Mellon seeks to repeat its win in the 2007 DARPA challenge, and another $2M award. LORD MicroStrain provided inertial navigation sensors to several teams in 2007 and is pleased to have been able to again play an important role in the latest challenge.

The appeal and effectiveness of unmanned systems prompted Congress to mandate that one third of all US military vehicles be unmanned. Navigation subsystems are integral to the performance of these vehicles. MicroStrain’s GX5 series offers low weight, multi-sensor capability, within both power and financial budget constraints.

Having access to magnetic field, temperature and even pressure altitude data, in addition to inertial position, speed, acceleration, and GPS coordinates in some models, makes the GX5 series ideal, when dealing with unknown conditions.

The competitive nature of robot development has many academic institutions involved in improving and demonstrating autonomous vehicles. LORD MicroStrain is proud to have been able to support Team Explorer’s efforts.

Special thanks are due to the leaders of Team Explorer, for their observations, and to the CMU Press Relations Office, for providing photography and background information for this application brief.

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