Robotic Support for Capturing Training Performance
2015-present

This research effort explores and tests the feasibility of using quadrotor and other robotic technologies to transform training, making it more cost efficient and portable

The vision is to create coordinated constellations, or squadrons, of camera-equipped quadrotor robotic drones, to function as 'magic-eyes' that follow and record soldiers' individual and team performance during a range of live or virtual training scenarios. This data, captured in video and 3-D geometry, could be used to support after action reviews and other types of evaluation.

This effort focuses on the development of algorithms and technologies to support multi-robot coordination, with the goal of maintaining effective sensor coverage of multiple humans engaged in dynamic training activities. It examines both indoor and outdoor operation of drones, as well as sensor capture challenges.

From a scientific perspective, this effort seeks to advance the state of knowledge in coordinating human-robot and robot-robot teams. Much like soldiers communicate with their squadron with minimal gestures, algorithms will be developed that enable the robots to communicate and make decisions with minimal explicit instructions.

Long-term implications of this research would be to develop the potential to transform any bare field into a virtual training environment. Other uses could include reducing piloting needs for formations of drones in movie shoots, or providing multiple viewpoints to review sports team formations for training or telecasts.

This ARL-funded work is a collaboration between ICT's MxR Lab and Nora Ayanian, the Gabilan Assistant Professor of Computer Science at the USC Viterbi School of Engineering.

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At the University of Southern California Institute for Creative Technologies leaders in artificial intelligence, graphics, virtual reality and narrative advance low-cost immersive techniques and technologies to solve problems facing service members, students and society.