

Engaging the Community: Robotics and Autonomous Systems for Medical Missions

At the end of last year, TATRC was requested to participate in a “Joint Mission Thread” workshop which was held at the Johns Hopkins University Applied Physics Lab (APL), commissioned by the Joint Staff Operational Plans and Joint Force Development, J7s, Joint Concepts Division, to inform the implementation of the recently published Joint Concept for Robotics and Autonomous Systems (JCRAS). Since this invitation afforded TATRC the opportunity to engage with both academia and the broader defense community in discussions of how emerging Robotics and Autonomous Systems (RAS) could provide additional resources in support of medical missions in future operating environments, Mr. Nathan Fisher, TATRC’s Operational Medicine Lab Project Manager for Medical Robotics and Autonomous Systems, was designated to attend.

During this two-day workshop, which took place in January, Mr. Fisher presented the potential benefits that RAS might afford future medical operations, as well as research challenges that need to be overcome at the J7 APL workshop. APL analysts created several Joint Mission Threads (JMTs) based on feedback from subject-matter experts which consisted of a baseline mission describing today’s operational practices. Two alternative threads were developed based on analysis of how RAS capabilities may be utilized in the year 2035 timeframe for each of the JMTs. During the workshop, a diverse group of participants, with representation across all the Services, discussed these JMTs and provided valuable feedback regarding potential operational benefits as well as the challenges of applying emerging RAS technologies to

different mission threads. One of the JMTs was Casualty Management, which was unique among the JMTs in that no RAS capabilities are currently being used operationally in today’s battlefield. The alternate mission threads for casualty management incorporated some of the concepts outlined in the JCRAS, which included leveraging emerging unmanned air and ground vehicles for casualty evacuation when conventional assets are not available. The potential for using limited autonomy and artificial intelligence to aid in human planning and decision making was also explored in the alternate mission threads. This discussion was captured during the workshop, and is currently being used to inform the implementation strategy for the Joint concept.

Mr. Fisher also had the opportunity to present the research challenges associated with leveraging RAS for future medical missions to the Defense Science Study Group (DSSG) during their visit to USAMRMC in late March. The DSSG is a group of prominent science and engineering professors that have been brought together to apply their talents to the rapidly evolving needs of the nation’s security sector. The DSSG was started in 1986 and is directed by the non-profit Institute for Defense Analyses, and is sponsored by the Defense Advanced Research Projects Agency. During their visit, the DSSG gained a greater understanding of MRMC’s core areas and learned more about ongoing research efforts in areas of interest identified by the group, including research related to the use of robotic/autonomous vehicles during medical resupply and casualty evacuation missions. “Learning how to effectively utilize RAS capabilities for medical missions will become increasingly more important as the future fleet of vehicles becomes increasingly unmanned as a response to maneuver challenges imposed by future operating environments,” stated Mr. Fisher. “Overcoming the science and technology hurdles inherent to this application of RAS will require engaging groups like the DSSG to help forge relationships between the defense community and S&T leaders from academia.”



Mr. Nate Fisher speaking at the 2016 TRADOC Mad Scientist Conference.



Mr. Fisher sharing exciting research in the field of UAS.