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TECHLAV Center Convenes Third Annual Meeting

Greensboro, NC – May, 2018 – The Center for Testing, Evaluation, and Control of Heterogeneous Large-scale Systems of Autonomous Vehicles (TECHLAV) convened nearly 100 professionals from across the academic, governmental and industrial spectrum to witness and celebrate research milestones regarding the autonomy capabilities of unmanned vehicles such as drones, rovers, surface and underwater vehicles. This event marks the third year in the five-year cycle of grant funding provided by the United States Department of Defense.

Devices with autonomous control have the ability to self-govern with minimal human input. Autonomous system technology is of increasing interest throughout scientific and even consumer circles, especially as it relates to military applications. Autonomous systems allow operators to observe, record, make decisions and even take action in locations where physical human presence is either impossible or undesirable. These systems are separate entities from the people who operate them, so the more aligned an operator is with a system's state, the more effective it will be. Creating this alignment through technology and research is TECHLAV's primary mission.

The TECHLAV Center is led by its Director, Dr. Abdollah Homaifar and organizes its research efforts within three parallel tracks called "thrusts". Thrust 1, led by Dr. Mo Jamshidi at the University of Texas at San Antonio, includes the modeling, analysis and control of Large-Scale Autonomous Systems of Vehicles (LSAVs). Thrust 2, led by Dr. Ali Karimoddini at N.C. A&T, addresses resilient control and communication of LSAVs. Thrust 3 is led by Dr. Younho Seong at N.C. A&T which covers the testing, evaluation and verification of the LSAVs. The results of these research processes will undergo Demonstration, Implementation and Integration (DII) to transition the technologies to higher testing readiness levels led by Dr. Homaifar.

The education and outreach components of this grant are led by Drs. John Kelly at N.C. A&T and Nader Vadiee at Southwestern Indian Polytechnic Institute. The objectives of the educational and outreach activities within TECHLAV are to attract and expose talented students, in particular underrepresented minorities, to a rich learning environment. The Center

will also have outreach activities for K-12 educators, students, and the community at large in autonomy related areas to develop a STEM-educated student pipeline and increase public awareness of TECHLAV.

"This is an exciting time to be involved with this type of research," said Dr. Abdollah Homaifar, Duke Energy Eminent Professor at N.C. A&T and TECHLAV Director. "Together we are making great strides in the area of autonomy. We are well on our way to becoming a leading force within autonomy and machine learning. Our collective efforts during the first three years of this grant have truly put us on the map as being a cutting-edge autonomous Center."

This year's meeting featured speakers from the United States Department of Defense, the United States Air Force Research Laboratory, N.C. A&T, the University of Texas at San Antonio and the Southwestern Indian Polytechnic Institute. Keynote addresses were provided by Dr. Lee Seversky, lead for the Air Force Research Laboratory's Autonomy Command Control and Core Technical Competency, and Dr. Jonathan How, Director of the Ford-MIT Alliance at the Massachusetts Institute of Technology. Additionally, Dr. Edward Tunstel, Associate Director of Robotics with United Technologies Research Center, moderated a panel of distinguished researchers who discussed the challenges and future outlook of operationalizing autonomy.

Around 50 undergraduate, Master's and PhD students are involved in the TECHLAV Center represented by three educational institutions: N.C. A&T, the University of Texas at San Antonio and the Southwestern Indian Polytechnic Institute. Students travel between campuses, curriculum is being developed and shared among the partner institutions and community outreach promoting STEM education is occurring year-round at all three sites.

About the TECHLAV Center

The Testing, Evaluation, and Control of Heterogeneous Large-scale Systems of Autonomous Vehicles (TECHLAV) Center is funded by the DoD Air Force Research Laboratory as a Center of Excellence in Autonomy. The TECHLAV Center comprises a strong multi-disciplinary team and synergizes expertise in Control, Communication, and Human Cognition from N.C. A&T and its collaborators the University of Texas at San Antonio and the Southwestern Indian Polytechnic Institute. TECHLAV addresses fundamental problems in modeling, analysis, control, coordination, test and evaluation of autonomous systems, serves as a national resource in education and research in Autonomy, provides outreach services in autonomy related area, fosters linkages among national institutions of higher education, government agencies and private companies and commercializes TECHLAV technologies for the benefit of the national economy.