National Center for Autonomous Technologies (NCAT)

JONATHAN BECK,* ANTON BERGEE

National Center for Autonomous Technologies (NCAT), Northland Community and Technical College, 13892 Airport Drive, Thief River Falls, MN 56701, United States

** jonathan.beck@northlandcollege.edu*

Abstract: The National Center for Autonomous Technologies (NCAT) was formulated through the National Science Foundation's Advanced Technological Education (NSF ATE) program in 2019. As the first national ATE center in autonomous technologies, NCAT is crafting, adapting, and implementing educational resources to support K-12 educators, and two-year college faculty in numerous disciplines to meet workforce demands while increasing the quality and diversity of the highly skilled technical workforce.

Keywords: Autonomous Systems, Unmanned Aircraft Systems, Connected and Automated Vehicles, Remotely Operated Vehicles, Unmanned Underwater Vehicles

1. Introduction

NCAT's first mission is to foster public understanding of three autonomous technologies (ATs): unmanned aircraft systems (UASs), connected automated vehicles (CAVs), and unmanned underwater vehicles (UUVs). All three types of autonomous technologies require highly skilled, agile technicians who can design, monitor, utilize, repair, and control them. Explaining what autonomous technologies do and the career opportunities they generate are part of the center's effort to expand educational programs about these emerging technologies.

NCAT's foundation is to expand and grow autonomous technologies knowledge among secondary and post-secondary faculty, instructors, and administrators through mentorship and coordination of collaborations. By engaging one-on-one with K-12 and post-secondary educators, NCAT provides guidance and recommendations for setting up degrees in autonomous technologies through curriculum development support, access to resources, equipment selection based on program needs and budget, and identification of workforce requirements.

Fig. 1. Autonomous Technologies Students and Instructor


EXPERIMENTAL.


INNOCON

NCAT leaders draw on their extensive experience developing replicable instructional models and utilize best practices to recruit underrepresented populations and support their entry to STEM careers. Through ongoing support and encouragement for STEM engagement through workshops, camps, and student competitions in autonomous technologies, NCAT works to remove barriers to underserved and underrepresented populations and provide access for all.

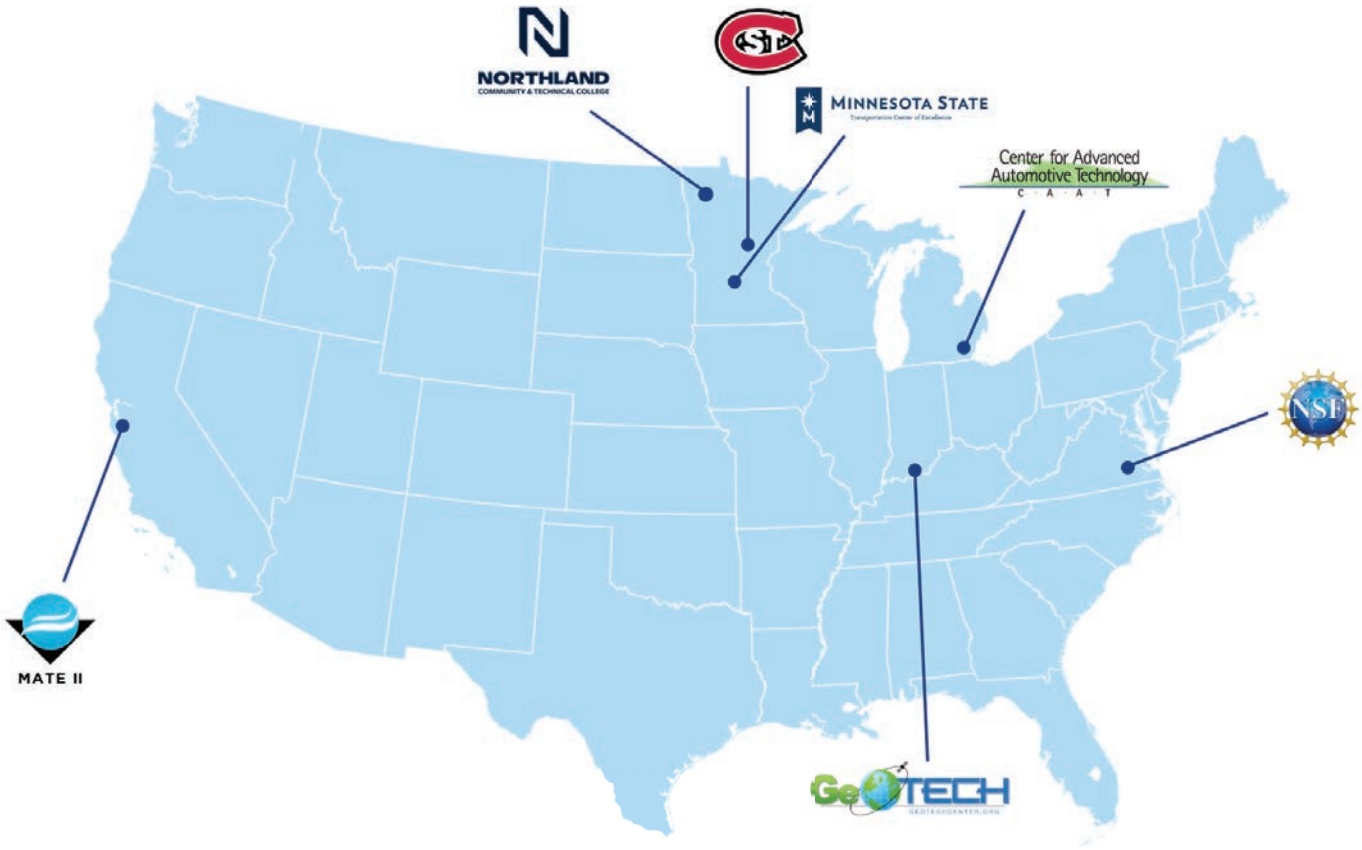

Fig. 2. National Center for Autonomous Technologies Leadership Team

To accomplish the center's goals NCAT leaders have engaged stakeholders from industry and government as well as colleagues from ATE centers and projects. Their shared priority is preparing the nation's technical workforce to use autonomous technologies that are changing how people live, work, and learn. By collaborating with industry to stay informed on technology trends and employer needs, NCAT ensures graduates of ATE-affiliated programs have the complex skills needed and the capacity to learn as the technical field evolves. These same leaders provide influence to help shape the future environments of autonomous technology by serving on various advisory committees for organizations that support policy, standards, and regulations.

NCAT is proud to support the Journal of Advanced Technological Education (J ATE). We are committed to working with the autonomous systems community to increase awareness though J ATE about the amazing work in our nation's community and technical colleges preparing the skilled technical workforce for an exciting future. NCAT serves as a resource hub for the AT community, providing a vast collection of resources for educators, students, administrators, industry professionals, and Federal Aviation Administration (FAA) groups.