SUSTAINING MEMBER:

New York University

New York University startup Manifold Robotics simplifies data collection with drones

Manifold Robotics is a spin-off company from New York University (NYU) that is developing specialized drones to tackle data collection in complex environments. The company was founded in 2017 by Jeffrey Laut, who earned a PhD in Mechanical and Aerospace Engineering from NYU Tandon School of Engineering, and his doctoral advisor Maurizio Porfiri, Institute Professor at New York University. Dr. Laut serves as the company's CEO and lead engineer, and Prof. Porfiri is involved as a technical advisor and consultant to the company.

The company's focus started with developing robotic boats – an effort stemming from a research project in Prof. Porfiri's lab at NYU in which small-scale robotic boats were used to collect water quality and image data from the nearby Gowanus Canal for environmental monitoring purposes. Recognizing the potential for this technology to grow beyond a university research project, Dr. Laut participated in a proof-of-concept center at NYU known as PowerBridgeNY to understand its commercial applications. There, through customer discovery, he learned that there's an unmet market need for autonomous boats that can intelligently identify potential obstacles in the water, and use that information to navigate more effectively. This led to the formation of Manifold Robotics, and the company shortly thereafter was awarded an SBIR grant from the National Science Foundation to further develop this technology. With this funding, the company developed computer vision algorithms that enable unmanned boats to navigate effectively in urban waterways that may contain a variety of obstacles, such as boats, floating debris, or wildlife. Manifold Robotics is now focusing on commercializing the technology.

"Manifold Robotics is a testament to the nurturing academic entrepreneurship environment at NYU that supports the translation of research breakthroughs into new products, processes, and services. Jeffrey Laut is also an example of the changing professional aspirations of some of our PhD students after graduation, away from a traditional Postdoc position into the world of startups," said Kurt Becker, Vice Dean for Research, Innovation, and Entrepreneurship at NYU Tandon School of Engineering.

More recently, the company broadened its research to include unmanned aerial systems (UASs). With support from the New York Power Authority and NYSERDA, Manifold Robotics is developing specialized UASs for performing aerial inspections of power transmission lines. The UASs are outfitted with proprietary electric and magnetic field sensors to measure the electromagnetic fields emanating from energized power lines, and use this data to avoid collisions with the lines and autonomously inspect them. Manifold Robotics expects this technology to transform how power line inspections are performed today, which typically involves a mix of utility bucket trucks, helicopters, and manually controlled drones. By automating this process, utilities will be able to inspect power lines more thoroughly and more often – a need that is becoming increasingly important as climate change and the shift to renewable energy places more stress on the power grid.