



EASEEbot
A Robotic Envelope Assessment
System for Energy Efficiency



Building envelope inspections are necessary to maintain a building's energy efficiency and structural safety, but inspections are expensive, time-consuming, and dangerous to inspectors. We want to make building inspections safer, more comprehensive, and less expensive. This is our mission at EASEEbot. The EASEEbot ecosystem is the next generation of technology for non-invasive building inspection, diagnosis, and retrofit construction. EASEEbot has been designed to benefit technical building inspectors, building scientists, and structural engineers. During inspections, drone pilots and safety officers first ensure that a building site is safe for drone flight. They then program a flight path for the EASEEbot drone to capture the building's 3D point cloud while automatically avoiding minor obstacles. Attaching a radar module to the EASEEbot drone allows it to find envelope issues hidden deep within the building wall assemblies, like moisture and corroded wall ties. The captured thermal, color, and radar data is fed to EASEEbot's artificial intelligence, which generates a building's digital twin, analyzes data, and maps identified defects spatially to the façade. A building inspector can then review the outputs and make informed decisions on where to retrofit and repair the building envelope. During the retrofitting phase, the EASEEbot Retrofit Robo-Dog uses that digital twin to project previously recorded defect imagery onto corresponding areas of the building's envelope. In the process, it guides workers to ensure those defective areas are addressed. Going into the second half of 2022, we will hire more staff for marketing, product development, and machine learning. We will continue to develop and test our solutions with our partners in building science and construction.

New York University E-ROBOT Team Brooklyn, New York



AI4CE Lab
ai4ce.github.io

Xuchu Xu (xx762@nyu.edu)
Bilal Sher (bas9876@nyu.edu)
Guanbo Chen (gc2720@nyu.edu)
Chen Feng, PhD (cfeng@nyu.edu)

Mike Lasby (mklasby@gmail.com)



Building Informatics Lab (BILAB)
bilab.engineering.nyu.edu
Semiha Ergan, PhD (semiha@nyu.edu)
Beyza Kiper (bk2569@nyu.edu)
Daniel Lu (dbl299@nyu.edu)

Key Partners



Eliot Benor (eliot@bet-na.net)

ENTUITIVE

Brian Shedden (brian.shedden@entuitive.com)