

Research Results

Equipment

August 2025

Project Title: Evaluation of Mobile Robot Teams for Security of Caltrans Equipment Yards and Maintenance Stations

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Evaluation of Mobile Robot Teams for Security of Caltrans Equipment Yards and Maintenance Stations

This research explored the potential of utilizing mobile robots to provide security at Caltrans yards.

WHAT WAS THE NEED?

The California Department of Transportation (Caltrans) currently experiences high amounts of vehicle component theft at its facilities. Cumulatively, the state has had over \$4 million in catalytic converters stolen to date. Equipment yards and maintenance stations typically only have perimeter fences and sometimes standing guards, but a guard service is prohibitively expensive for wider usage across the state. These current measures are inadequate to deter thieves. Caltrans needs evaluation of a modern security system. One system type investigated in this task was a team of mobile robot security guards for potential deployment across the state. Such a system holds the promise of greatly reducing this theft problem and associated costs.

WHAT WAS OUR GOAL?

The goal of this project was to determine if a modern security system could reduce theft at Caltrans facilities, thus reducing subsequent repair costs.

WHAT DID WE DO?

The AHMCT Research Center curated a selection of mobile robot security guards for the project panel to choose from for pilot testing. The system selected was the Boston Dynamics robot dog outfitted by Asylon Robotics, called the "Drone Dog". Pilot testing took place at the Division of Equipment's Shop 8 in San Bernardino, CA.

WHAT WAS THE OUTCOME?

The research found potential challenges that future deployment of similar systems could face. These include but are not limited to; availability of power for charging stations,



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quality of available wireless internet or cell tower signal, inclement weather conditions, and system maintenance. No intrusions occurred during pilot testing compared to before, where the test site was facing consistent break-ins. With this result, the Division of Equipment wished to pursue further testing at another equipment yard in a follow-on task.

WHAT IS THE BENEFIT?

These systems aim to eliminate theft and vandalism at Caltrans facilities, thus reducing subsequent repair and/or replacement costs that taxpayers ultimately bear.

LEARN MORE

A demo video was recorded by the project manager and can be found on the Caltrans AV YouTube Channel: <https://youtu.be/wEmglslzcjl?si=qqc7WVrd-M2jz18lt>

IMAGES



Image 1: Mobile robot security guard



Image 2: Mobile robot security guard

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