



CENTER FOR CONNECTED AND AUTOMATED TRANSPORTATION

Project Title	xBOT – A Versatile Robot to Assist Testing of Autonomous-Connected Vehicles	
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Most relevant CCAT research thrusts (choose all applicable)	<input checked="" type="checkbox"/> Control & Operations <input checked="" type="checkbox"/> Enabling Technology <input type="checkbox"/> Human Factors <input checked="" type="checkbox"/> Infrastructure Design & Management <input type="checkbox"/> Modeling & Implementation <input type="checkbox"/> Policy & Planning	
Funding Request	\$211,585	
Matching Funds and Source (if any)	\$23,509	
Total Project Cost	\$235,095	
Contract Number	69A3551747105	
Project start/end dates	07/01/2022 – 12/31/2023	





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Project Abstract	This project aims to develop a robot (xBOT) that is customized for testing autonomous-connected vehicles. The xBOT platform itself is an automated-connected and modified Segway Ninebot© with an external shell that allows it to behave, and be perceived, as a free-moving Pedestrian, Scooter, Bicycle, Motorbike, or full-sized Vehicle in actual street environments. The objectives of the project are to ruggedize the platform, provide a user-friendly interface to easily program the platform’s motion, integrate the platform into the Mcity OS, allow the platform to communicate, and be synchronized, with other static and dynamic traffic elements, and achieve all this under a complete life-cycle cost of \$10,000 per robot.
High-level implementation plan	<ul style="list-style-type: none"> • Test baseline system in Mcity (1st Qtr): benchmark performance and obtain design targets • Design and test iteratively improved versions of the xBOT platform: end-user provides input at every iteration • Integrate DFMA and DFME elements into the design iterations: final version will be field ready and producible • Develop a bill of materials and complete cost estimate to produce xBOT: converge towards productizing xBOT • Commercialize xBOT: continue to work with UM OIP on patents and licenses
Project Metrics	<ul style="list-style-type: none"> • Addition of xBOT to Mcity infrastructure • Testing assistance to LC partner (Ford) • xBOT commercialization • Dissemination of findings
Web Links: [leave blank until project approval]	ccat.umtri.umich.edu

