

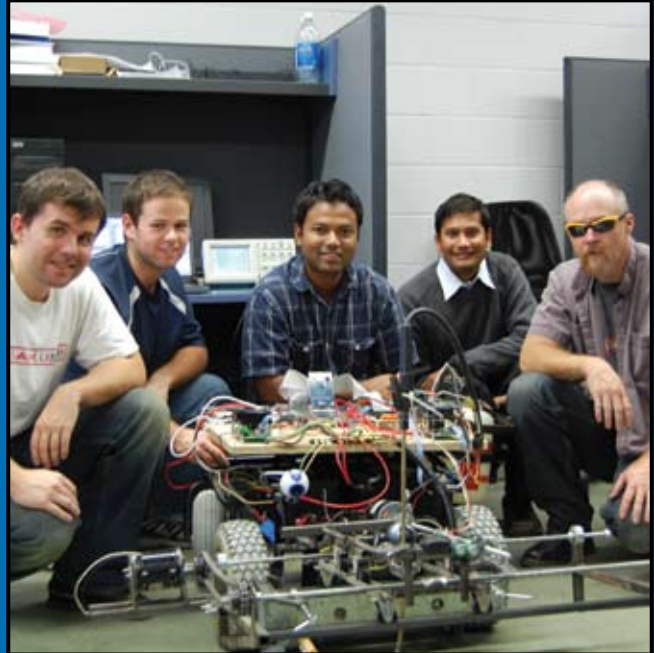


Robotic Weed-Eater Offers Green Alternative to Chemical Lawn Treatments

Researchers at the University of Manitoba are using prototyping technology provided by CMC Microsystems to design a mobile robot that could identify a weed and take the action required for lawn or garden maintenance. In future, it could provide an environmentally friendly alternative to eliminate weeds without using chemical treatments.

“Our team started working on larger-scale robots two years ago, about the same time that CMC introduced embedded systems prototyping platforms for university researchers. This allowed us to experiment with wireless Internet connectivity and control, embedded processors, power electronics and sensors, all within a single prototyping environment. This enabled us to integrate different technologies into one device and improve the capability of the robot.”

Dr. Bob McLeod
Professor, Electrical and Computer Engineering
University of Manitoba



Dr. Bob McLeod (far right) and a team of engineers at the University of Manitoba have designed a robotic weed-eater that can locate and remove weeds on a lawn. Other team members include (from left to right): Marek Laskowski, David Sanders, Monir Khan and Venkateswara Reddy.

It is estimated that Canadians use hundreds and thousands of kilograms of pesticides on their lawns each year.¹ The risk associated with the use of these chemicals on human health, animal life and our environment continues to increase, demanding new environmentally friendly solutions for those who maintain lawns, gardens and parks.

A salvaged electric wheelchair may not look like a typical weed eater, but researchers at the University of Manitoba are putting it to the test. Dr. Bob McLeod, Professor of Electrical and Computer Engineering, and his students are assessing the feasibility of semi-autonomous robots that can identify and locate weeds in a lawn. The robots are initially controlled wirelessly over the Internet by a computer operator, and eventually shift into a semi-autonomous mode as they move across the grass.

Dr. Bob McLeod and six graduate students are using system-level prototyping platforms provided by CMC to investigate the diverse underlying technologies required to make such a robot work. These include image processing and computation for vision and reasoning capability; motor controls for mobility; and wireless networking and graphical user interfaces for telecontrol of the robot.

“This is complicated stuff. We are trying to combine different technologies into one on-board architecture that will enable a robot to identify a weed and locate its root, while differentiating between other plants and obstacles on the lawn,” says Dr. McLeod, who has benefited from CMC’s products and services for over 20 years.

“With the support of CMC, our team is exploring the algorithms, electronic design, power circuits, FPGAs (field-programmable gate arrays) and platform-based design required to perform advanced research in robotics and artificial intelligence. This is training that can be applied in companies across many sectors.”

In the future, the research team aspires to develop a robotic weed-eater that is powered by the sun, offering an environmentally friendly alternative for lawn care by eliminating the need for chemical treatments. [cmc](#)

¹ <http://www.cbc.ca/consumers/market/files/health/lawnchem/index.html>