The MBot Ecosystem

TECHNOLOGY NUMBER: 2023-404

OVERVIEW

Low-cost, adaptable educational robot ecosystem for hands-on robotics learning

- Offers affordable, versatile platforms enhancing practical robotics education
- Useful for university courses, student projects, robotics competitions, STEM education

BACKGROUND

In the field of robotics education, hands-on experience is crucial for comprehending complex concepts such as control systems, autonomous navigation, and SLAM (Simultaneous Localization and Mapping). Historically, educational robotic platforms have either been too simplistic, lacking the depth to cover advanced topics, or too expensive, hindering widespread accessibility. Existing platforms often confine users with limited expandability or proprietary designs, curtailing the hands-on experimental potential for students. As robotics and AI continue to evolve and become more integral to various industries, there is a growing need for cost-effective yet comprehensive educational tools. These tools should provide both theoretical and practical knowledge, equipping students with the skills necessary to innovate in this dynamic field. Thus, creating an improved, affordable, and open-source platform becomes essential to bridge the gap between theoretical instruction and real-world application.

INNOVATION

MBot™ is a low-cost, adaptable ecosystem from Michigan Robotics for teaching robotics with real robots. It was invented in 2014 and consists of a family of educational robot platforms that have been used to teach 8 courses across undergraduate and graduate levels. The MBot™

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Category

Software
Software & Content
MOSS - Michigan Open Source Support

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family provides various educational robot platforms that can be tailored to meet the diverse needs of students and institutions, allowing for hands-on, practical learning experiences. This adaptability makes it an invaluable resource for teaching fundamental and advanced robotics concepts in a cost-effective manner. Potential real-world applications of the MBotTM ecosystem include use in university robotics courses, student projects, robotics competitions, and broader STEM education initiatives, ultimately democratizing access to quality robotics education and fostering innovation and technical skills in students. Learn more about how others are using the MBot^{TM} for hands-on robotics education.

ADDITIONAL INFORMATION

PROJECT LINKS:

- MBot Project Website

DEPARTMENT/LAB:

- Michigan Robotics

LICENSE:

- N/A