Robot Builder's Night Virtual April 29th, 2025

Introduction

The Robot Builders Night Virtual meeting on April 29th, 2025, was a gathering of robotics enthusiasts discussing various projects, insights, and technical challenges. Attendees shared updates on ongoing projects, explored innovative ideas, and leveraged AI tools to enhance robotics capabilities.

Main Discussion Points

Presentation by Karim Virani

 Unilidar 2 Demonstration: Karim showcased the UniLidar 2 and its 3D scanning capabilities, including how it can be utilized for obstacle detection. Discussions involved its mechanics, configuration applications, and potential uses on larger robotic platforms.

Tom Crawford's Line Tracking Robot

• Stepper Motor-Based Chassis: Tom introduced his custom-built stepper motor-based robot for line tracking, emphasizing precision over traditional open-loop gear motors. His work is aimed at enhancing control for smoother navigation on complex routes.

John K's F1 Tenth Robot Platform

• ROS2 Integration: Highlighted the use of ROS2 on an F1 Tenth robot car platform for robust autonomous navigation, demonstrating integrated math algorithms and navigation software infrastructure.

Wildfire Fighting Drones by Tom Crawford

 Autonomous Aerial Systems: Tom discussed the development of heavy-lift drone swarms for autonomous wildfire fighting. The drones, capable of operating in challenging conditions, represent significant advancements in automated disaster response technology.

Michael Ivison's Waveshare Driver for Robots

• New Robot Control Boards: Michael presented the Waveshare General Driver Board, highlighting its integration ease with ESP32 platforms, useful for both beginners and advanced robotics projects.

Discussion on Robust Robot Design and Troubleshooting

 Camera Calibration Issues: Mike Williamson discussed issues with his OpenMV camera appearing off-center, exploring potential causes such as lens displacement. Community suggestions pointed towards mechanical shifts potentially due to earlier drops or impacts.

Paul Bouchier's 6-Can Robot State Machine

• State Machine and AIDA: Demonstrated a robot programmed via aider to autonomously capture cans in a predefined space and return them to a goal. The setup utilized advanced state machine configurations for seamless transition between custom code and ROS Navigator.

Referenced Links and Contributors

- Karim Virani: Presentation Document
- Mark R.: F1 Tenth Instructables
- Tom Crawford: CBC News on Wildfire Drones
- Michael Ivison: Waveshare Driver Information