RBNV Meeting – 11/26/2024 Summary

Robo Columbus Recap

The meeting started with a recap of Robo Columbus, a robotics competition. Attendees shared videos of their robots, including one named "Belch," who was described as running over everything in its path [1, 2]. There were technical difficulties with the Google Meet recording of the competition, primarily slow frame rate [3].

- **Video of Belch the Robot:** https://www.youtube.com/watch?v=qJF84oz93jw This YouTube video shows Belch the Robot in action at Robo Columbus.

Attendees discussed using RTK GPS for heading instead of a compass [4]. One member shared a positive experience with a specific magnetometer and library.

- **Video about using magnetometers on Arduino:** https://www.youtube.com/watch?v=MJPn77SObMY This YouTube video provides a guide on using magnetometers with Arduino.

- **Video on using the QMC5883L 3-Axis Digital Compass with Arduino:** https://www.youtube.com/watch?v=xh_KCkds038 This video focuses on the basics of using the QMC5883L 3-Axis Digital Compass with an Arduino MCU.

- **Forum discussing the BNO055 Compass:** https://forums.adafruit.com/viewtopic.php?t=75497 This Adafruit forum thread discusses the BNO055 compass, which is a possible solution to some of the magnetometer challenges discussed.

The group then talked about the rules for taking measurements before the competition.

Spring "Day with Outdoor Robots"

The conversation transitioned to planning a future robotics event. Suggestions for a location included a park and someone's house. Concerns were raised about liability and safety in a public park [5, 6].

Cancel December meeting

The group decided to cancel the December meeting due to the holidays [7, 8].

Carl's Robot and Brushless Motor Discussion

Carl presented about his robot, which experienced mechanical failures at Robo Columbus [9-11]. Before the competition, his robot could successfully navigate cones. Carl showed a video of his robot in action.

- **Video of Carl's Robot Navigating Cones:** https://www.youtube.com/watch?v=R7Bk18DNDpE This is a video of Carl's robot navigating cones.

Carl's robot utilized two buzzers to indicate distance from the cone [12]. The robot used hard-coded speed and had separate commands for concrete and grass [9]. He explained the mechanical failures the robot suffered, including a broken drive shaft [11]. Carl discussed switching to brushless motors for his next robot [13].

The group discussed the advantages of brushless motors, including power, durability, and telemetry capabilities [14].

- **Carl's ChatGPT Conversation about Brushless Motors:** https://chatgpt.com/share/67467890-ca3c-800e-b539-206222a79115 This is the ChatGPT conversation where Carl discusses brushless motors.

Specific brands and models were mentioned, including Spark Max and SimpleFOC [15].

- **REV Robotics Spark Max Motor Controller:** https://www.revrobotics.com/rev-11-2158/ This is the product page for the Spark Max motor controller.

Carl outlined his vision for a well-constructed robot with a two-speed transmission and a focus on aesthetics [16].

Michael's Bluetooth Speakers and 3D Printing

Michael presented on building Bluetooth speakers for his family [18]. He showcased the backlight feature and a small microcontroller he used [19, 20].

- **Adafruit Backlight:** https://www.adafruit.com/product/1622 This is the product page for the Adafruit backlight that Michael used.

Michael discussed the challenges of bending the LED legs and shared his solution involving hot glue [21]. He also spoke about his positive experience with a new, faster 3D printer [22].

- **Video of Open TPU tires with Compliance:** https://www.youtube.com/watch?v=R-2Is7-YfY4 This link shows a YouTube video featuring open TPU tires designed for compliance, which is a feature Michael discussed in the context of 3D printing.

The group discussed printing with TPU and the benefits of low infill for flexibility [23, 24].

- **Video of Smooth TPU tires**: https://www.youtube.com/watch?v=hbDfvBTRt5o This YouTube video shows smooth TPU tires.

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Mike's Theater Projects and ROS

Mike provided an update on his work as a tech director for a theater project [25]. He talked about working on a soccer ball robot and using plastic spray to reinforce cracked plastic props [25, 26]. Mike detailed building percussion equipment, including a gong stand and tubular chimes [27-29]. He also discussed a robot mannequin used in the play and the challenges of syncing audio with the robot's movements [30, 31]. He planned to explore ROS for his future robotics projects [32, 33].

Paul's Data on RTK GPS, RoboRemo, and NoteLM

Paul presented data on using RTK GPS for heading, showing the accuracy compared to a compass [34, 35]. The group discussed the limitations of GPS accuracy without RTK [36, 37].

Paul shared an app called RoboRemo for robot control and telemetry [38]. He highlighted features like joystick control, Bluetooth and Wi-Fi connectivity, and a GUI editor.

- **RoboRemo App:** https://roboremo.app/ This link leads to the website for the RoboRemo app that Paul shared.

Paul provided examples of the Arduino code used with the app [39]. Paul showed off a model car from the project [42]. Michael expressed interest in using the RoboRemo app to control stepper motors on a milling machine [43].

Vizanti

Karim suggested Vizanti, a ROS2-specific telemetry and mission planner app with a cellphone interface [44].

- **Vizanti GitHub repository:** https://github.com/MoffKalast/vizanti/tree/ros2 This is the GitHub page for Vizanti.

- **Video demonstrating Vizanti:** https://youtu.be/NZO6q_YMRwI?si=TSbkpM_u_uumANuk&t=493 This YouTube video shows some features of the Vizanti interface.

Node-RED Resources

- **Node-RED Dashboard Tutorial:** https://www.influxdata.com/blog/node-red-dashboard-tutorial/ This link provides a tutorial on using Node-RED for creating dashboards.

- **Node-RED Dashboard Project:** https://flows.nodered.org/node/node-red-dashboard This link directs to the Node-RED dashboard project page.

- **Node-RED Organization:** https://nodered.org/ This is the main website for the Node-RED organization.

- **Node-RED on Raspberry Pi:** https://nodered.org/docs/getting-started/raspberrypi This link provides instructions for getting started with Node-RED on a Raspberry Pi.

- **Node-RED and Arduino:** https://nodered.org/docs/faq/interacting-with-arduino This link shows information on using Node-RED to interact with Arduino.

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Meeting Summaries and Ethical Implications

Finally, Paul shared his plan to summarize meeting transcripts using Google's NoteLM and distribute them via email to the club members [45]. He showcased the summarization capabilities of NotebookLM, including the ability to attribute statements to specific speakers and provide links back to the original transcript [46, 47]. He also discussed the limitations of AI summaries, noting that they can be inaccurate and should be reviewed for errors [48, 49].

The meeting concluded with a discussion about the ethical implications of recording and summarizing meetings using AI [50, 51].