Jump the Moon - Art-Bots

College of Engineering
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Project Definition

Art is a form of communication, self-expression, and creativity that everyone should be able to participate in. Jump the Moon provides an innovative space for people with disabilities to create art. This project provides a way for those with limited mobility to create unique art using robotic technology.

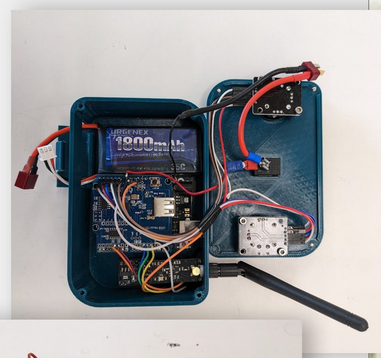
Goals for the project:

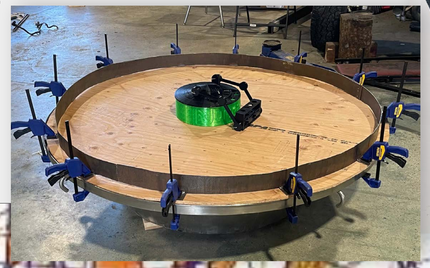
- Build 5 art-bots that can create art using a variety of art mediums.
- Create controls for each art-bot that are easy for people with diverse sets of abilities to use.
- Build an arena where the artists can create collaborative art pieces using the art-bots.

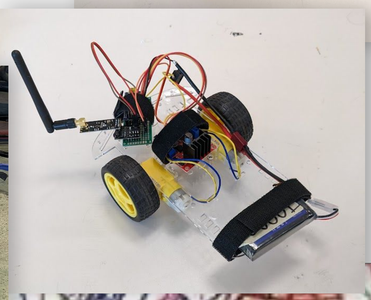
Design Description

The project is divided into 3 main subsystems:

- **Controller:** Artists can use a custom-designed handheld controller or an Xbox Adaptive Controller with the users' choice of joysticks or switches.
- **Robot:** The robot subsystem includes the internal electronics, an outer shell, and an art medium holding device.
- **Arena:** The robots operate within the confines of a specially produced arena that keep them in the working area. All arena materials are sourced from recycled materials.







Performance Review

The first art-bot prototype was evaluated using the set of design criteria illustrated in the table below.

Criteria	Prototype Performance
Is the art-bot functional?	Yes
Is the controller intuitive/adaptive?	Yes
Can the art-bot create art?	Yes

The first prototype was tested by allowing 12 of Jump the Moon's artists to create a collaborative piece of art. The team collected the following feedback to improve the final design of the art-bots:

- Use a rechargeable Lipo Battery rather than disposable batteries.
- Include LED lights inside the art-bot shell.
- Design a method for the art-bot to hold multiple art mediums at once.

Conclusion

- All three goals of the project were successfully met: the team designed and built 5 functional art-bots, 5 adaptive controllers, and an art arena.
- Several art pieces have already been made using the art-bots.
- The controllers for the art-bots can be easily adapted to a variety of setups to accommodate for the unique needs of the users. Any setup with a USB port may be able to control the art-bots
- Future work on this project may require electrical engineers. With an electrical engineer on the team, Jump the Moon would be able to produce more complex and individualized robots.

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