Arduino Buddy Robot

A Project Proposal

October 18 2019

Brandon Huzil and Lukas Hoffman

# Introduction

In this proposal we will discuss an Arduino based robotic project called Buddy. The original Buddy is the creation of the minds at LittleBots and found at [www.hackster.io](http://www.hackster.io). Buddy is a small 3D printed robot that makes use of a proximity sensor on an arm to observe and react to its surrounding environment. Buddy’s eye shaped proximity sensor and ability to move anthropomorphize him to help him provide company to lonely programmers and IT personnel. Buddy can look around in programmed or random ways to make it appear alive and playful. Buddy makes use of mapping software to sense when new objects have been placed in its vicinity and when objects have been removed. In doing see we can interact and play with buddy.

# Novel Contribution

We intend to add minor vocal audio capabilities that allow buddy to audibly express itself in addition to expressing itself in movement. The voice clips will be taken from Trevor Tomesh’s fall 2019 CS 207 lecture audio recordings or from direct recording of Trevor Tomesh, with consent. We intend to have voice recordings that express basic human emotions such as surprise, happiness, greed, and anger that Buddy will make use of when reacting to changing environments.

# Motivation

In our future careers we fear that we may experience loneliness in the work environment and so we found Buddy as a way to remedy this potential problem. With a Buddy on our desks we will be less likely to experience the heart wrench that is adulthood isolation. Further, we sought to make more use of the underappreciated vocal recordings that our CS 207 instructor posts on Schoology. This was the driving force behind the idea to add in audio functionality to our Buddy.

# Materials Required

* 3D printer
* Servo from our Arduino kit
* LittleArm Arduino Robotics Board
* Arduino Nano R3
* Speaker
* Jumper wires
* LED (stretch goal)

# Milestones

|  |  |  |
| --- | --- | --- |
| **Milestone 1** | **Nov 1st** | Materials gathered and printed. |
| **Milestone 2** | **NOV 7th** | Research completed on C++ mapping and assembly completion. |
| **Milestone 3** | **NOV 21st** | Basic movement without environmental interaction. |
| **Milestone 4** | **DEC 2nd** | Movement with environment interaction and audio features. |
| **Milestone 5** | **DEC 6th** | Coloured LED’s to match Buddy’s reactions. Presentation complete. |

Our stretch goal will be 2 LED’s that will match our Buddy’s mood/reactions when interacting with its environment. An example being a red light for when our Buddy has detected removed objects in its environment, and reacts angrily. LittleBot’s original project has not quite been finished, so the initial configuration may prove to be challenging.

# Team Roles

|  |  |
| --- | --- |
| **Alex** | **Lukas** |
| 3D creation and printing of Buddy | Materials and parts gathering |
| Code creation of basic movement | Configuring Buddy |
| Code creation of reactions to environment | Code creation of environmental map |
| Code creation that implements movement and reaction patterns by changes in map. | Code creation that implements movement and reaction patterns by changes in map. |

# Summary

If all comes to plan, we should have our very own Trevor Tomesh, to be our Buddy. Our Buddy will interact with changes in its environment using movement in ways the appear cute and may express itself audibly with a consenting Trevor Tomesh’s voice. Our Buddy will make for excellent company and a great demonstration of our ability to interact hardware and software as one.