Socially Assistive Robots Used as Therapy Tool for Children With ASD

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Introduction

Definitions:
ASD: Autism Spectrum Disorder
SAR: Socially Assistive Robotics


Fig. 1

Meet Kiwi the Robot! In Dr. Maja Matarić's robotics laboratory, SAR is used as a therapy tool for children with ASD by interacting with them socially. To make the research data gathering kid-friendly, an endearing robot – pictured in Fig. 1 to the right – plays the role of an alien that requires assistance in the form of engaging puzzle games.

Objective & Impact of Dr. Mataric's Research

The objective of our lab under PhD student Caitlyn Clabaugh was to:
- analyze data and utilize that to improve the robot's effectiveness
- modify the dialogue of the robot to increase understanding between Kiwi and the child

The impact of Dr. Maja Matarić's lab as a whole is remarkable.
- Dr. Matarić's research uses SAR to make a tool that in the future is hopefully extremely beneficial to patients with ASD.

Professor Maja Matarić with Kiwi the Robot

Skills Learned

My lab mate Bryan Pyo and I worked closely with:
- the terminal
- ELAN
- GitHub
- ROS
- Amazon Poly

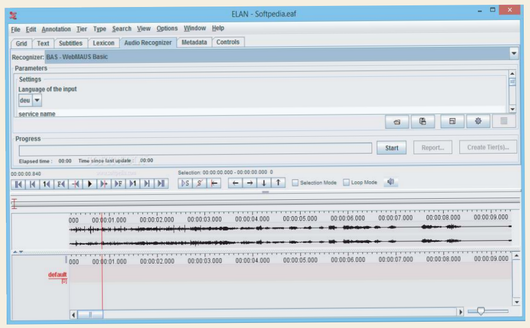
Through these programs I've learned:
- how to utilize online resources
- the importance of data
- persistence
- responsibilty
- independence
- patience

Outside the lab I've learned:
- the large world of research
- the significance of having a purpose
- the shocking reality of the "imposter syndrome"


Computer terminal used to install/open programs


Github, a development platform, logo

Below: ELAN 2.5 used to annotate research videos



Relation Between Lab Work and STEM Coursework

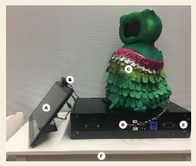
The lab:
- requires more responsibility
- allows for freedom/flexibility
- applies learned knowledge and skills
- has a clear and meaningful purpose

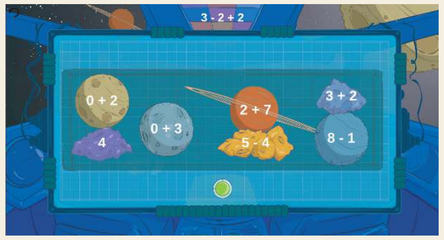
What I've learned in the lab can be applied to:
- my future computer science courses
- managing the robotics club I am founder and president to
- personal robotics, CS, and/or programming projects


Fig.1 Kiwi the Robot

TELACU Upward Bound logo


Participant with Kiwi the Robot


Above: Kiwi setup for the home



Example of the games participants with ASD play during research

Advice for Future SHINE Students and My Future

Firstly, congratulations for your achievement! My advice is don't be scared. You will be exposed to a lot of complicated material that you might not understand but it's okay, no one expects you to! So instead, please enjoy and take advantage of the many resources you have. Be as social as you can and learn as much as you can.
As a rising senior I will be applying to universities starting in November. SHINE has made me more confident in my own abilities and what is to come in my academic future. My goal is to earn a PhD in mathematics and incorporate that into the worlds of CS and research. I also plan to support organizations such as TELACU in hope that they will continue to allow communities like mine to access these resources like they did for me.

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