GRACE HOPPER CELEBRATION

ANITA B.ORG

How we built a successful product they didn’t even know they wanted

This is a story of how a ragtag team of developers designed and built an educational raspberry-pi robot and brought it from a hackathon to our community.

Take aways

Some neat stuff we learned along the way

...while doing good for the community.

- ITERATION
- EMPOWERMENT
- COMMUNITY

The Team

Terry Tan | Software Developer

Smita Ghosh | Configuration Analyst

Rebecca Thayil | AI Engineer

Natan Organick | AI Engineer

Vanguard

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A HopperBot History

A hackathon gave us the opportunity to begin building HopperBot, an interactive learning platform.

‘17

’17 - ’19

In the following 2 years we improved HopperBot far beyond the prototype we began with until it was ready to bring to schools.

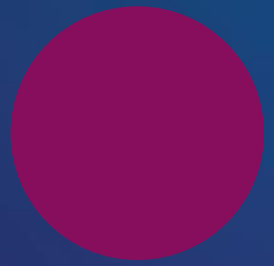
We took HopperBot to a STEAM Expo called GETT – Girl's Exploring Tomorrow's Technology – and got to teach girls how to code through our platform.

’18, ‘19

The Beginning

Ideation Session

First Generation Robot



Experiences at the Start

MVP Momentum

MVP Robot

Hardware

- Raspberry Pi 3 running raspbian
- 2 wheel chassis kit
- DC motors
- Duct tape

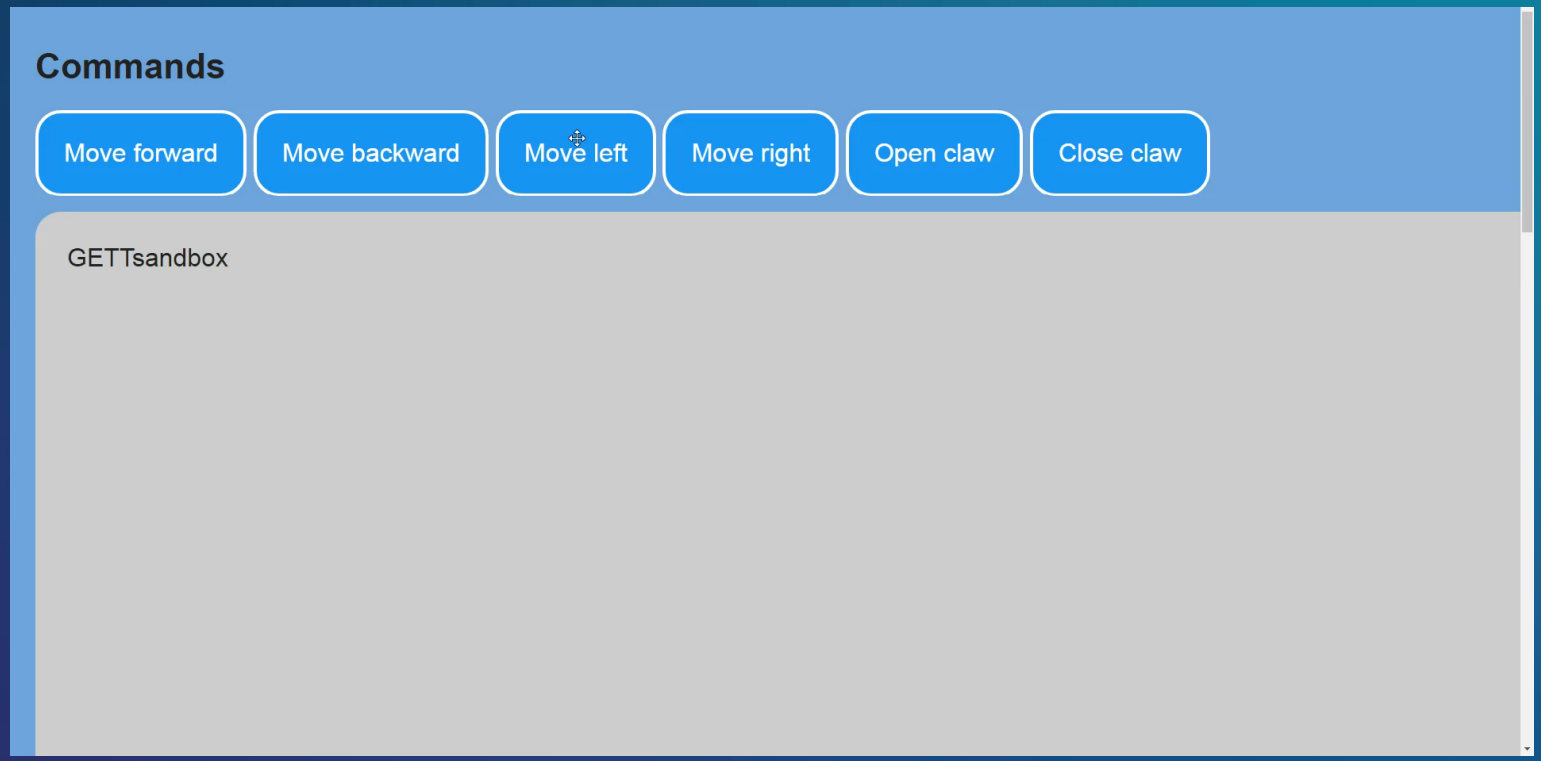
Architecture

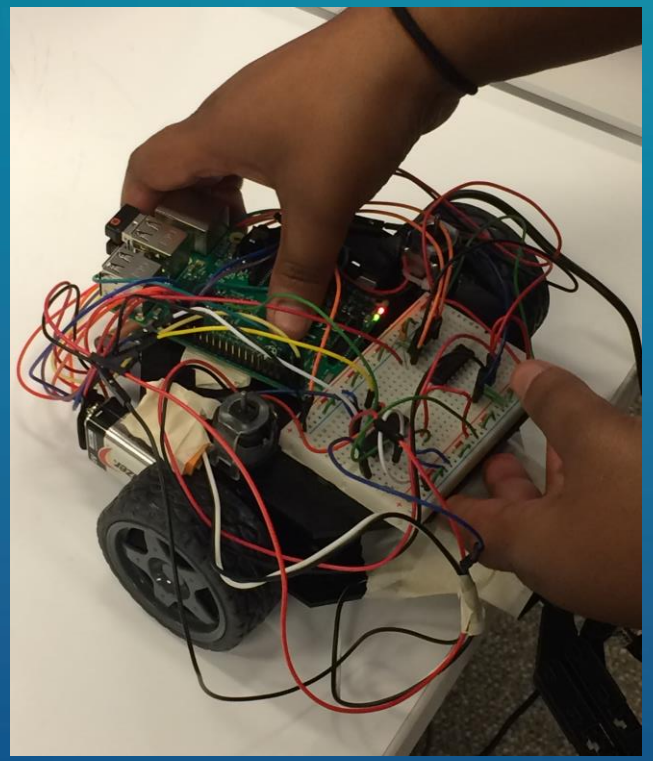
- Ran webapp and web server on the Pi
- Opened ngrok tunnel on Pi
- website sends user commands via REST request to web service
- Commands are executed on Pi

Webapp

- HTML/CSS/JS
- Drag and Drop UI
- Supports only one move at a time

First Generation Robot

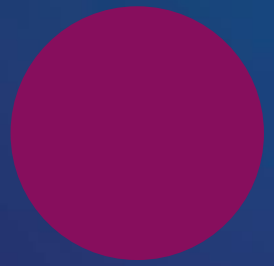




The Middle

Feedback and Learning

GETT



Tech Iteration

Technical Improvements

Hardware

- Raspberry Pi 3 running raspbian
- 4 wheel chassis kit
- Case
- Cleaned up wires

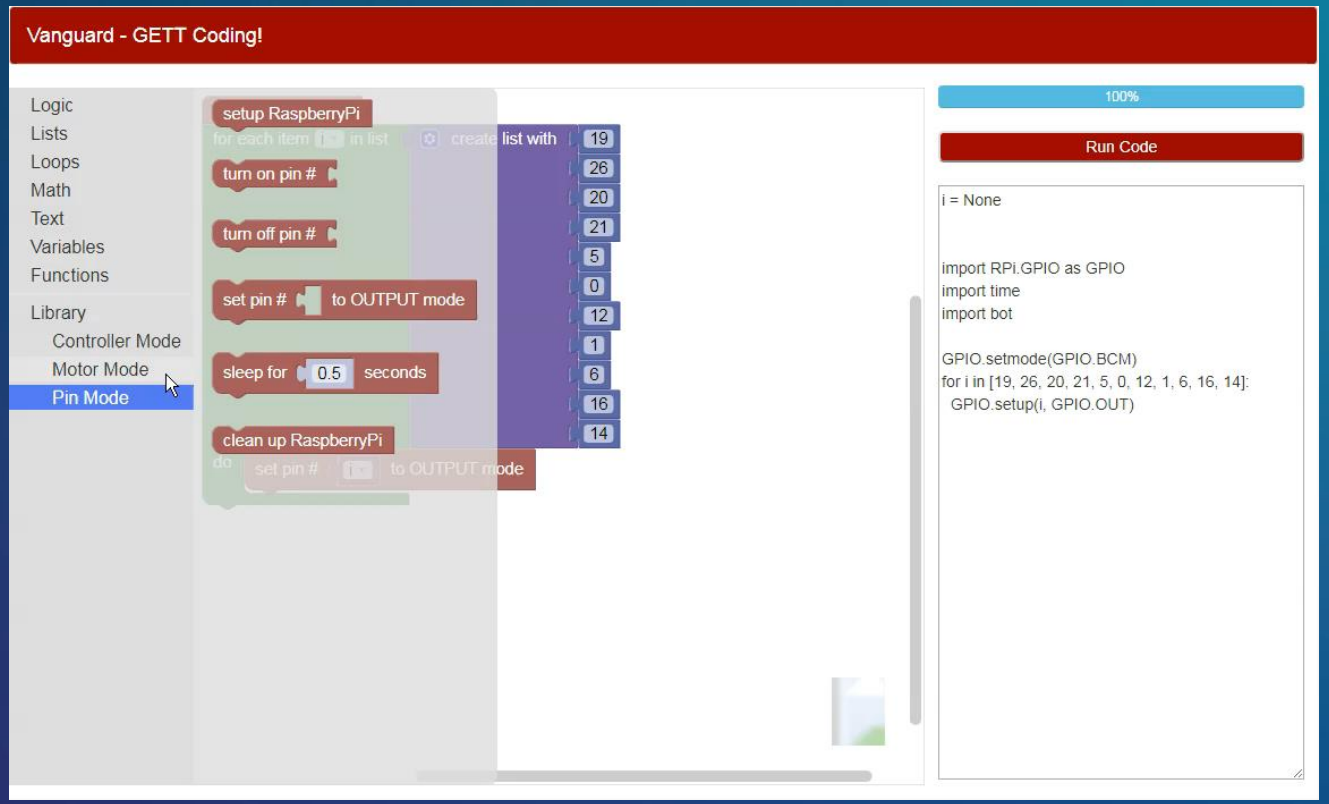
Architecture

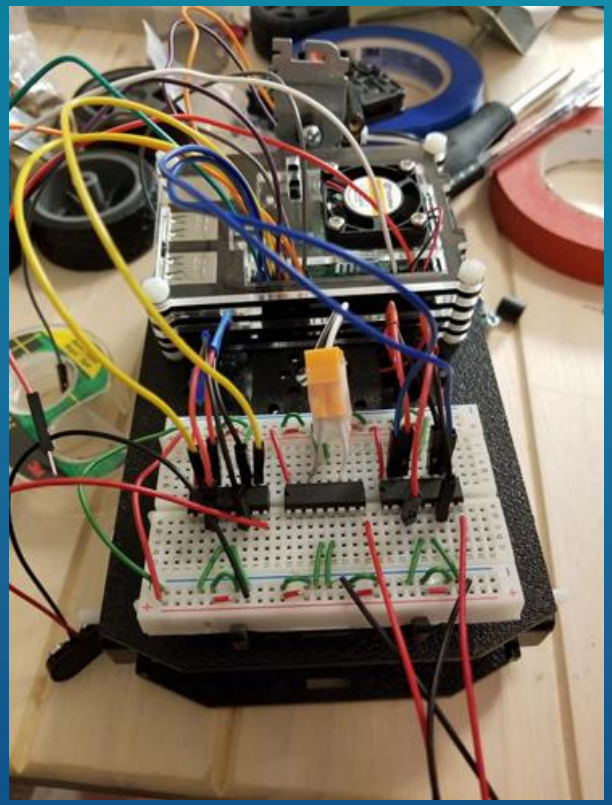
- Publish subscribe communication model
- Host on platform

Webapp

- Hosted on Heroku
- Google’s Blockly API
- Replaced Flask with node

Second Generation Robot





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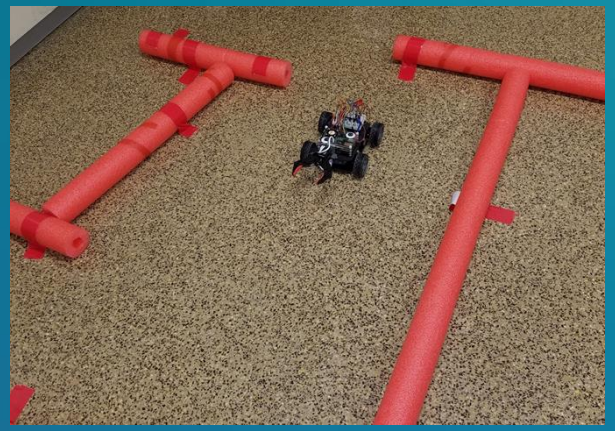
GETT – A Successful Day



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Lessons Learned

- Outcome-driven product design
- Things go wrong and that's OK
- Promoting STEAM in communities

Thank You!

Check out Vanguard's Tech (1862) and Career (1922) Booth!

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