GRACE HOPPER CELEBRATION



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.

O ITERATION

EMPOWERMENT

COMMUNITY

The Team

Terry Tan | Software Developer

Smita Ghosh | Configuration Analyst

Rebecca Thayil | Al Engineer

Natan Organick | Al Engineer





A HopperBot History

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





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

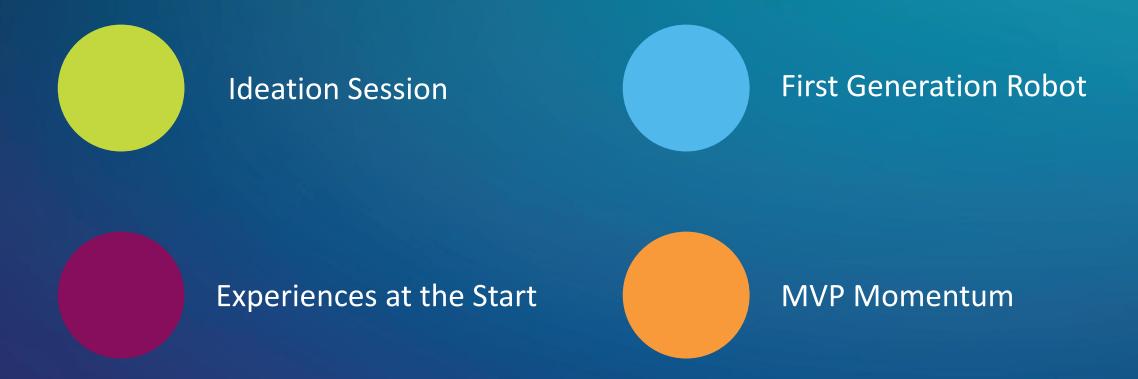
Technology — and got to

teach girls how to code

through our platform.



The Beginning



MVP Robot



Hardware

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



Architecture

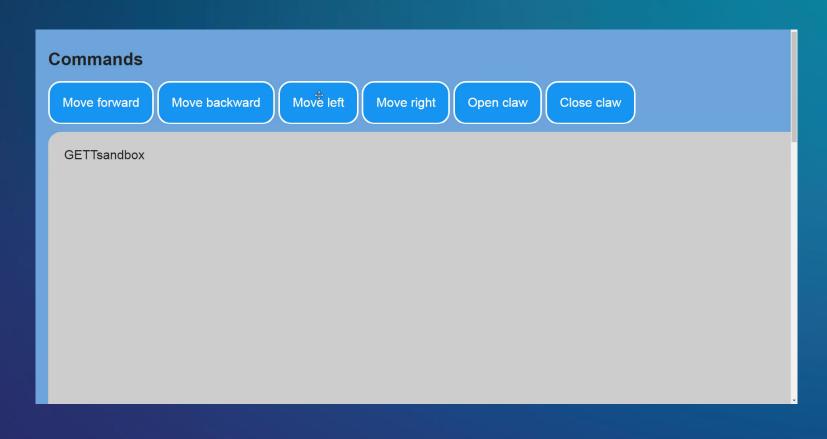
- Ran webapp and web server on the Pi
- Opened ngrok tunnel on Pi
- website sends user commands via REST request to web service
- Commands are executed on Pi

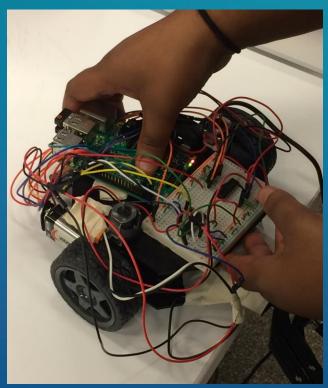


Webapp

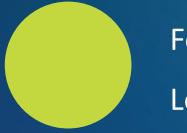
- HTML/CSS/JS
- Drag and Drop UI
- Supports only one move at a time

First Generation Robot





The Middle



Feedback and Learning





Tech Iteration

Technical Improvements



Hardware

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



Architecture

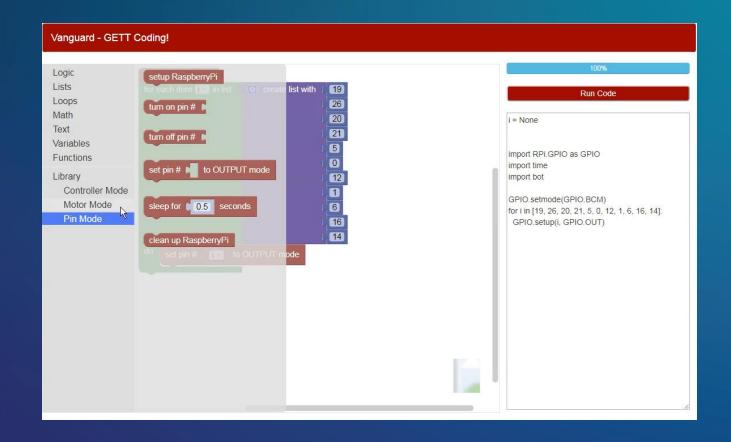
- Publish subscribe
- communication model
- Host on platform

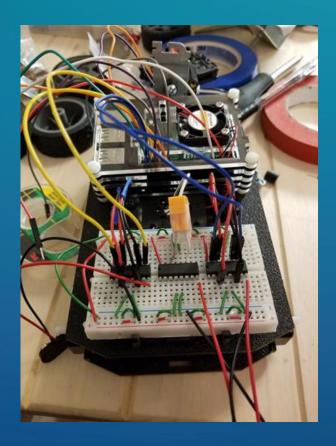


Webapp

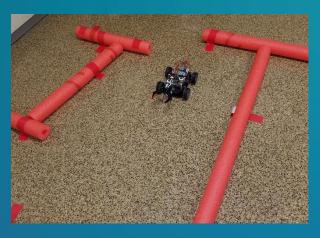
- Hosted on Heroku
- Google's Blockly API
- Replaced Flask with node

Second Generation Robot





GETT – A Successful Day









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!