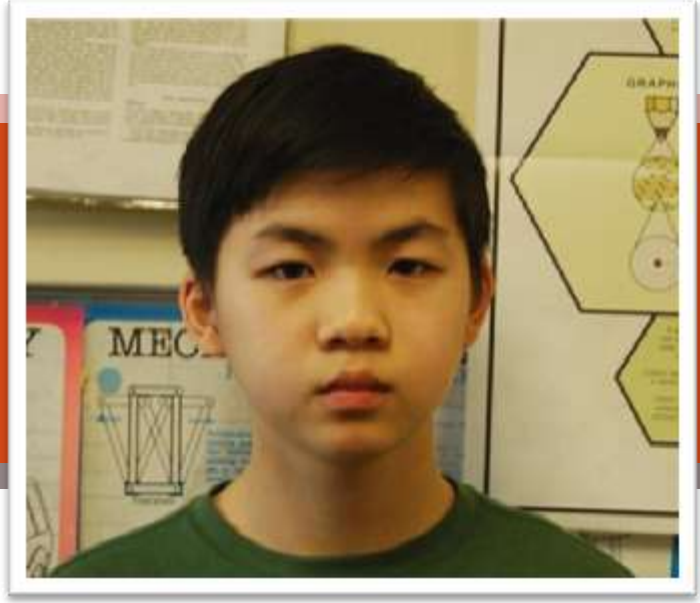
SR - chitect

RCJ Rescue B

Storming Robots in Branchburg, NJ, USA

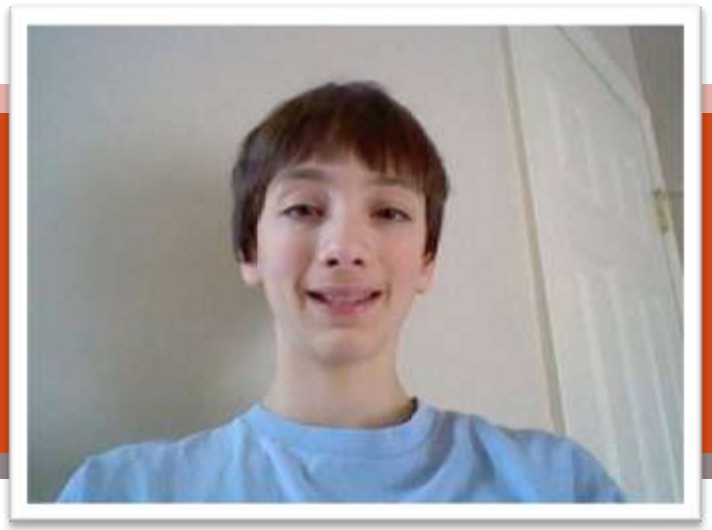
TEAM MEMBERS - BIOS

Andre Gou
(captain)



- 13 years old
- Has done robotics for around 4-5 years
- Shall be going to Watchung Hills Regional High School and is currently in the 8th grade.
- Hobbies include manipulation of drawing tools to create art, table tennis, tennis, Video Games. Love good food..

Eric Ward

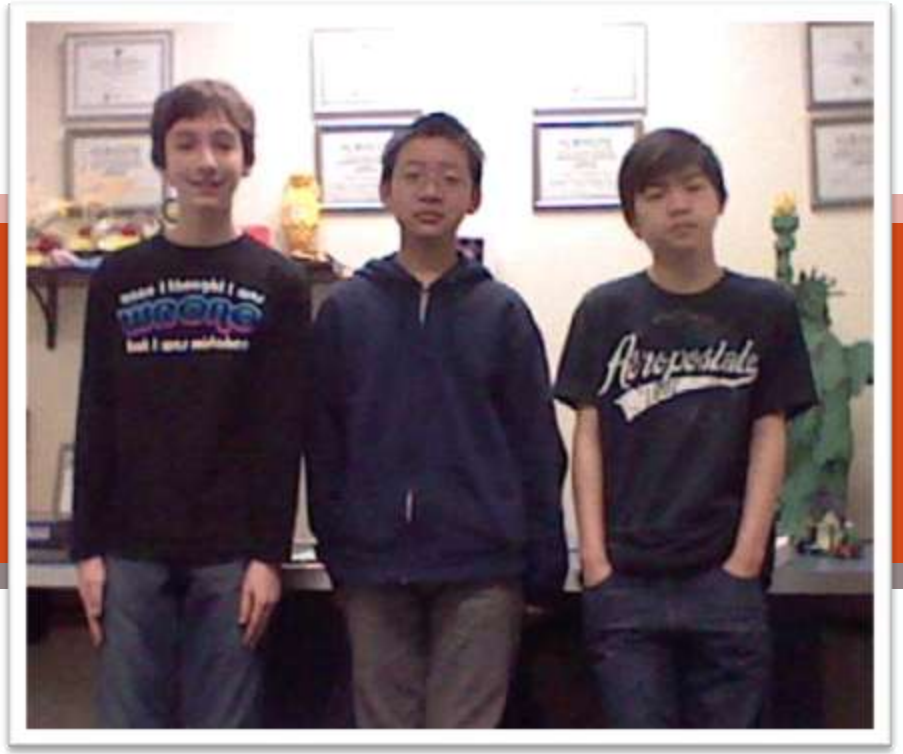


- 13 years old
- Has done robotics for 5-6 years
- Goes to JP Case middle school and is in seventh grade
- Hobbies include playing video games, ping-pong, and building robots.

Michael Xie

- 12 years old
- Has done robotics for 4 years.
- Goes to BRMS and is in 7th grade
- Hobbies include playing the saxophone and piano, swimming, and ping-pong.

What Do We Hope To Achieve In Robotics?



- By participating in robotics, we hope to learn more about physics, science, programming, building, and math. We want to expand our knowledge. It is fun to make our robot do a human's task!

Elizabeth Mabrey- Mentor

- Founder of the unique **“Storming Robots”** Technology Learning Center in Central New Jersey.
- Received her M.S. in Computer Science
- Has over fourteen years of system level software engineering experience in the highly competitive software development industry.
- Strongly believes in the importance in strengthening computational thinking skill and utilize robotics to build Science, Technology, Engineering and Mathematics as the core foundation for our academic and intellectual development.

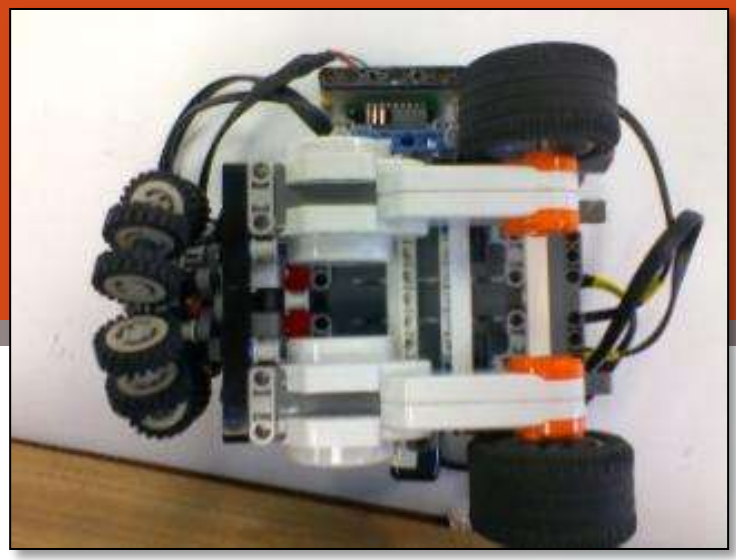
HARDWARE

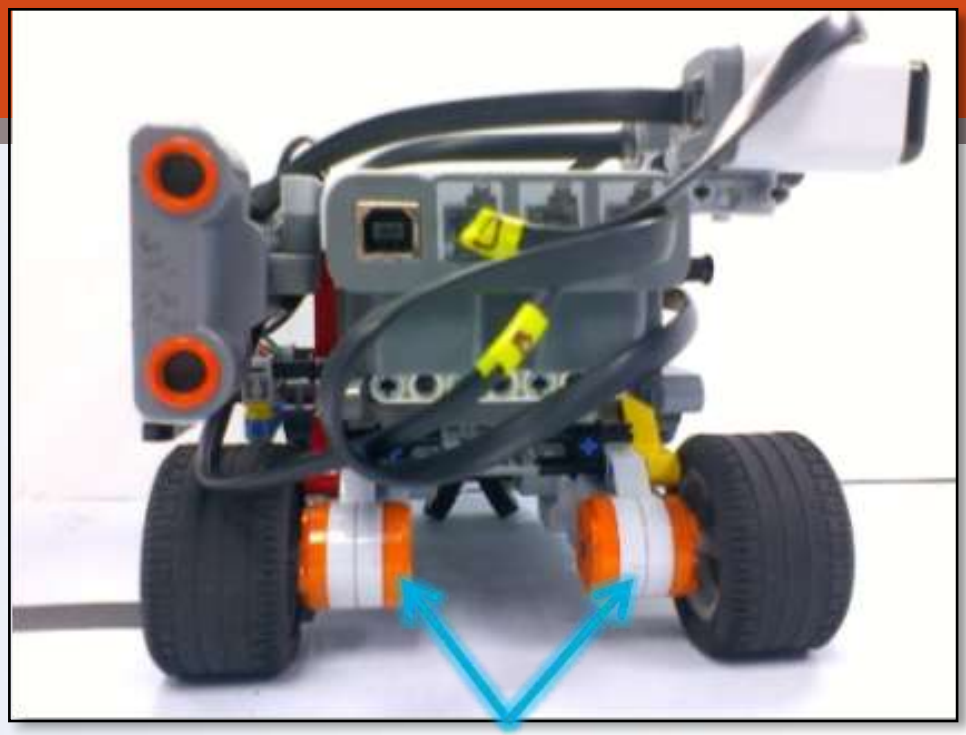
Platform & Major Electronic:

- NXT Controller Brick and servo motors
- Two Hi-Technic Electro-Proximity Detection sensors
- One Mindstorms Ultra-Sonic sensor
- One TPA81 Thermopile Array sensor

The Robot

Omni wheel used to ease turns.

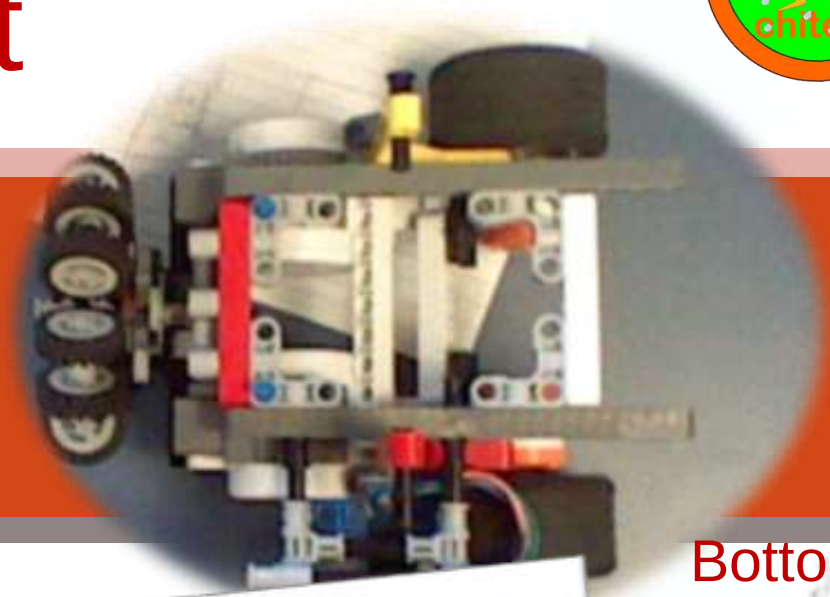




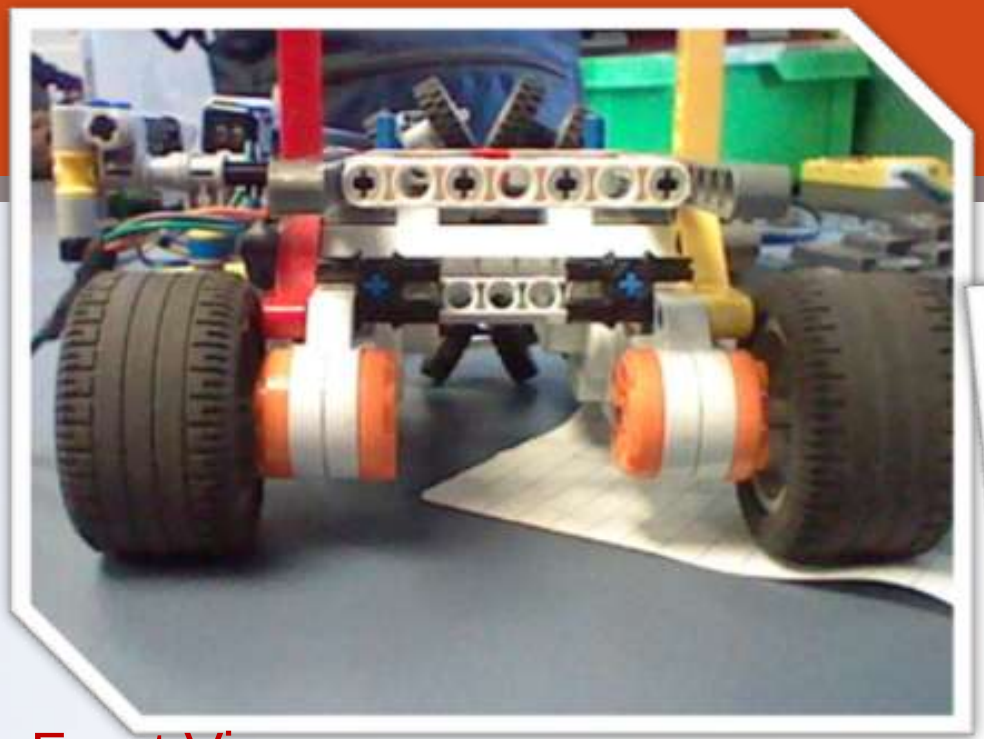
2 Synchronous servo motors to control all types of turns.

Bot's frame is built with small footprint in mind; although we did not organize the wire to add aesthetic value.

Views of the Robot



Bottom View



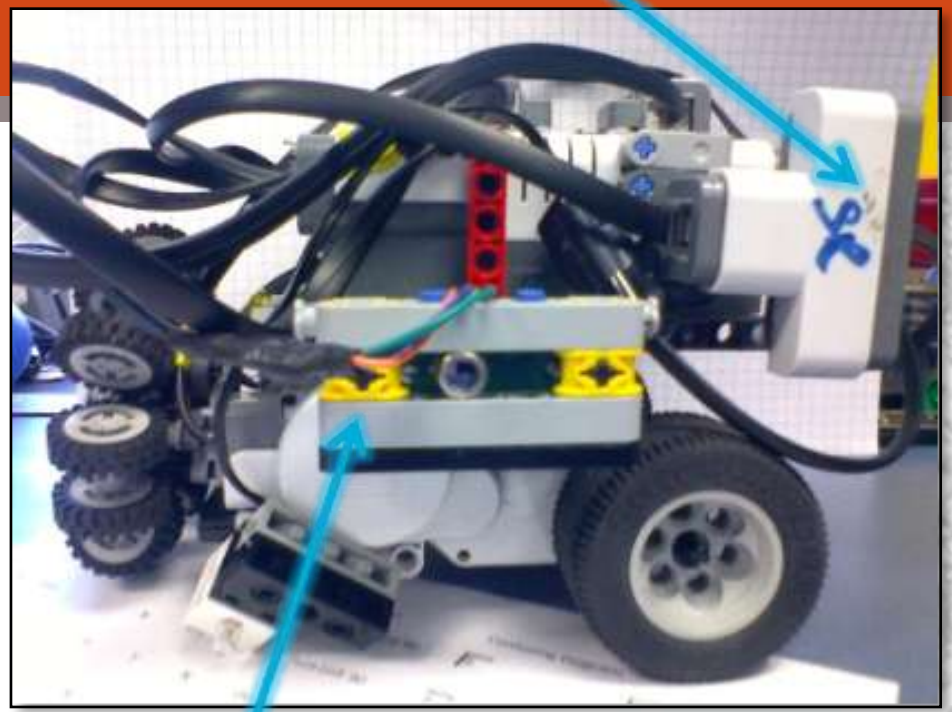
Front View

Back View

SENSORS

2 Electro Optical Proximity Detector (EOPD) sensors to straighten and help robot during wall following.

An ultrasonic sensor to see walls in front of the robot.



A thermal sensor to detect victims on the field.

SOFTWARE

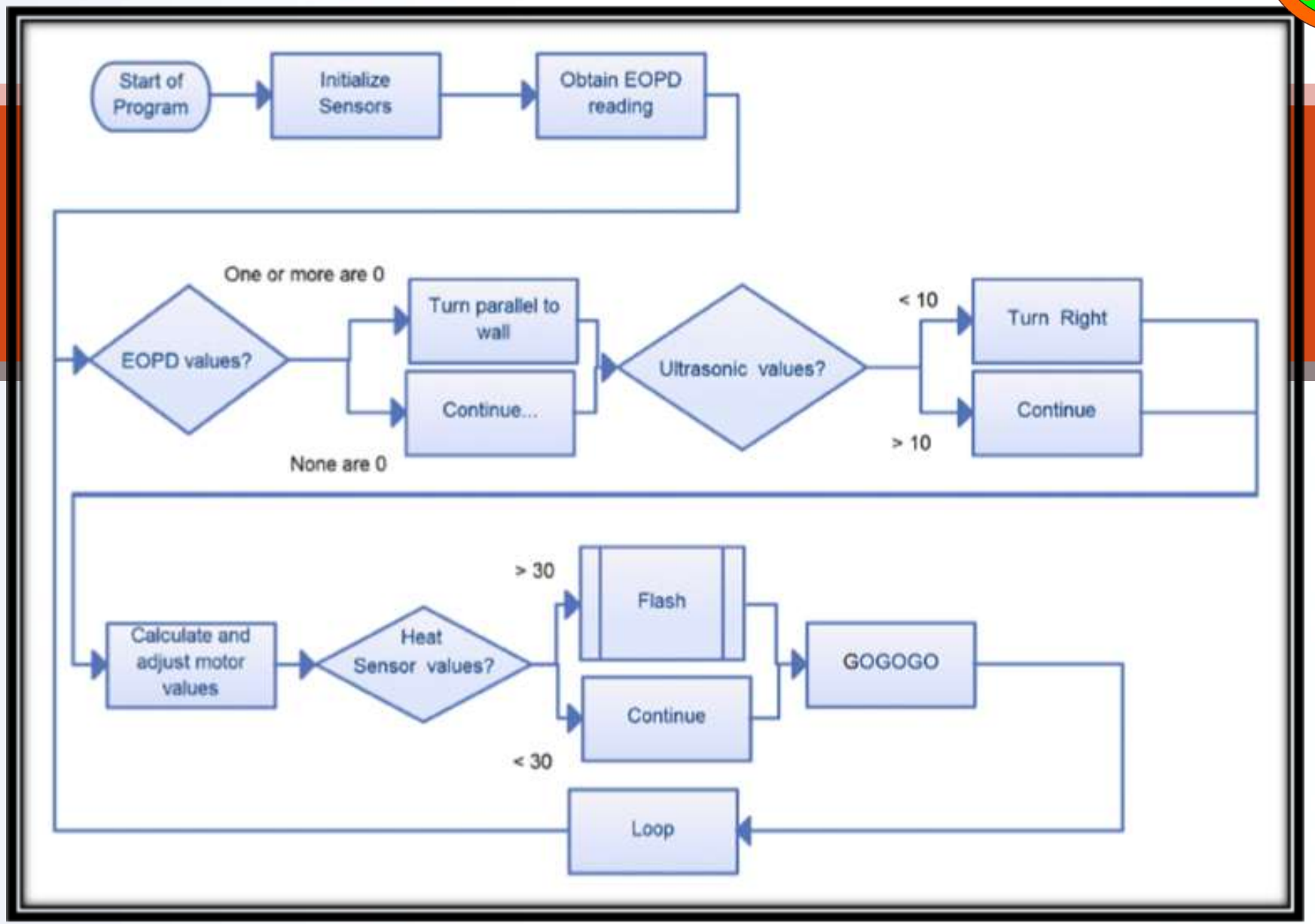
Software Program

- Robot C 2.26 BETA
- Deploy Proportional Integral Derivative (PID) algorithm for wall tracing.

Two separate tasks

1. Task 1: Handle the PID wall tracing navigation
2. Task 2: Handle thermal reading for victims to set a global boolean switch for victim recognition

High Level Flowchart



Hardware Issues

- Lacking ports for all of our desired sensors
- Ultrasonic sensor was inaccurate and slow

Software Issues

- Software algorithm will not be able to handle floating walls due to lack of sensors port and processing power of the NXT Brick.
- Will mistake obstacle away from wall as floating wall
- PID program had some fishtailing effect

Thanks For Watching

- Check us out at our website:
  http://teams.stormingrobots.com – click on RCJ 2011.
  Find “SR-chitect”.
- Write us at sr-chitect@stormingrobots.com if you are interested in our technical journal which reflect our approximately 60 hours of work.