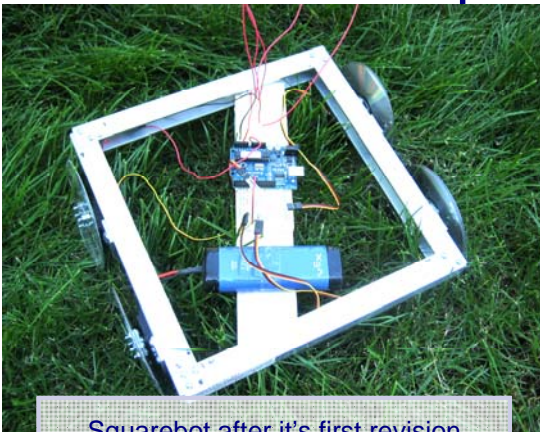


# CASE STUDY: Squarebot

## The Idea

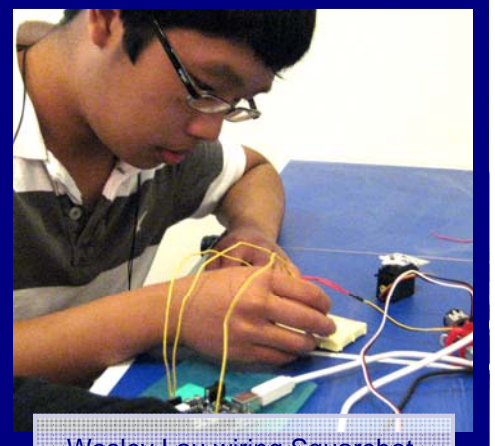
Some of us joined StudentRND with experience from **high-school robotics** teams. However, the **FIRST** and **Vex** robotics competitions give competitors **pre-planned parts** to make their lives easier. While these parts make it easy for us to build robots, we wanted to **try** building a robot with **off-the-shelf components** instead of pre-planned kits. We wanted to go to the next level and use what other **hobbyists, engineers, and scientists** would buy to build a robot. As a result, we decided to start out with a project to test out a **simple robot** that can move. Hence, Squarebot.



Squarebot after it's first revision

## What Happened

**Parents lent tools, and StudentRND purchased the parts** to make Squarebot a success. In fact, we were surprised that Squarebot **cost much less** than the parts used in high-school competitions. The aluminum cost \$20, motors cost \$40, and the Arduino, or "brain" of the robot cost \$90 (including the wireless chip). We salvaged old CD-ROMs to use as wheels for the robot. As a result, Squarebot only cost **\$150**. That's a lot less than the startup costs for the Vex (\$500) and FIRST (\$6000) Robotics Competitions! After we purchased the parts, **assembly** was fairly **straight-forward**. We cut the metal and built a frame to support the chassis. We mounted the motors, wired the robot, and we were mechanically ready! However, we still needed to **program** the robot, and that's where we ran into more difficulties. Because the parts did not come from a kit, we needed to **research** the electrical components **in-depth** to figure out how to use them. However, after some work, we obtained success!



Wesley Lau wiring Squarebot.

## Personal Statement

"Having had **no previous experience...** programming the Arduino for Squarebot initially seemed to me like a **daunting** task. However, after taking a look at a few examples... we were able to create a working program that would control the... robot with an HTML page generated by the Arduino. Making Squarebot was a great **opportunity** for us to better **understand** the field of robotics and of how to **create** something without a predetermined set of instructions." —Wesley Lau

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