



FLL - A Gateway to FIRST Robotics

June 22, 2016



LIGERBOTS
FIRST Team 2877

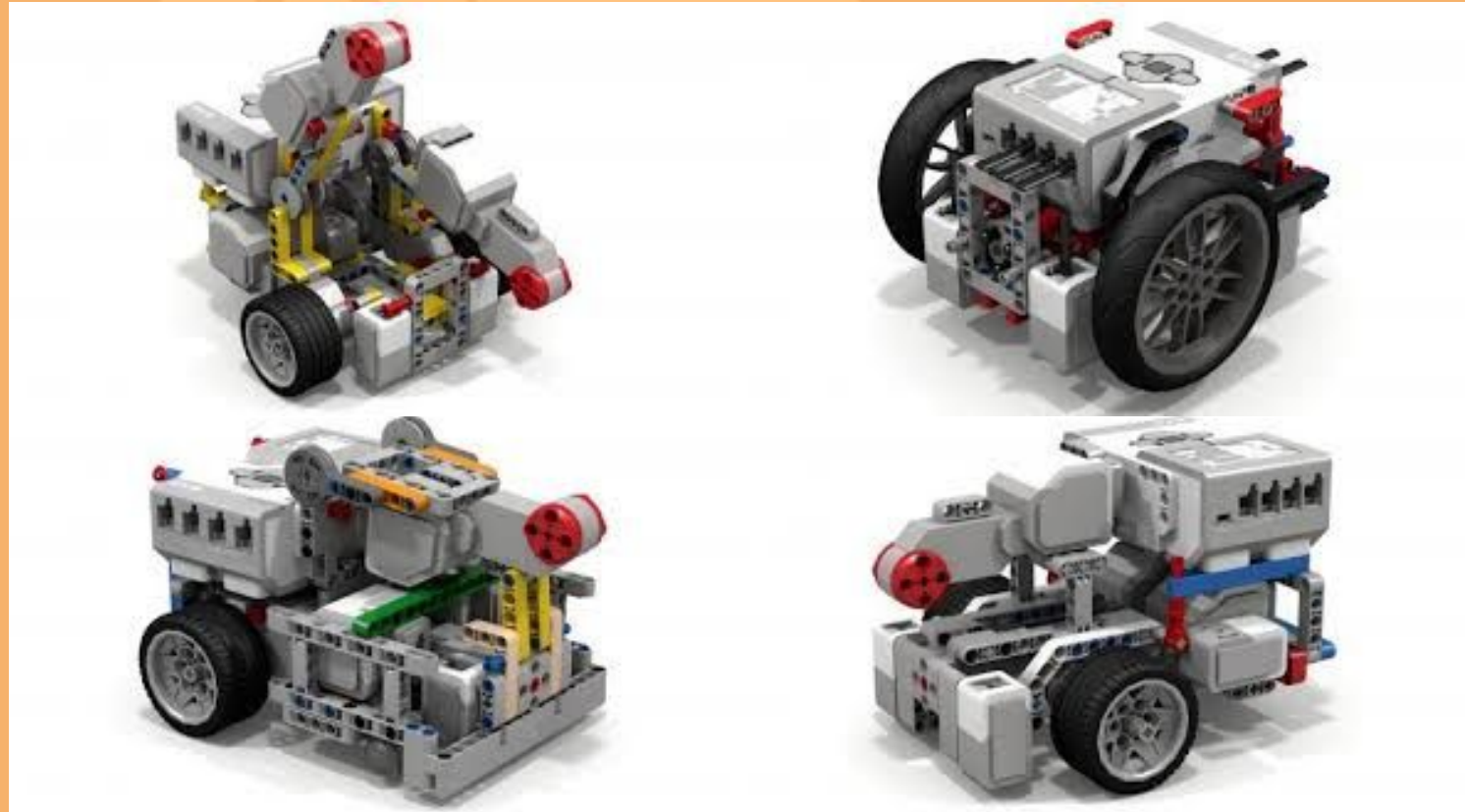
What is FLL?

<https://youtu.be/ydLJKFi0vHA>

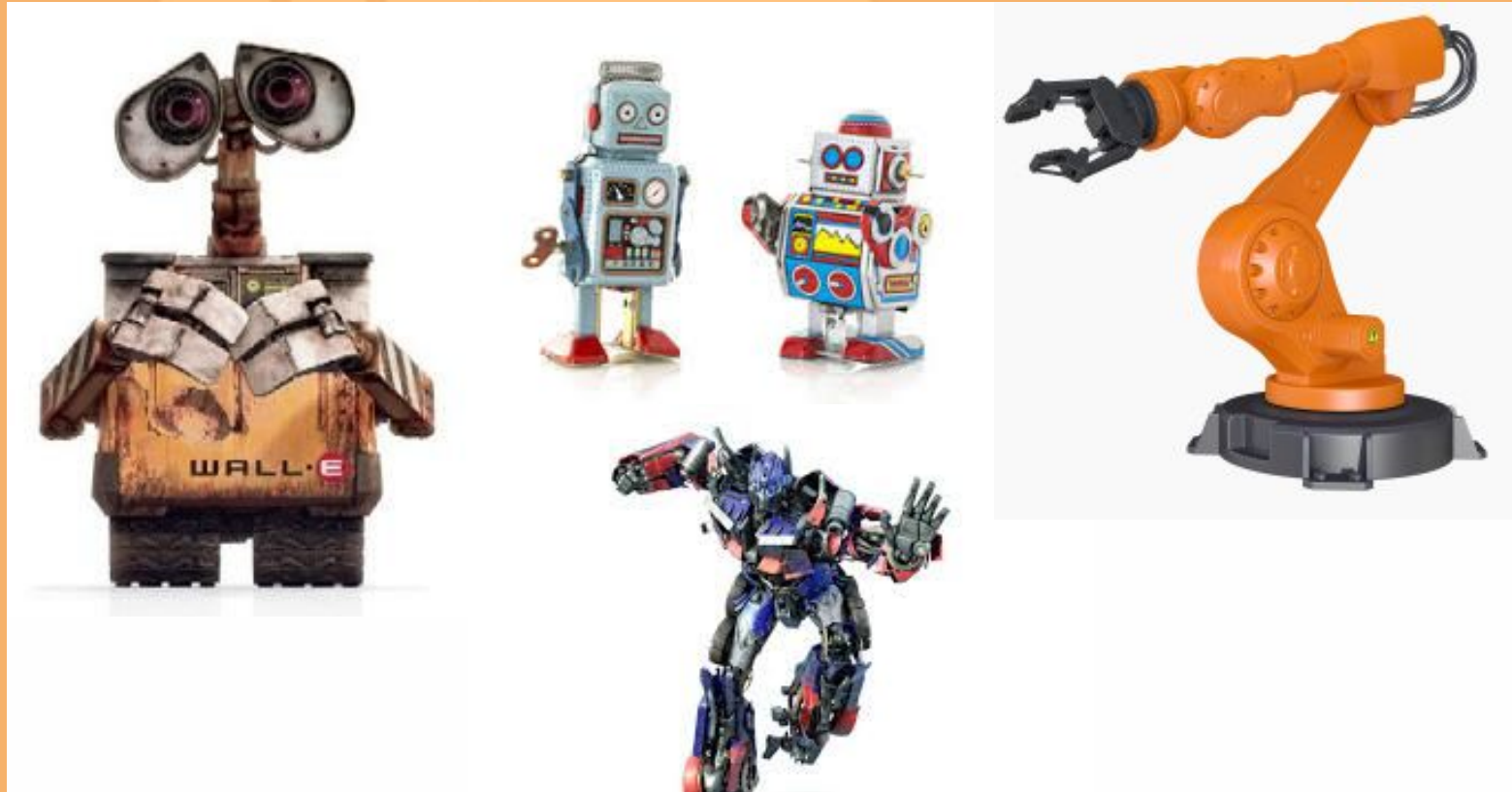


LIGERBOTS
FIRST Team 2877

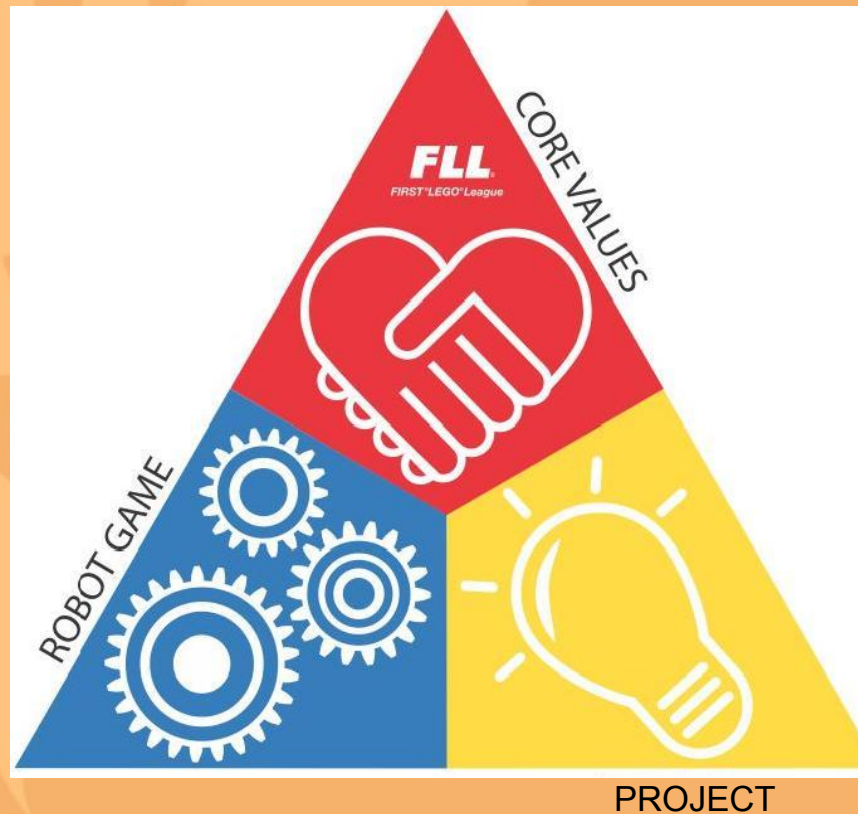
The Robots We are Talking About



The Robots We Are Not Talking About



The Three Components of FLL



The Project and Robot Game are what the children do. Core Values are how they do it.

The Team

- FLL teams have
 - 2 adult coaches
 - 4-10 students in grades 4 to 8
- Teams can be based in schools, organizations, or homes
- Students can only be on one team
- Teams compete in official and unofficial events



The Challenge

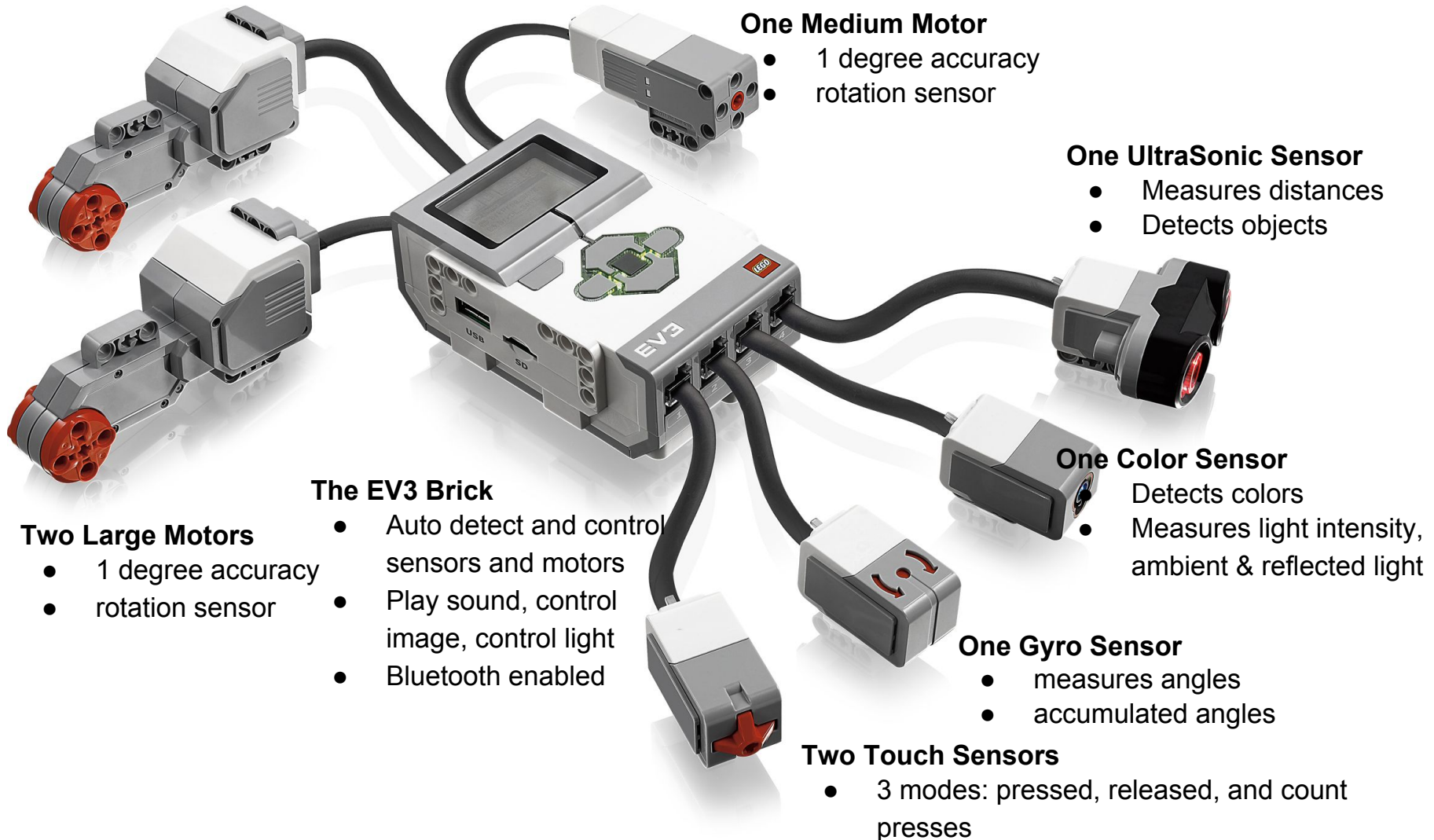
- Each year has a robot game and a project that share a common theme
 - Robot assembled from Lego parts
 - 4'x8' field layout is new every year
 - Research project proposes solutions to real life problems
- Challenge is announced in late August
 - This year is August 30
 - Detailed manual + highlight video



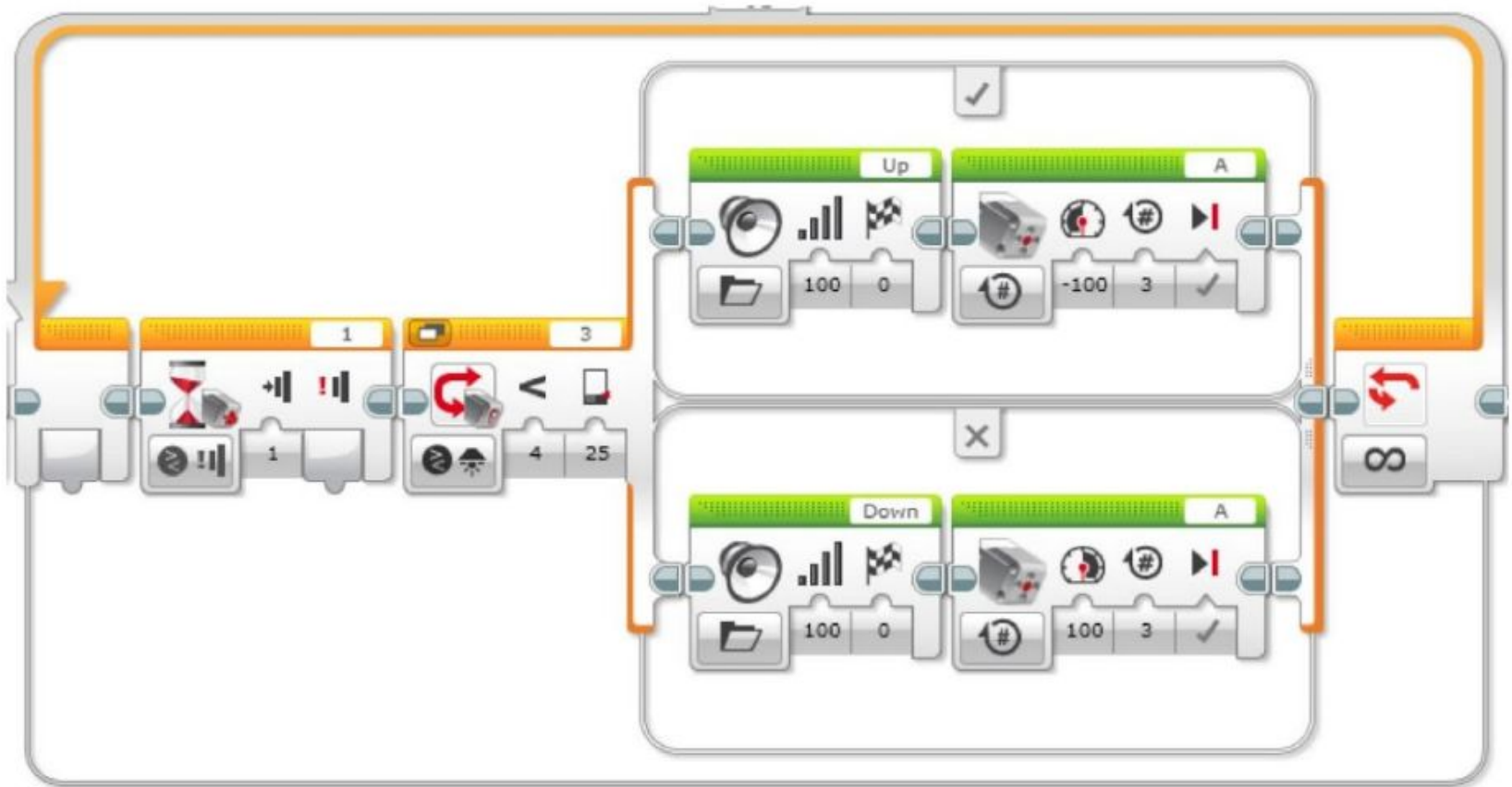
The Robot

- Start with Lego EV3 Kit
- Add parts to perform tasks
- Write software
- Robot is completely autonomous

EV3 Brick with Sensors & Motors



Intuitive Graphical Programming



Example of a loop which uses the touch sensor and color sensor to determine which sound file should be played, and which direction to move the small motor. Notice the use of icons which look like the sensors and motors on previous page, as well as dials and common symbols.

The Challenge

- Related to the theme of the competition
- Research real-world problems
- Develop an innovative solution
- Come up with a creative presentation



Season schedule



- Start up over the summer
 - Registration is open
 - Closes when slots are filled
 - Typically mid-September
- Challenge announced August 30th
 - Animal Allies
- Build-season is 10 weeks
- 1 to 2 afternoon meetings/week
- Cost depends on number of members, sponsorships



2015 Trash Trek: Project Video



<https://youtu.be/HhSXJ7bvSYQ?list=PLpaPRqT711tiysCIIVqZWBirBwIAjcYVT>



2015 Trash Trek Robot Video

Details are explained
in game manual



<https://youtu.be/akuN95EyXJk>



LIGERBOTS
FIRST Team 2877

2015 Trash Trek: Video of Game



<https://youtu.be/kRKiSFzmGSQ>

2015 Trash Trek: The Project

Real world question, kid
created solutions

Helps to improve public
speaking and
presentation skills

Has resulted in patents
and civic programs



<https://youtu.be/uyO5mD4pPyQ>

Hidden Agenda

Working with robots and developing a real world solution are nice, but the real benefits of being on the team:

- learning how to work together
- positively work through conflicts
- confidence even under scrutiny

Other benefits

- applied engineering concepts
- applied software development concepts
- applied prioritization & time management
- applied fun and achievement



Finding a team

- There is a small number of existing teams in Newton
 - School based, home based
 - Some will recruit new members, others are full
- Teams change every few years
- The number of teams does not meet the demand
- If you can't find a team - start one!



Starting a team

- Finding coaches
- Finding students
- Costs - \$500-\$1000
- Timeline - registration closes in September
 - often fills up before closing
- Registration process
 - Start on the FIRST website



Coaching a team

- You too can coach a team!
- Does not require a STEM professional
- Abundance of resources for coaches
 - FIRST web site, google, Youtube
- Other coaches will help - so will we
- Every technical problem has already been solved!
 - And it's all been captured on video



Team Activities

Team Building

- Icebreakers: Name Bingo, Pasta tower, low bar, name game, human robot...etc.
- Team name, logo, t-shirt design, banners, mascots...etc.
- “Yes, and...” exercises: practice agreeing, supporting, building
- Create decision making process to resolve conflicts

Robot Game

- Build 96” x 48” FLL table (detailed instructions are available online)
- Setup challenge field (August)
- Lego build challenges – vague problem, many solutions, compare approaches
- Programming tutorials - navigate obstacles, push item, pick up, target ... etc.

Project

- Practice project – Nature's Fury
- Research, brainstorm, present, document, and repeat
- Watch other team presentations



Team Member's Responsibilities

- Be positive to learn new subjects
- Be supportive of everyone
- Contribute to the team
- Respect coaches and others
- Do your share of the work and more
- Know your schedule & manage your time
- Make mistakes & share bad ideas (might not be bad)
- HAVE FUN!



Parent Responsibilities

- Communicate scheduling conflicts
- Be supportive, drive and pick up on time
- Be involved and motivate your child
- Lots of opportunities to help out (treasurer, graphics,
- Administration (T-shirt, fundraising, field trip, snacks, photos, videos, pit management, food, carpool, etc)
- Help with fundraising or to obtain sponsorship



Coach Responsibilities

- Encourage and structure the process, let the team develop the content
- Ask questions to encourage the team's thinking and problem solving
- Keep kids aware of the schedule
- Help learn skill in basic building and programming
- Help kids find resources for the project
- Read and understand the rules
- Balancing fun versus competition
- Keep parents informed

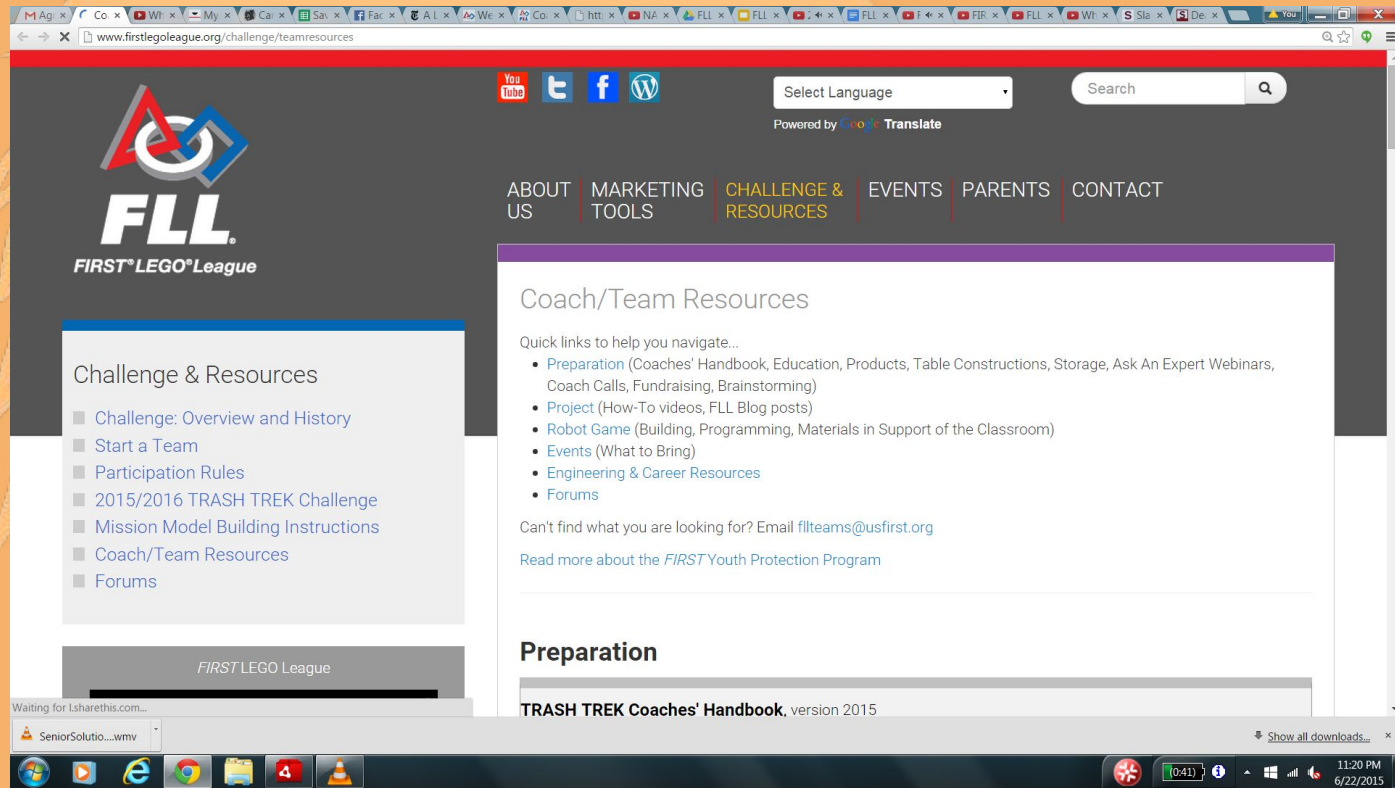


Not Coaches Responsibilities

- Build and program the robot
- Do research and design project solutions
- Make important decisions
 - The kids need to make the decisions
- Not a football coach
 - Don't call the plays
 - Winning isn't everything



Official FIRST[®] online resources



The screenshot shows the FLL (FIRST LEGO League) website. The header includes the FLL logo, social media icons, a language selector, and a search bar. The main navigation menu lists: ABOUT US, MARKETING TOOLS, CHALLENGE & RESOURCES (highlighted), EVENTS, PARENTS, and CONTACT. The 'Coach/Team Resources' section is active, displaying a list of links under 'Challenge & Resources' and 'Preparation'. The 'Preparation' section specifically mentions the 'TRASH TREK Coaches' Handbook, version 2015'. The browser's taskbar at the bottom shows various application icons and the system clock indicating 11:20 PM on 6/22/2015.

FLL
FIRST[®] LEGO[®] League

ABOUT US | MARKETING TOOLS | **CHALLENGE & RESOURCES** | EVENTS | PARENTS | CONTACT

Coach/Team Resources

Quick links to help you navigate...

- [Preparation](#) (Coaches' Handbook, Education, Products, Table Constructions, Storage, Ask An Expert Webinars, Coach Calls, Fundraising, Brainstorming)
- [Project](#) (How-To videos, FLL Blog posts)
- [Robot Game](#) (Building, Programming, Materials in Support of the Classroom)
- [Events](#) (What to Bring)
- [Engineering & Career Resources](#)
- [Forums](#)

Can't find what you are looking for? Email flteams@usfirst.org

[Read more about the FIRST Youth Protection Program](#)

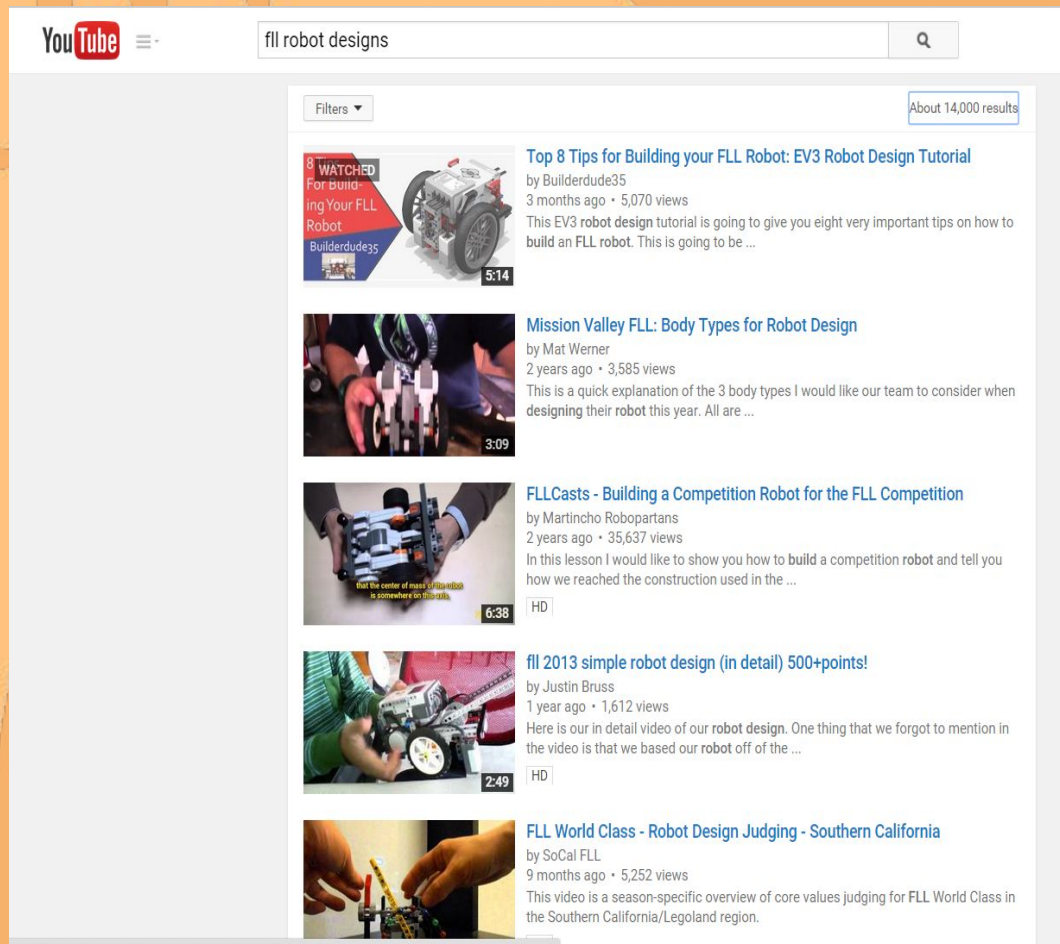
Preparation

TRASH TREK Coaches' Handbook, version 2015



LIGERBOTS
FIRST Team 2877

Youtube - FLL robot designs



The screenshot shows a YouTube search results page for the query "fll robot designs". The page features a list of five video results, each with a thumbnail, title, channel name, upload date, view count, and a brief description. The first video is "Top 8 Tips for Building your FLL Robot: EV3 Robot Design Tutorial" by Builderdude35, which has 5,070 views and is 5:14 minutes long. The second video is "Mission Valley FLL: Body Types for Robot Design" by Mat Werner, with 3,585 views and 3:09 minutes. The third video is "FLLCasts - Building a Competition Robot for the FLL Competition" by Martincho Robopartans, with 35,637 views and 6:38 minutes. The fourth video is "fll 2013 simple robot design (in detail) 500+points!" by Justin Bruss, with 1,612 views and 2:49 minutes. The fifth video is "FLL World Class - Robot Design Judging - Southern California" by SoCal FLL, with 5,252 views. The page also includes a search bar at the top, a filter button, and a result count of "About 14,000 results".

YouTube

Filters

Top 8 Tips for Building your FLL Robot: EV3 Robot Design Tutorial
by Builderdude35
3 months ago • 5,070 views
This EV3 robot design tutorial is going to give you eight very important tips on how to build an FLL robot. This is going to be ...
5:14

Mission Valley FLL: Body Types for Robot Design
by Mat Werner
2 years ago • 3,585 views
This is a quick explanation of the 3 body types I would like our team to consider when designing their robot this year. All are ...
3:09

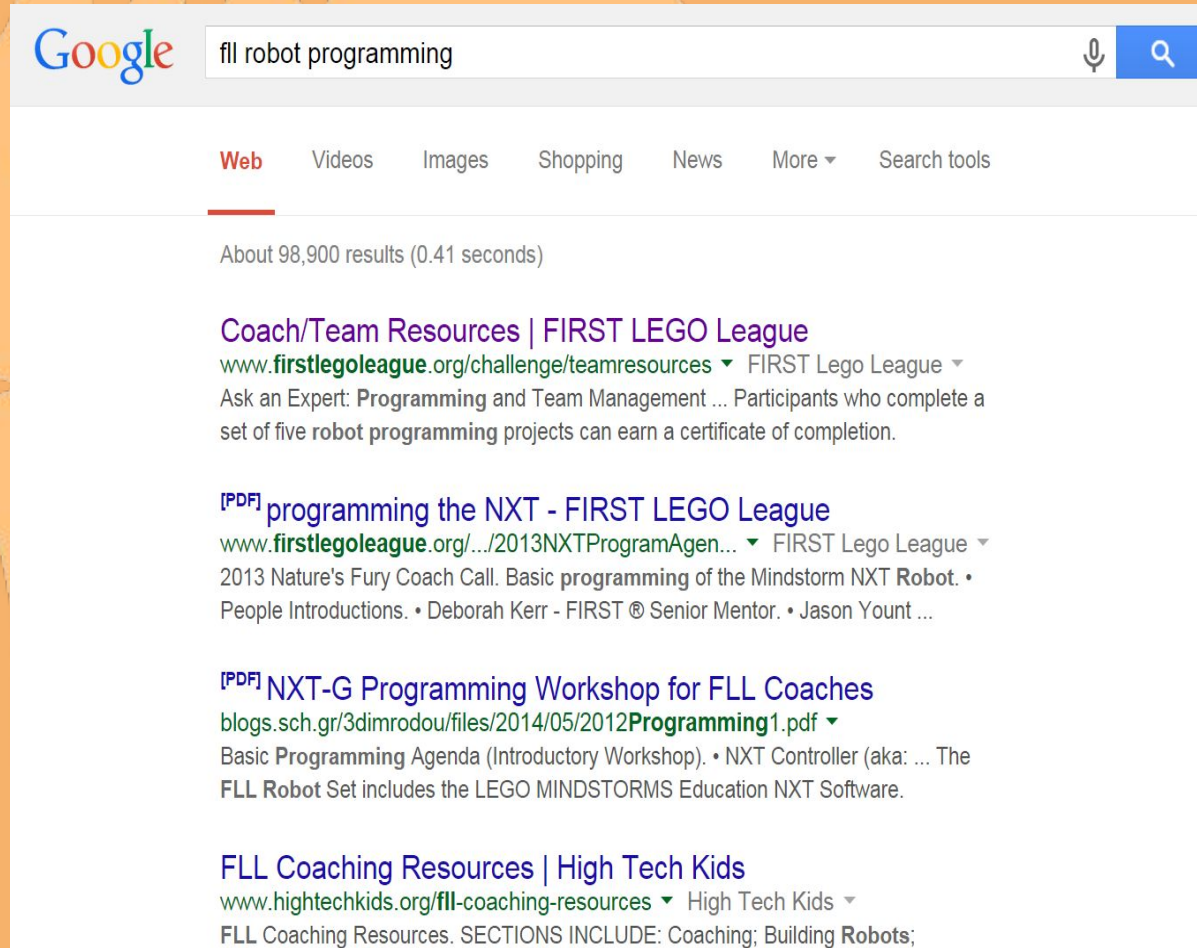
FLLCasts - Building a Competition Robot for the FLL Competition
by Martincho Robopartans
2 years ago • 35,637 views
In this lesson I would like to show you how to build a competition robot and tell you how we reached the construction used in the ...
6:38 HD

fll 2013 simple robot design (in detail) 500+points!
by Justin Bruss
1 year ago • 1,612 views
Here is our in detail video of our robot design. One thing that we forgot to mention in the video is that we based our robot off of the ...
2:49 HD

FLL World Class - Robot Design Judging - Southern California
by SoCal FLL
9 months ago • 5,252 views
This video is a season-specific overview of core values judging for FLL World Class in the Southern California/Legoland region.



Google - FLL robot programming



Google fll robot programming

Web Videos Images Shopping News More Search tools

About 98,900 results (0.41 seconds)

Coach/Team Resources | FIRST LEGO League
www.firstlegoleague.org/challenge/teamresources FIRST Lego League
Ask an Expert: **Programming** and Team Management ... Participants who complete a set of five **robot programming** projects can earn a certificate of completion.

[PDF] programming the NXT - FIRST LEGO League
www.firstlegoleague.org/.../2013NXTProgramAgen... FIRST Lego League
2013 Nature's Fury Coach Call. Basic **programming** of the Mindstorm NXT **Robot**.
People Introductions. • Deborah Kerr - FIRST © Senior Mentor. • Jason Yount ...

[PDF] NXT-G Programming Workshop for FLL Coaches
blogs.sch.gr/3dimrodou/files/2014/05/2012Programming1.pdf
Basic **Programming** Agenda (Introductory Workshop). • NXT Controller (aka: ... The FLL Robot Set includes the LEGO MINDSTORMS Education NXT Software.

FLL Coaching Resources | High Tech Kids
www.hightechkids.org/fll-coaching-resources High Tech Kids
FLL Coaching Resources. SECTIONS INCLUDE: Coaching; Building **Robots**;





Panel Q&A

