

**Summer Robotics Programs**  
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# Summer Robotics Programs

## 1. Types of Summer Robotics Programs

There are two ways to attend a summer robotics program that is as a teacher or as a student. The past two years I have attend two different summer robotics programs as a student and have learned immensely from them. This year I will be teaching two different robotics tracks at two different conferences. This is where the types of robotics programs come into play

### 1.1 Themed Summer Robotics Programs

There are some summer robotics programs that are themed. For example I am teaching a robotics track at a state 4-H camp and it is themed after the Mars Rover. I am to build a Lego Mindstorms example of the Mars Rover and teach the campers about what the Rover does, how it is built, how it is programmed ect.

This is an example of a Themed Summer Robotics Program

### 1.2 Project Summer Robotics Programs

Other summer robotics programs come as a track inside a summer conference. These tracks are either themed or project based. For example at the second robotics camp I am teaching at this year we will be building an autonomous robot which I have submitted the plans for to the Robotics Showcase for NCER. This would be a project based summer robotics program where a problem is found, solutions are brainstormed, and an end product is made.

This is an example of a Project Summer Robotics Program

## **2. Summer Robotics Program Materials**

When teaching summer robotics programs usually you are dealing with teenagers and kids who haven't really done anything with robotics before. If you are indeed teaching such students then a good easy to use system is the LegoMindstorms™ set. LegoMindstorms™ come with a set of legos, sensors, programming software, and a book of robot ideas. This set is very easy to teach from with its many different guides to teaching and robot ideas. The sensors work great but aren't as complicated as the ones from the Botball kits though we have used them in the past with the Lego RCX. Then also the programming software is a very simple drag and drop system that isn't as precise as C++ but a lot of fun if you're just messing around or teaching a summer robotics program.

## **3. Organizing A Summer Robotics Program**

There are several things that should be done to organize (i.e. put together) a summer robotics program. First you should brainstorm the program itself. Who are you teaching to? This will help you decide a lot of what you teach and how you teach it. If you are teaching to a younger audience you probably need to have a complete building plan and the whole program planned but be open to some creativity by the kids. With teens though you can be slightly more flexible and allow them to build on their own and figure out what they need to do on their own. Basically saying that themed programs are better for the younger kids and project programs are better for teens. But either can be used with either age group. Before getting down to the work of the summer program things that are good for getting the groups ready for the building and learning are teambuilding games. Teambuilding exercises are great to break the ice between kids who don't know each other and also to build trust between the attendees. Make sure that you know the subject that you're teaching and you will be able to further someone else's knowledge of robotics.

## **4. Different Summer Robotics Programs I Have Participated In**

The robotics programs that I have been involved with have been based mostly with the LegoMindstorms kits and/or the ROBOLAB kits. We typically start out with a standard Roverbot and program it to follow a line, then we move on to more complicated tasks such as moving until it sees a line then navigating away from that line, we have also done a program that involved crossing terrain such as the same texture as that of Mars. I have also planned a robotics workshop where the kids are split up into groups of 4-7 depending on size and then told to brainstorm problems that could be solved by using a Mindstorms robot and then given the task of building and programming those robots to solve the chosen problem. These are just a few of the summer robotics programs that I have been involved in and I am also starting next year to begin working on a program that will involve the Botball kits, that will teach kids who already know how to use the Mindstorms a more advanced form of robotics and sensory skills.