

## EXTREME BOTS AND BUILDING PARENT SUMMARY

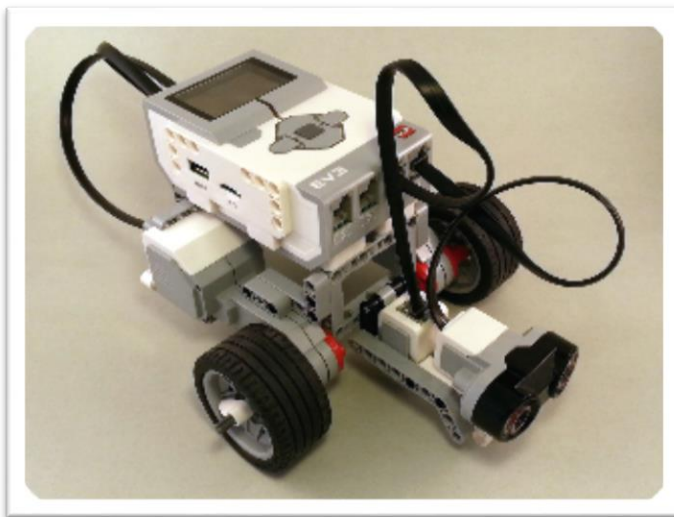
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This camp will be filled with some of the most exciting builds our campers have ever seen! We are offering different LEGO® boxes and activities with this camp. The builds offered are for the best and most talented Lego builders! Scratch, Alice, Lego technics, WeDoBots, and EV3's all combined into one great week of camp! How could any kid resist?

### EV3'S

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EV3's are the latest in the evolution of MINDSTORMS® by LEGO. The software is more focused on equation based programming sequences than the previous version, the NXT's. These robots take a little more reasoning thought to accomplish a moving machine. Our children are up to the challenge! They are being exposed to logical , reasoning thought processes at a much younger age than we were.



The first robot that Extreme builders will make is called **Riley Rover!** This rover will face challenges while exploring an unknown planet. For each challenge students will change out and program different sensors that will help them navigate foreign terrain, how to identify and maybe move around obstacles that might be faced on another planet.



Once the students have become fluid in their programming abilities they will have the opportunity to build a larger robot from the MINDSTORMS® EV3 Core Set. **Gyro Boy** will balance on 2 legs with the help of the gyro sensor. The **Puppy** bot has 8 different behaviors that can be programmed the goal being to feed and pet the puppy making him happy. Once he becomes happy the program resets. The **Robot Arm** knows

when to pick up items by the number of buttons manually pressed on the computer brick itself. Your child might choose the **Color Sorter**. It uses the color and touch sensors to load and move colored bricks.

#### MOTORIZED BUILDS:

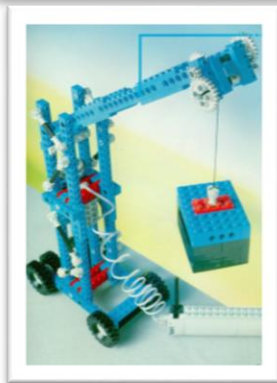
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LEGO® technic bricks allow your child to build several Extreme Bots! Take the **Goliath** bot. It is built around a gear housing that will move the legs and the arms causing it to walk!



The **Monowheel** also employs gear housing as a means of turning the monowheel around and around. Neither of these two bots move fast but they are fascinating to watch! Your student will have to use reasoning and patience to complete both of these builds, they are involved building activities.



The **Crane** is not the hardest build we are offering but it could be the most fun! Your child will learn about the Jib, Slewing Unit, the Mast and Lifting Capacity as they build the crane. Using objects found around the camp students will experiment to find out the lifting capacity.



We would be surprised if you didn't recognize the **Snow Walker** from one of the greatest movies of all time! Do you know which one it is? This motorized robot uses a pulley system to move the gears and levers that make the bot move.



The **Sky Car** is extremely fun to experiment with. It uses compound gearing and a great pulley system to navigate its way across the room on a thin rope. How high can the sky car pull itself up to the docking station? The answer will depend on the weight of the car itself and the rope used carry it across the room. A thin, weak rope will not have the strength to remain taunt the higher the car goes. How much power does the motor have would be another factor.

Ask your student what they thought the limitations of the car was once they are done experimenting with it.

## PROGRAMMING

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To round out your child's learning experience in Extreme Bots and Building we offer 2 different coding experiences.



**Scratch** programming is a fun and entertaining way to learn more about the thought processes needed for clarity and precision to create productive command sequences. We know, it sounds like a mouthful! It's surprising to think that we use sequences of steps every day without even thinking about it, like, just getting out of bed!

So easy to do when you don't have to think about it. But when you try to tell a computer to do something you need to be very clear with a command and its parameters.

Well, how do you teach children to use sequence thought to make something happen? You disguise it as fun!!

Scratch the website is [https://scratch.mit.edu/scratch\\_1.4/](https://scratch.mit.edu/scratch_1.4/). This is a free download!



We also offer **Alice**! This program teaches students how to program down to the tiniest detail. Moving arms, blinking eyes and wiggling toes lend a more lifelike look to the characters your student creates. Alice is also a free download. Feel free to take a look! <https://www.alice.org/>

