

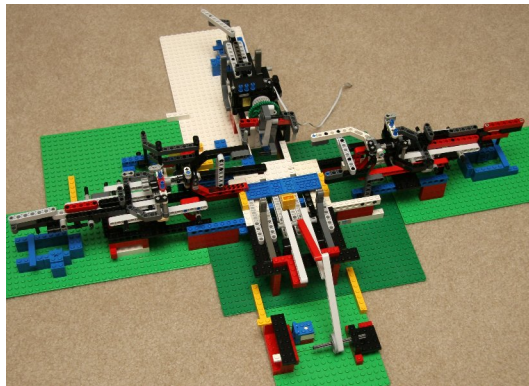
Phoenix

Our “robot” does what many humans cannot. The Rubik’s Cube has fascinated millions around the world. There are 43 quintillion possible arrangements, but only one is the solution. Many variations of the Rubik’s Cube have been made, but we are working with the most common 3x3x3.

The robot uses 4 motors and 3 servos. Two arms work together to turn the entire cube and a separate arm can turn the cube or turn a single face. All of the arms can move in and out to allow room for another one to come in. At its max length (from tip to tip), the solver is about 64 cm. A base holds the arms about 7 cm above the surface. The XBC camera is used to identify the 6 colors, and is mounted above the cube. The XBC itself controls the motors/servos.

The program does not find the shortest possible solution. Instead, it uses a method a human would use. The program uses the camera on every step. The white side is always solved first, the yellow following, but this is because that is how the programmer solves it.

This robot was built and programmed by Alex and Nafis respectively. However, they helped each other along the way. Nafis sorted the kit to make it easier for Alex to build, and Alex added color-sensing functions to make it easier for Nafis to program. They both know how to solve the Rubik’s Cube using similar methods, making it easier to explain ideas.



Only one motor is shown in the pictures.

