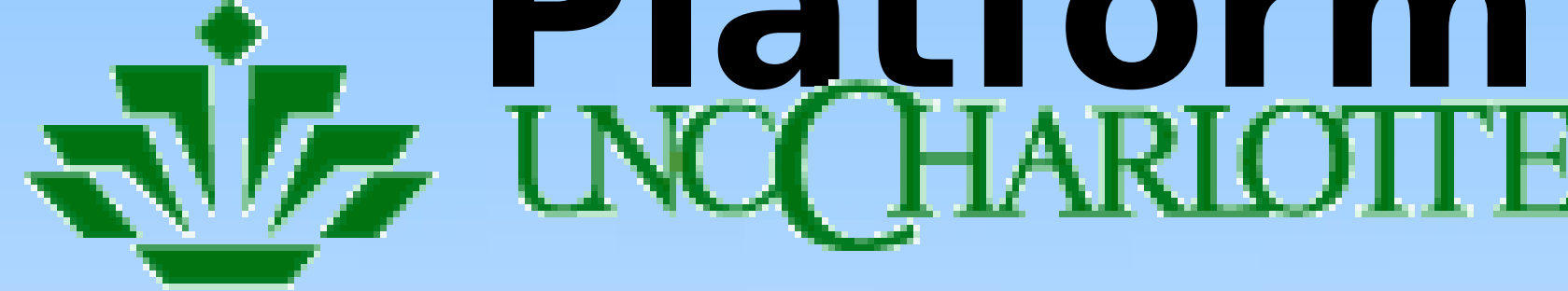
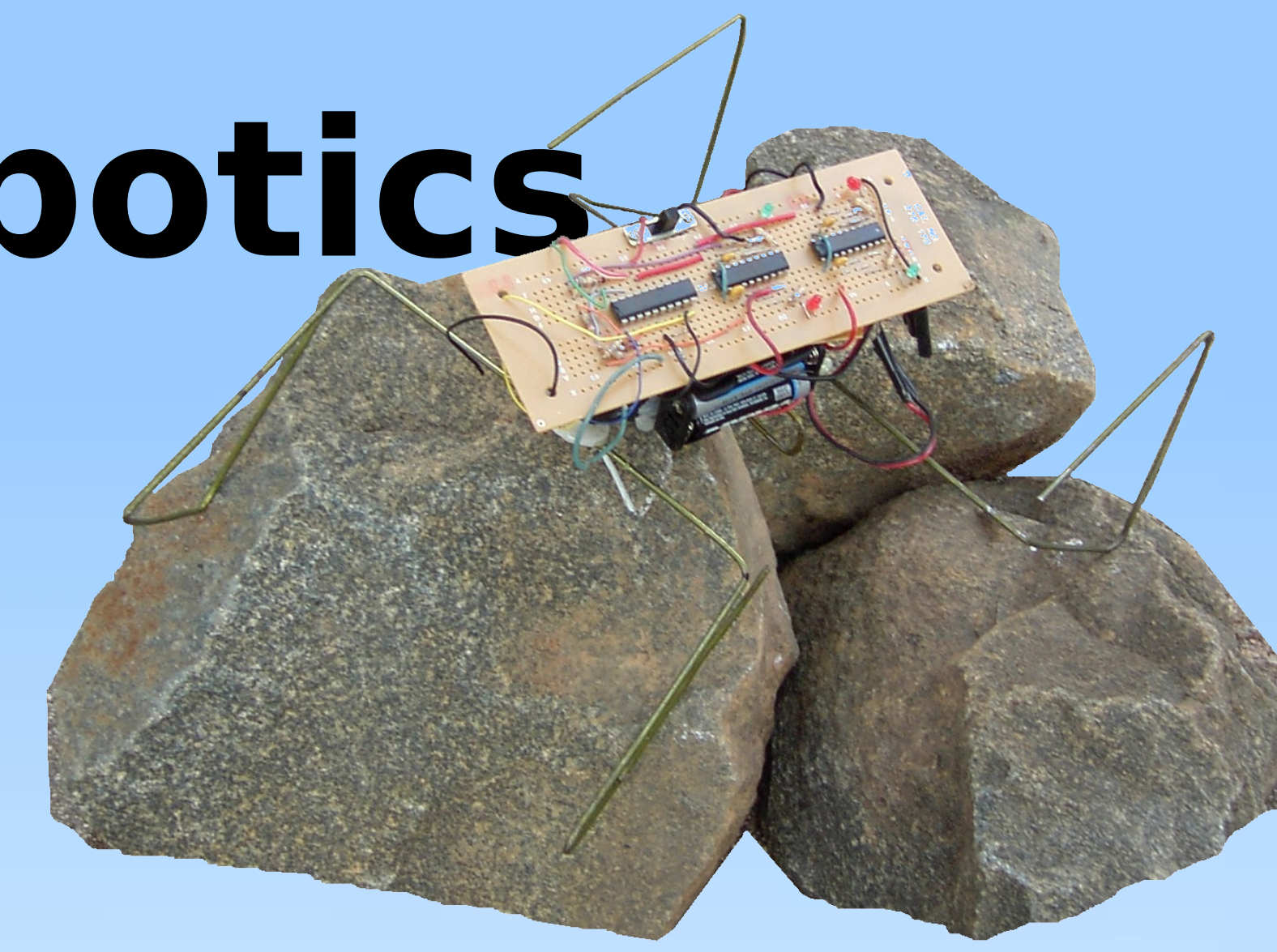
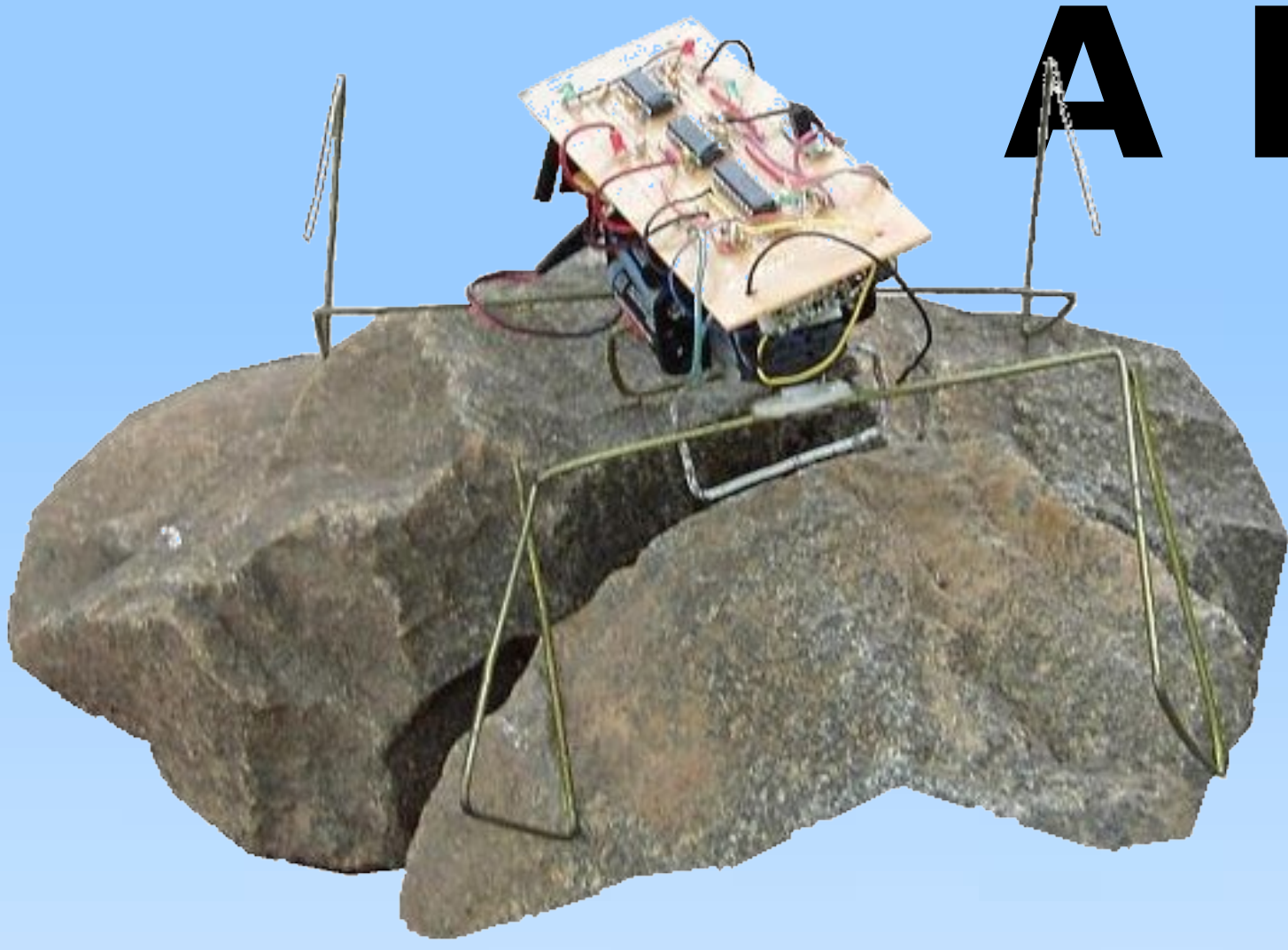


A Biology, Electronics, Aesthetics, Mechanics Robotics

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Introduction

Robots are great tools. They:

- Do repetitive tasks flawlessly and cheaply
- Do things that humans would rather not, or cannot do

- Can be used for exploration

Most robots have some type of human control, whether it be programs or a telerobotic link.

Purpose

This project was designed to:

- Integrate B.E.A.M. robotic technology with other forms of robotics
- Create an overall more effective robot for exploration
- Develop a remote controlled B.E.A.M. robot with more

capability than normal telerobotics projects

BEAM Technology

B.E.A.M. is an acronym that describes a certain type of robot. Taking notes from nature, B.E.A.M. robots are very adaptive yet simple, autonomous, and usually only take care of themselves. The base of a B.E.A.M. walking robot is the Microcore.

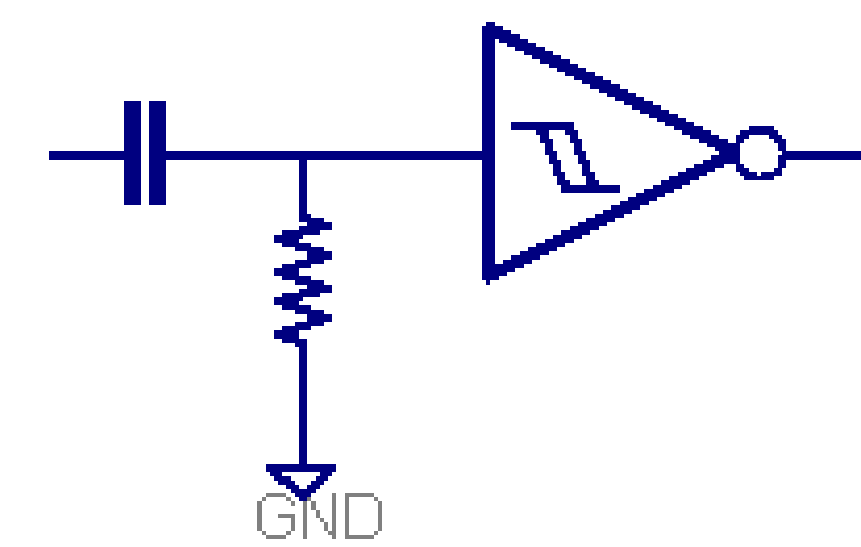


Figure 1. Microcore.

Bicores are made by stringing two Microcores together. This creates a central pattern generator that can control a motor.

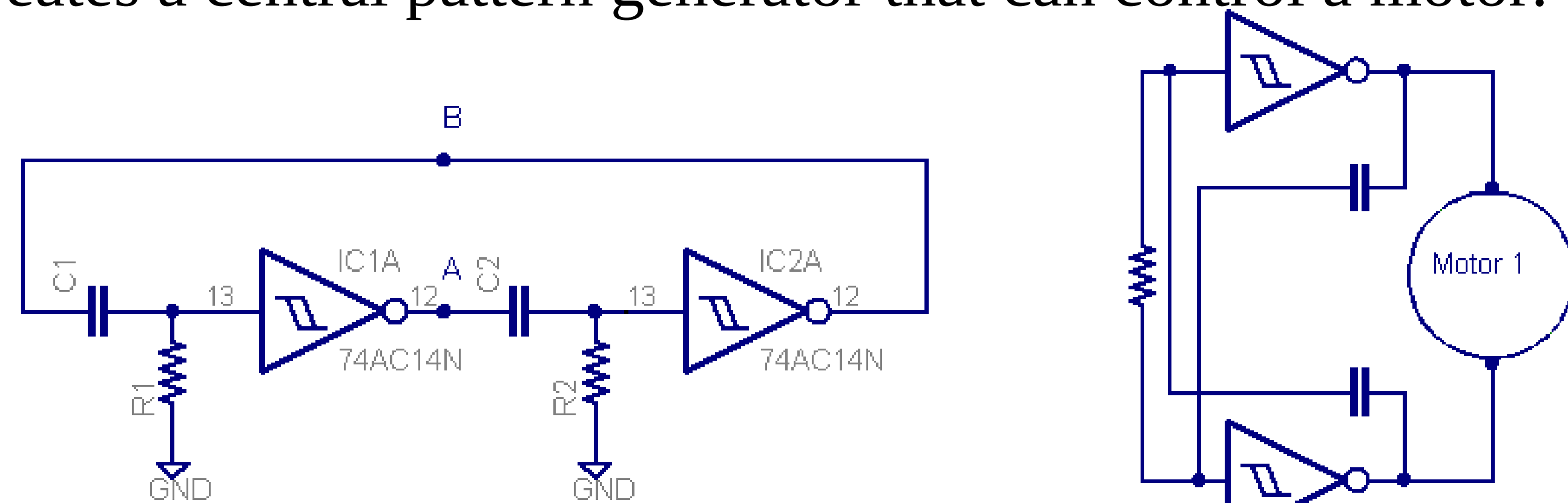


Figure 2. The ways to show a bicare.

Stringing two Bicores together makes it possible to have a very adaptive, two-motor walking robot. This is the base of the project.

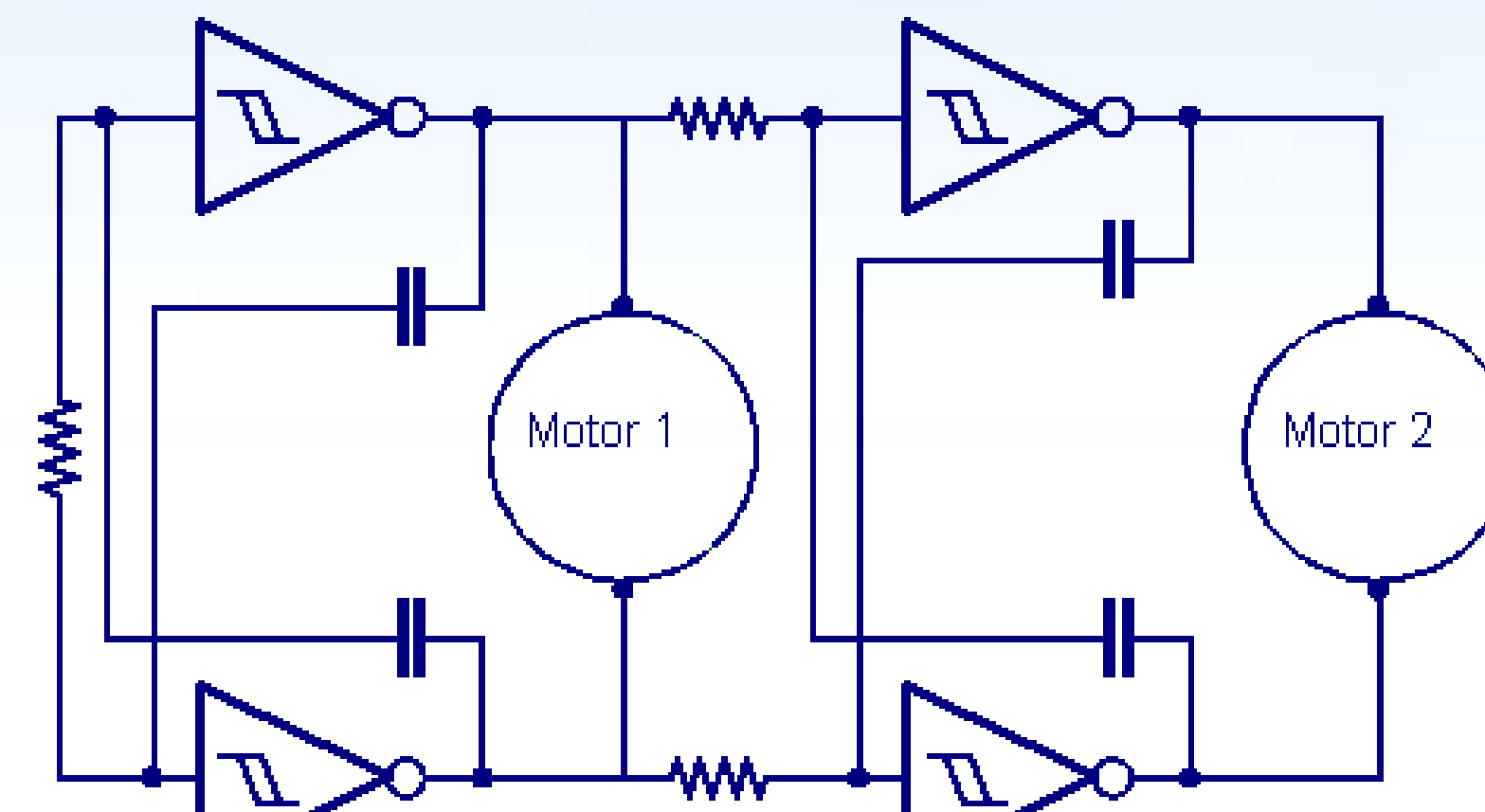


Figure 3. Master/Slave Bicare.

Adding Functionality

Functionality was added by interfacing two modules to the basic two-motor walker. A reverse-and-turn circuit was added in case the robot gets into trouble. A second module was designed for forward turning and is mainly controlled by the user.

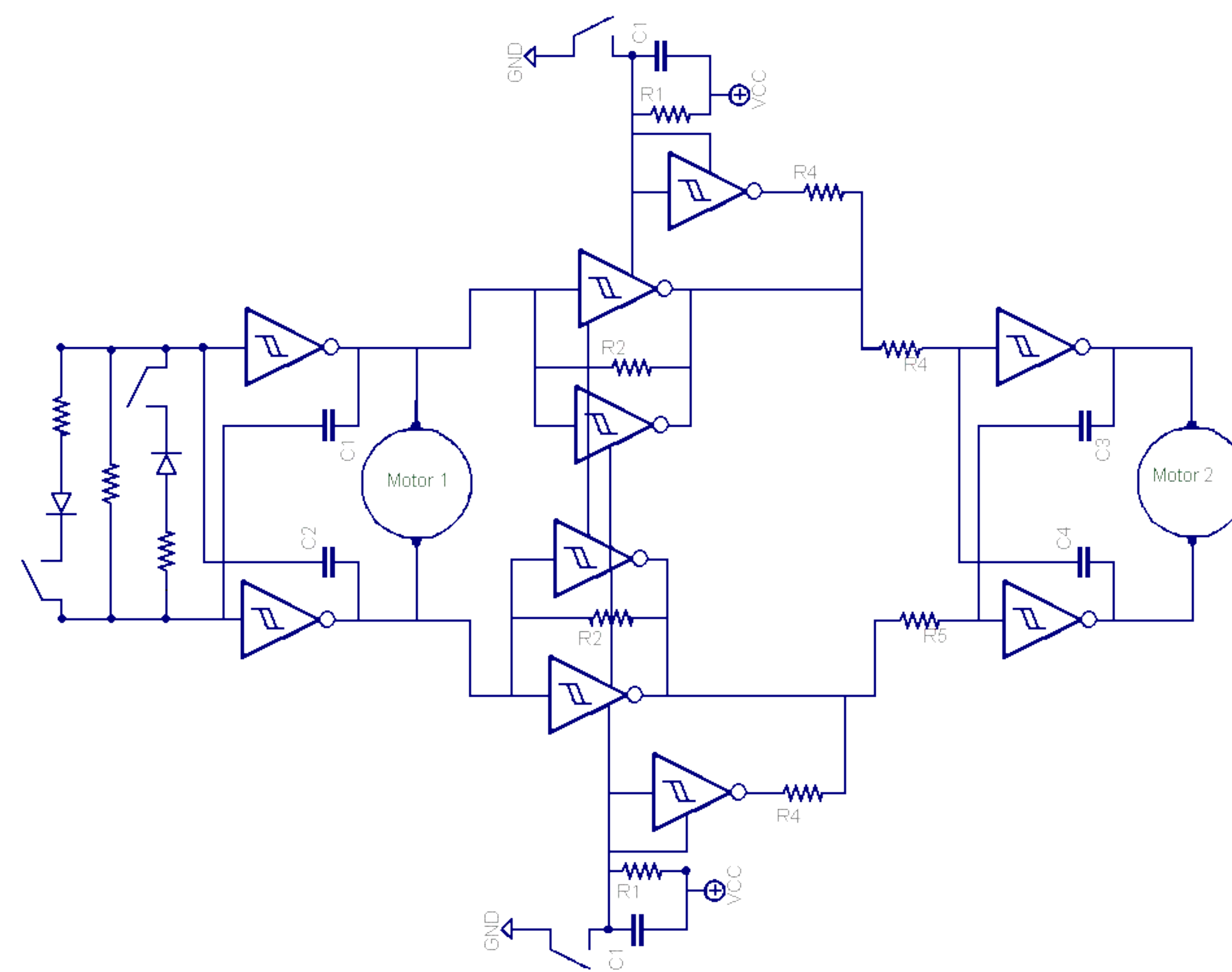


Figure 4. Master/Slave bicare with reverse and forward directional control.

Interfacing

Interfacing was done with a Maxim bilateral relay chip. The inputs of the relays are connected to the outputs of the radio receiver. The switch sensors of the robot are connected to the relays in the chip. This way, the user can directly influence the robot from a distance.

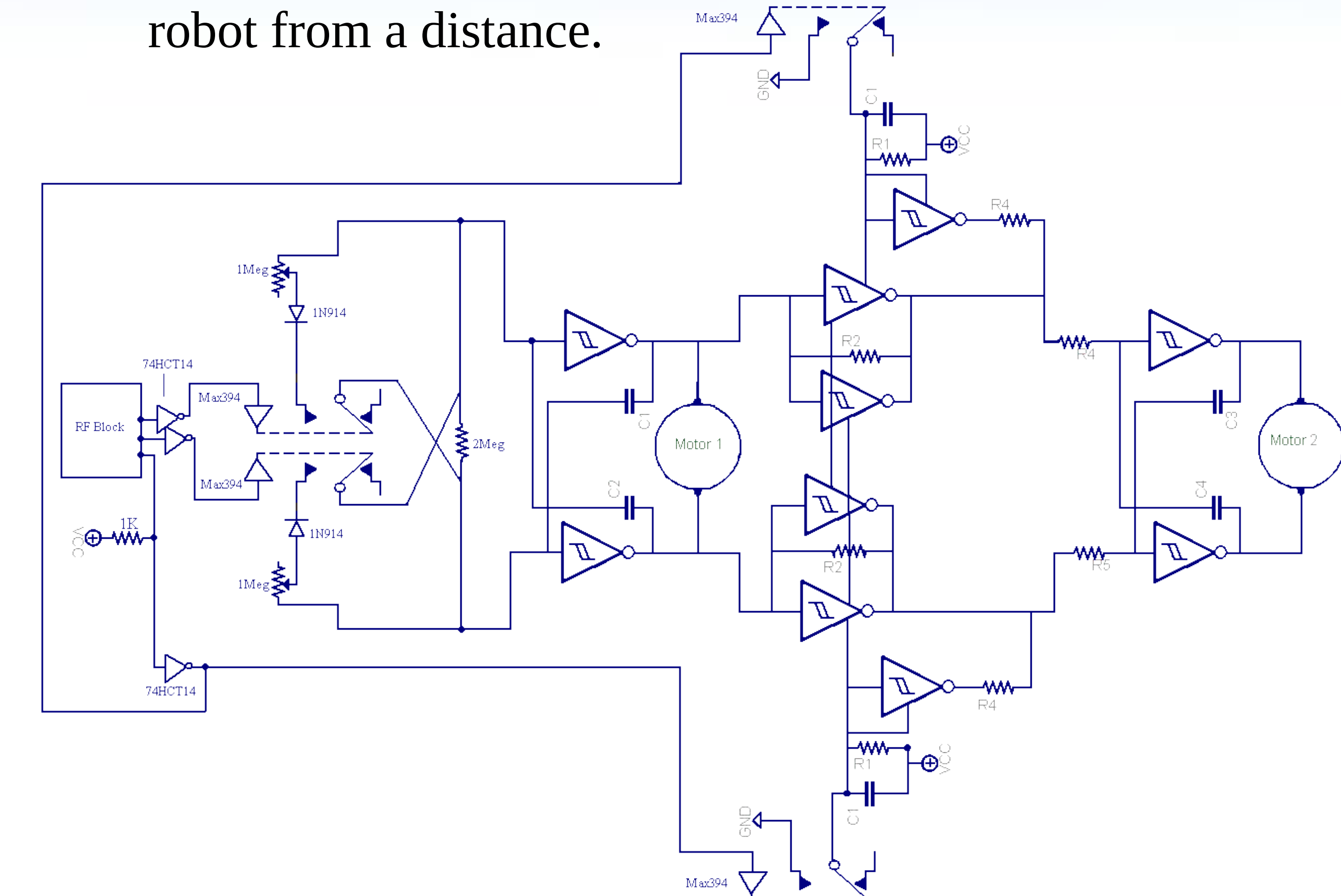


Figure 5. Full robot circuit with interfaced RF module.

Conclusion

- The B.E.A.M. robotic base adds to the robot's overall effectiveness by taking care of itself more than other telerobotic projects, yet still offers the flexibility of human control.
- The mechanics of the B.E.A.M. base allows it to be more capable in rough terrains.
- The radio receiver gives the robot a "driver," thereby giving it a purpose other than self preservation.

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