

# **BUMPING ROVER**

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# ABSTRACT

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This project is a simple robot car model driven by two stepper motors and guided by an impact sensing mechanism, based on an inductive sensor. A castor wheel is mounted on the front part of the model. A single 12V 4Ah lead-acid sealed battery powers the entire system. A PIC 16F84 micro controller directly controls the stepper motor system i.e. feeds the actual phase sequence outputs, and interacts with the inductive sensor. The user just has to press the mounted rocker switch and the model takes off on its own. The model travels in a straight line and upon impact on an object the inductive sensor/bumper unit detects this collision and transmits a signal to the micro controller. The micro controller immediately stops the motors and reverses their drive direction. After travelling a short distance backwards, the controller commands the motors to steer the model in a different direction and to carry on driving forward thus avoiding the object that it had just collided into. There is no dedicated steering mechanism; the castor ball in front serves solely for support. Since the stepper motors are independently driven, and not connected together with a common shaft it is possible to have one motor rotate forward while the other reverses. The effect is that the robot model steers around, almost on its axis, to a different direction.

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