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Voice-controlled robotic arm platform

**Abstract**

This project will be primarily composed of a simple robotic arm mounted on a 4-wheeled chassis to allow it to navigate its environment. The arm will be based on a 360-degree swivel mount, and will actuate at two points with a grasping mechanism at the end for a good degree of free motion. The intent is for the robot to be controlled by a simple Android application interface on a user’s mobile device over Bluetooth.

In addition to the direct controls featured on the application, the app will also feature voice recognition to allow the user to perform all application functions (move the robot forward, turn, actuate the arm by x degrees, close the grasping mechanism, etc.) only by speaking to their mobile device using a library of pre-defined commands. The system also has potential to support other user languages than English, such as Vietnamese and Mandarin. For the purposes of safety, the robot chassis will feature a front-mounted distance sensor, to prevent it from colliding with objects while moving forward, in addition to sensors in the grasping mechanism to ensure proper gripping of the desired object. Another feature will be a series of annunciation systems, such as lights to make others aware of the robots presence, indicate its direction of travel, and aural alarms when backing up or grasping an object.