**A Simple Programming Interface between the Botball™ CBC and the Android™ Operating System**
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# A Simple Programming Interface between the Botball™ CBC and the Android™ Operating System

## 1. Abstract

Robotics has found applications within a large range of fields, including military, law enforcement, and assistive applications. The success of a particular robotics platform in part rests on its programming flexibility. The easier the robot is to program, the more adaptable it is to changing field situations. We have found the CBC is an ideal platform for robotics, but like similar small controllers it needs a computer to modify any programming. This fact makes in-field modifications difficult, as laptop computers take significant resources to charge and maintain, and are often larger than the robots themselves. Our method uses a simple interface that builds on the strengths of the CBC platform as well as the Android™ OS to provide a small, pocket-sized way to reprogram robots in the field

## 2. Method

As a test device on the programming end we used a Motorola DROID™ running Android™ OS 2.1. Our method exploits two things that both the CBC and the DROID have in common: a LINUX-based operating system and USB communication. The actual process is very simple. With a micro-SD memory card inserted, the DROID provides pass-through USB access that can be used by the CBC. In fact, it is the CBC's ability to use a USB flash drive and its on-board compiler that makes this possible. The method steps are as follows:

A. Programs are entered in plain-text on the DROID and saved on the SD card. Android C-compiler apps are also available.
B. The SD card is unmounted from the Android OS, allowing CBC access.
C. The program is downloaded and compiled from the CBC program menu.
D. The DROID may be disconnected at this time if needed.
E. CBC robot program can be run.
F. SD card is re-mounted to DROID to allow access to change program.

## 3. Future Work and Improvements

Our final goal is to make a script that will automate the mount-unmount-remount process, as it is time-consuming and difficult for an average user. We also see an Android app in the future that can directly upload programs to the CBC much like the computer software that does the same for Botball.