**Motivation**

This system is designed to provide the ultimate experience for a typical “couch potato.” It eliminates the need for a remote and performs dynamic actions on the television based on sounds occurring near the set-top box. These features provide a comfortable viewing experience for the viewer.

The system is able to simulate the actions from a typical remote control. It can also detect sounds and volume changes in the environment to dynamically change the television settings based on what is going on in the room. For example, if the room becomes noisy, the volume will be adjusted accordingly.

**Example Scenario:**
1. A television is on and a conversation is taking place.
2. The noise level in the room starts to grow.
3. After some time, the volume of the television goes down because the system realizes people are talking.
4. The conversation ends.
5. The volume returns to normal since the conversation is over.

**Development Environment**

- **Hardware:**
  - Motorola VIP 1970 Set-Top Box (STB)
  - High Quality Microphone
  - Linux-Based Computer acting as an Infocast Server

- **Software:**
  - Java Development Environment
  - CMU Sphinx-4 Speech Recognition Framework
  - JavaScript Language with AJAX
  - KreaTV Application Platform

**Existing Infrastructure:**
Network with DHCP server

![Architecture Diagram](http://www.linuxdevices.com/files/misc/motorola_kreatv_arch.jpg)

**Architecture**

The following are graphs generated from test data to gauge the accuracy of the system.

The graphs on the left show that our system yields very high accuracy when commands are given within a short distance from where the microphone is located. Testing was done with one male and one female voice sampled ten times per command, each.

Response time from the time a command is issued to the time that the command is acted upon by the STB is comparable to those issued by a standard IR remote.

![Accuracy Graphs](http://www.linuxdevices.com/files/misc/accuracy_graphs.png)