Mahalia, an Open Hardware Hearing Aid Platform

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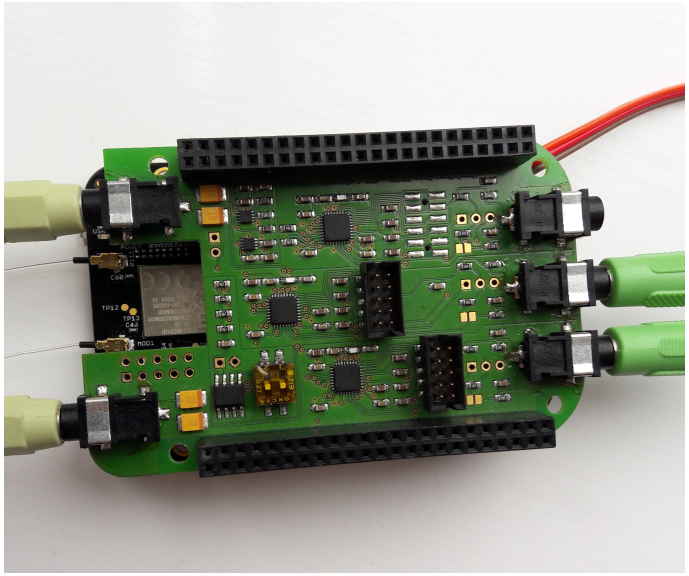
What is demonstrated

Cape4All combines three stereo codecs to create a six-channel full duplex audio board for the BeagleBone. Mahalia is a single-purpose build of Debian with realtime kernel support for the Cape4All board and the openMHA suite of tools for multi-microphone hearing aid research.



Hardware Information

* BeagleBone Black (WiFi or Bluetooth optional)
* Cape4All uses 3x Analog Devices ADAU1761

What was improved

* Field trials of hearing aid algorithms help prevent premature optimisation for miniature hardware. Tiny devices make hardware mistakes very costly!

* Much lighter for the user to carry than the previous generation of laptop-based equipment

* Now uses the McASP (Multi-channel Audio Serial Port), rather than USB audio, for sub-millisecond latency

* Cape4all appears as a regular ALSA device, so existing audio applications can use the hardware without modification

* Driver registers the cape as one PCM device with three mixer sub-devices, each with their own set of controls in the ALSA mixer

* Full Debian base, built with PDK, means all your familiar packages are just an ‘apt install’ away

Source code or detail technical information availability

* https://github.com/HoerTech-gGmbH/Cape4all
* https://lac.linuxaudio.org/2018/pdf/35-paper.pdf