Field Expedient Computing: Audio Recording With A Raspberry Pi Zero W

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Erie Looking Productions is a versatile operation to handle your media arts needs. Recently we were given the chance to test a notion in computing. Just how small could we go in having an audio recording computer to record music?

Part of this comes down to production doctrine. To the extent possible, we try not to use digital effects to correct production errors. There are wide varieties of software packages on the market that purportedly add in talent where there might not be any. Those packages age, decay, and have compatibility divergence problems over time. If you avoid using those items, you radically simplify how you use your digital tools to produce sound.

In this instance we used an already available mixer, microphones, microphone stands, musician, and instruments. A monitor was available as was a keyboard and mouse. From the junkbox, some specific items were obtained.

First, we utilized a Raspberry Pi Zero W. We used the latest build of Raspbian, updated all packages to current, and installed Audacity with a few LADSPA filter plugins. At first one USB sound card from a different project was attached via the same USB hub as the keyboard and mouse but it was found to accept only monaural input. That did not fit our needs so an iMic from Belkin that was around from a previous project was plugged in and utilized for the stereo sound input. Both USB sound units were kept plugged in so that the first was used to feed the monitor/feedback speakers while the other was used to feed Audacity.

Figure 1: An audio mixer. This is a standard piece of production equipment.

Recording was actually a quite comfortable activity. When you use a computer for recording audio, you do not generally have a machine that you use for multi-tasking. It is a mostly single-purpose machine. CPU speed is not necessarily a major factor as much as is disk-write speed. Within our operating doctrine, the computer functions as if it were a tape recorder with non-linear edit functions. The Raspberry Pi Zero W performed well in that respect.

For the purpose of setting up operations with a client to start recording, this most recent test shows us that more is possible than might be easily imagined. There are ways to do on-site audio recording in places previously thought impossible in a high-quality fashion. We can give the best solution we can in a crunch but giving us time to plan gives us the chance to make many possibilities come alive.

Figure 2: The testing Raspberry Pi Zero W with multiple peripherals hanging from it. This is what we used to record while running Audacity on the latest build of Raspbian.

Figure 3: This part did not work. We happened to also have a solid-state drive that was house in an enclosure with a SATA to USB 3.0 conversion. The hub we scrounged up for the Pi Zero W did not have USB 3.0 so the Pi could not write to it.