

Design Team 1: Progress Report 2

Overall, progress on the SAiNT has been moving in a positive direction. All of the individual components are beginning to come together. Circuit designs are being finalized for the audio recorder, as well as the power supply. The software interface is almost completed. Microcontroller programming is also nearing the final stages of development, with only the write to SD routine remaining. A working prototype should be completed by the end of next week.

Software Update

The SAiNT user interface software has reached the final stages of development. The graphical design has been finalized and tested. A very complex search algorithm has also been implemented to allow for efficient text searching. The software can now also handle selection of search results and audio playback from the specified results. We also obtained our hardware key logger recently. Initial testing has been done on the keylogger and a parsing algorithm is currently under development to handle the keylogger files. Once the parsing algorithm is complete, the software will be ready for final testing.

Audio Recording Update

The audio recording portion of SAiNT has made tremendous progress in the past couple weeks. The SD card connections have been verified through hardware testing. All of the appropriate and expected signals are being passed. The SD card also communicates and sends the expected responses back to the microcontroller, showing successful operation. Code has been developed and tested which has the ability to store data to the SD card. This achieves the goal of being able to store data on an external memory device. The AD converter has been initialized and tested successfully. The Audio pre-amp has also been designed and tested. A final implementation of all of these project components should be

completed in the next week, leading to a working prototype able to record audio. Once this prototype is put together, the microcontroller code can be tweaked in order to allow for accurate storage and playback of the data. This includes identifying the actual rate of sampling to enable proper playback. Other things that need to be developed, such as PCB design for the pre-amp as well as the microcontroller.

Power Supply

We have to build a power circuit to output 3.3V from either 5-10VDC or 9-12VDC wall power supplies. The LM317 voltage regulator is previously selected to step-down a 5-10VDC input voltage and output a 3.3VDC. However, since our sponsor provided us a free 9-12VDC-wall power supply and the LM317 requires a 5-10VDC inputs, we choose to use LM1117. The 3.3VDC power supply circuit with LM1117 voltage regulator has already been developed and successfully tested. Presently, the power supply circuit is complete in this stage. Since the current drawn by the audio recording circuit is unknown, the battery cannot be selected. Also, our sponsor has suggested using a DC-to-DC converter instead of voltage regulator because it is more stable and more power efficient. In order to pick the right one, the audio load current is needed. In this stage, TPS71533 DC-to-DC converter is considered since it is recommended for MSP430.

PCB Design update

As the SAiNT project reached to the final stage, we are ready to start designing the printed circuit board for the project. Eagle Layout Editor is the CAD software we are going to use for the schematic and layout. So far the CAD software library has all the components we need for the design and there are few other components which could be downloaded from the internet such as op amp and microcontroller. Once we complete the audio recording, text recording, and power solution, we can start the PCB design.