

# Blind User Accessible Insulin Pump

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Sponsor – Asante Solutions, Resource Center for Persons with Disabilities, Marathon Oil

Facilitator – Professor Robert McGough

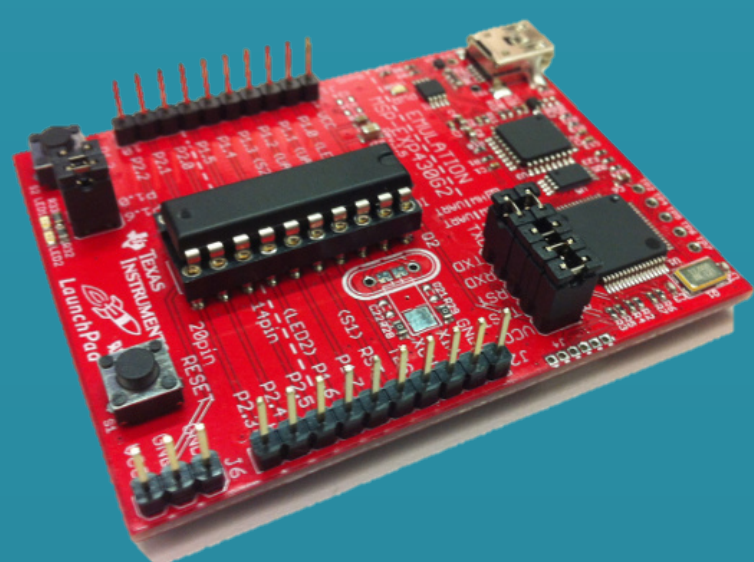


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## Abstract

The team has created an add-on module to an insulin pump design that forms a path of auditory communication between pump and user. The add-on should report all necessary information from the viewing screen to the user allowing a blind user to control it independently.

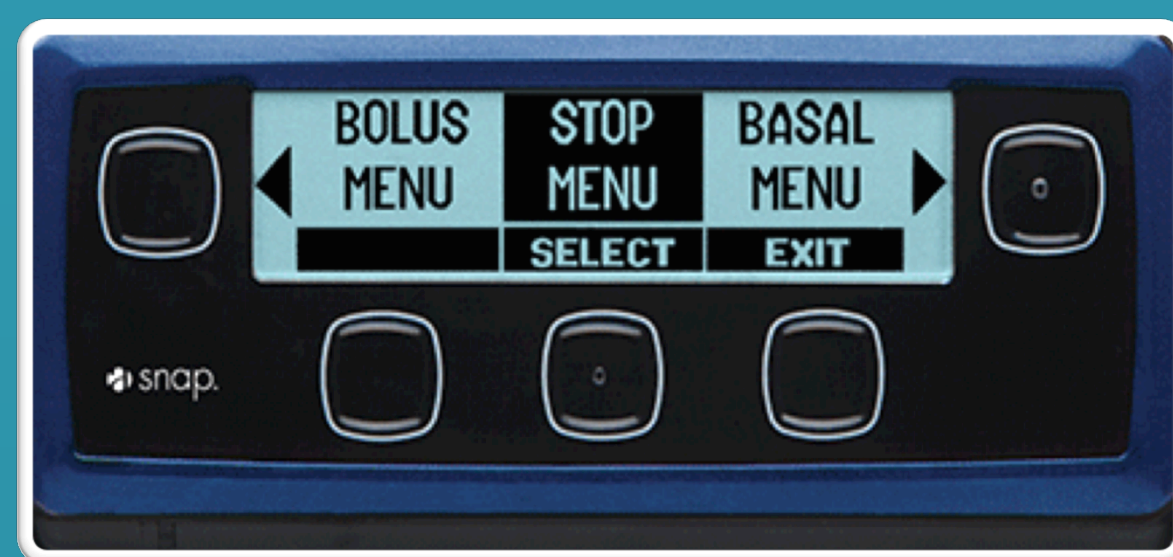


The MSP430G2553 Launchpad is used in the design for its small size and programming ease with Energia software.



RC-System's V-Stamp has text-to-speech technology as well as digital speech, voice recording. The team used both in the design to give the user a more comprehensive reading of the screen.

## Snap Pump



The Snap Pump is an insulin pump produced by Asante Solutions. Insulin pumps administer insulin, and a diabetic patient will interact with his or her pump 4-6 times a day. Using a UART connection, the Snap pump sends an ASCII signal to the microcontroller.

UART Capacitive Touch

Microcontroller

Capacitive touch, produced by the microcontroller, is added to each button, and allows for the user to touch and hear the button function. Once the user finds the necessary button they can press it and move on to the next screen.

Power Supply

The power supply runs off of a nine volt battery. It provides three point three volts to the microcontroller using a Pololu Step-Down Voltage regulator.

Digital Speech Chip

## Conclusion

Incorporating capacitive touch and the UART connection of the microcontroller and the text-to-speech and digital speech technology of the V-stamp, the team created an insulin pump design that can speak the text on the screen. It's small and compact size, benefited by the efficient power supply, allows this design to be easily integrated into a blind individual's life.

Audio



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