Project proposal for
DST & Texas Instruments Inc.
India Innovation Challenge Design Contest 2016
Anchored by IIM Bangalore

EYES IN A STICK

JAMIA MILLIA ISLAMIA

Name	College ID/Roll No.	UG/PG	Course/Branch	Semester
KRISHNA PANDEY	20147575	UG	B.TECH/ECE	FIFTH
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Project Abstract

Blind people confront a number of visual challenges every day – from reading the label on a frozen dinner to figuring out if they're at the right bus stop. People with complete blindness or low vision often have a difficult time self-navigating outside well-known environments. In fact, physical movement is one of the biggest challenges for blind people. Travelling or simply walking down a crowded street may pose great difficulty. Because of this, many people with low vision will bring a sighted friend or family member to help navigate unknown environments. Thus, it is very difficult for blind person to navigate without the help of their sighted friends. To address this problem of navigation, we have come up with the idea of designing a EYES IN A STICK (smart blind stick) for the greater good.

The smart blind stick is the solution for helping a blind person navigate without the help of another person. The most important aspect to keep in mind while navigating is to avoid any obstacle and at the same time navigate the person to his/her destination. The smart blind stick has a small button on its knob which when pressed for more than 5 seconds sets the destination to the user's home. When the button is pressed, the current location of the user is identified and with help of Google's API the route between the current location of the user and his/her home (destination) is set. The smart blind stick uses a proximity sensor to detect any obstacle nearby and with the help of speakers the person using the stick is notified well before he/she is in danger of getting hurt. The person is navigated with the help of speakers, which direct the user towards the destination.

The aim of the project is to create a better navigational conditions for blind people without the assistance of any other sighted person.

Team Members – Roles & Responsibilities

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S.No.	Student Member Name	Role (Choose one of the following – Marketing, Technical, Operations & Other Roles as applicable)	Justification
1	KRISHNA PANDEY	Technical	Handle all interfacing and coding related problem in project.
2	RUCHIR MATHUR	Marketing	Analyze all the market need. And make product more efficient and cheap for blind person.
3	AAYUSH GUPTA	Operations	Optimize all the code and help to distribute sufficient power to each part.

Market Analysis

285 million people are estimated to be visually impaired worldwide: 39 million are blind and 246 have low vision. 82% of people living with blindness are aged 50 and above. Globally, uncorrected refractive errors are the main cause of moderate and severe visual impairment; cataracts remain the leading cause of blindness in middle- and low-income countries.

Our smart blind stick is a innovative product for the safety of blind person this project is very cost effective so every one can easily afford .this ensures the safety of users and helps in navigating to location and also have a feature of one touch to home. This is very future changing innovation for old peoples approximately every one wants safety of our elders because this people are week and can't protect himself. Our stick have very low cost according to others because the use of inbuilt navigation system of phone and other features so everyone can easily afford this.

Proposed Design

A. Objective

The eyes in a stick is an innovative project for the blind persons. It make every blind person secure and smart because safety of these persons is very big question for society and it's our duty to think for these peoples safety. In this project we are using radar to detect the obstacles in the path and giving him instruction of these obstacle if there are any moving object coming very fast toward him then is also give emergency alert for that. The stick have a very important button in his stick called ONE TOUCH TO HOME if he press this button till five seconds then stick start navigating him to the predefined destination (e.g. home) without getting him into any harm.

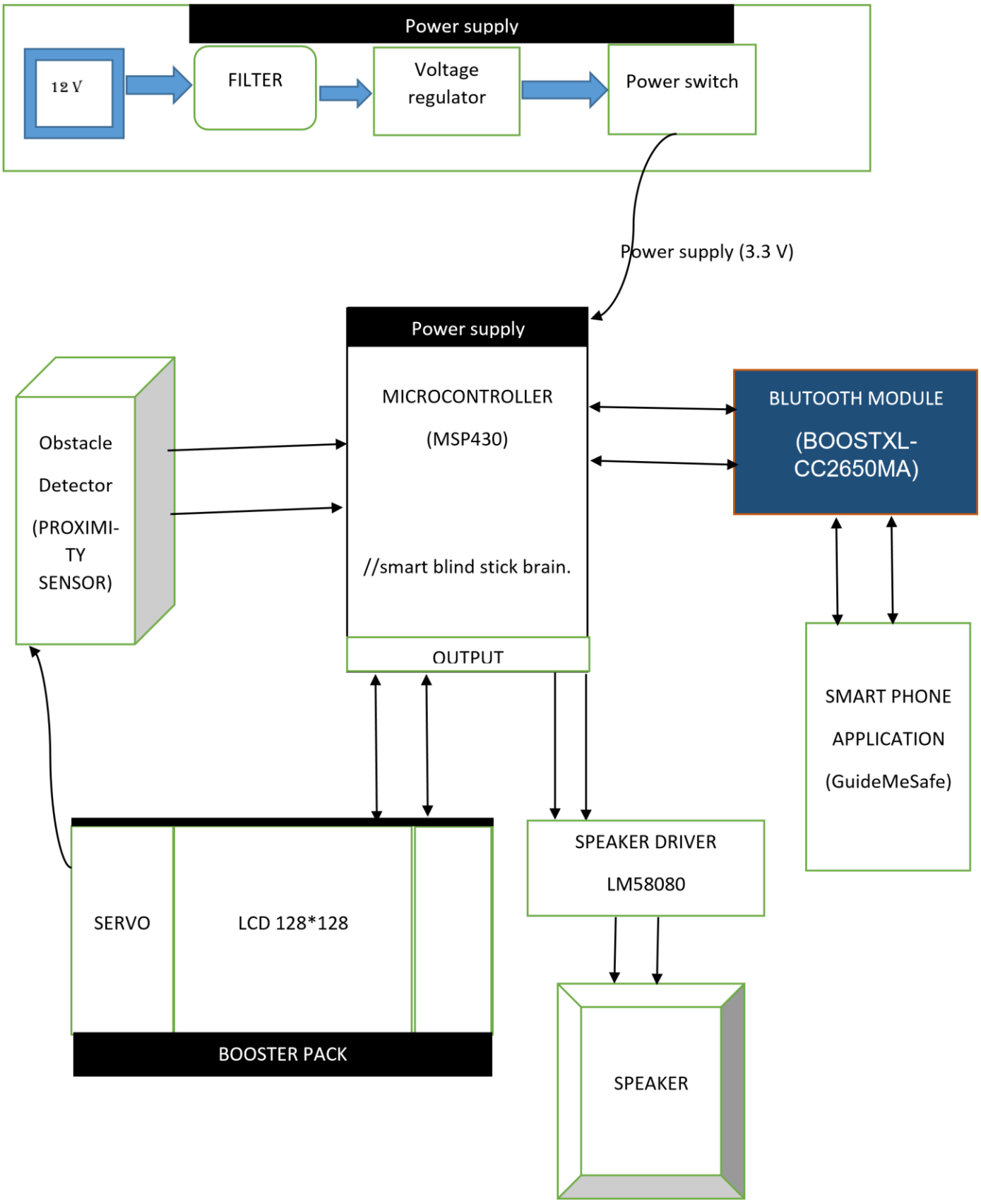
For navigation and other security purposes we are making and android application called GuideMeSafe. This android application have navigation method and it can also send safety message to predefined numbers which are given by user for any emergency condition this application is connected with the stick through the Bluetooth module. As we know it is an issue to operate any touch application due to lack of vision of this people so we are making it voice command application after activating this application user can control this application by voice if he have to go any undefined destination otherwise he have no need to give command to this application users can done all work simply by stick. So there are two main buttons in stick one is ONE TOUCH TO HOME and other one is EMERGENCY HELP.

The battery used by this is a rechargeable battery so that they don't have to buy time to time new battery. Whenever person need his stick he just have to

activate the application and stick start beeping till he find it because of this he never worry about the loss of stick.

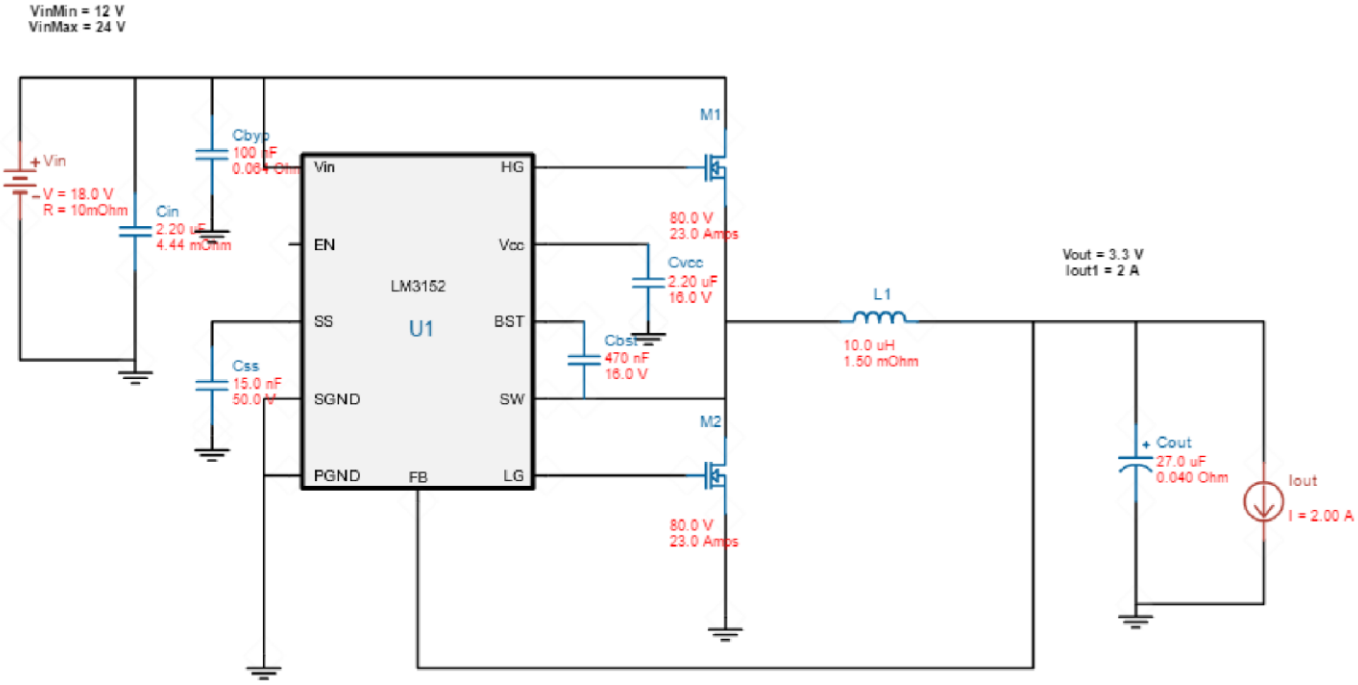
B. Proposed solution:

- BLOCK DIAGRAM



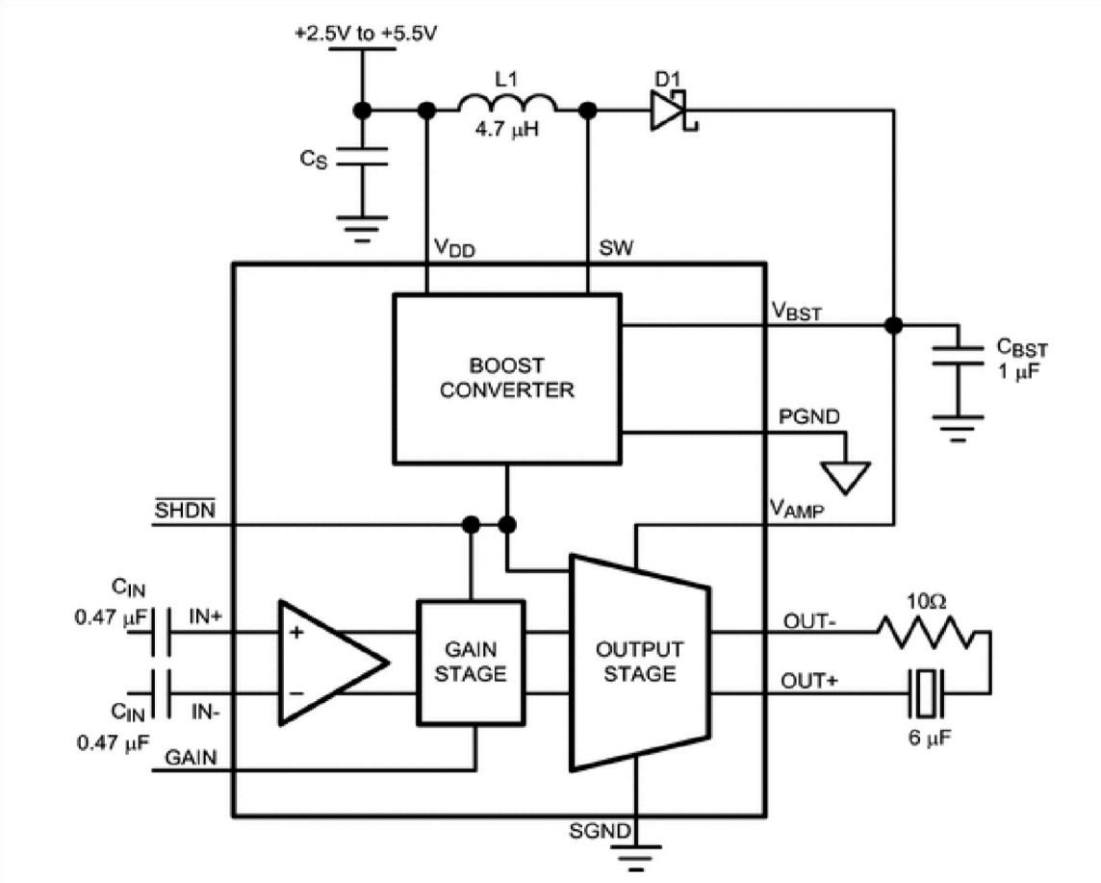
WEBENCH RESULTS FOR POWER SUPPLY DESIGN:

- Voltage for msp430 Microcontroller and sensors



Circuit diagram:

- LM48580 speaker driver



Component Used:

TI Part Number (link all the parts to their respective product page on the TI website)	How is it being used in the proposed solution? Explain its role/functionality
MSP430	Microcontroller
BOOSTXLEDUMKII	Booster pack having various on board sensor like temperature to maintain body parameters and switches and joystick to interface with android app.
BOOSTXL-CC2650MA	Low cost fully programmable Bluetooth module.
LP38501-ADJ	To regulate input voltage.
LM48580	High Efficiency class H ceramic speaker Driver.

Non - TI Parts	How is it being used in the proposed solution? Explain its role/functionality
Speaker	Give the direction to blind person.

Innovativeness:

Eyes in a stick will make blind persons more secure and smart. Approximately everyone in this world are using smartphone and we are using these phone as help of stick navigation and for other purposes therefore it will make our project more cheaper so everyone can easily afford this.

The battery used by this is a rechargeable battery so that they don't have to buy time to time new battery. Whenever person need his stick he just have to activate the application and stick start beeping till he find it because of this he never worry about the loss of stick.

Impact:

Eyes in a stick will change the life of blind peoples now they don't have to leave in the shadow of others. There are many problems in their life like how they cross the road, how they reach XX destination and in the condition of emergency how they will contact with their loved ones etc.

After the launching of this project they feel secure and safe and can live their life like other normal persons.it will become a future changing innovation for blind or low vision persons life.

Reference:

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- http://www.ti.com/lsds/ti/analog/webench/
- http://www.livestrong.com/article/241936-challenges-that-blind-people-face/
- http://www.who.int/mediacentre/factsheets/fs282/en/

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BONAFIDE CERTIFICATE

This is to certify that Mr./~~Miss.~~ Krishna Pandey

Son/~~Daughter~~ of Mr. Paras Nath Pandey

is a bonafide student of this Faculty, studying in V^th *semester*

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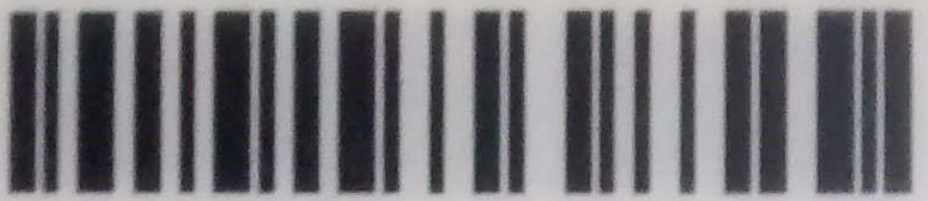

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