ENSC 440 PROJECT DEMO

of Safe Direction

Outline

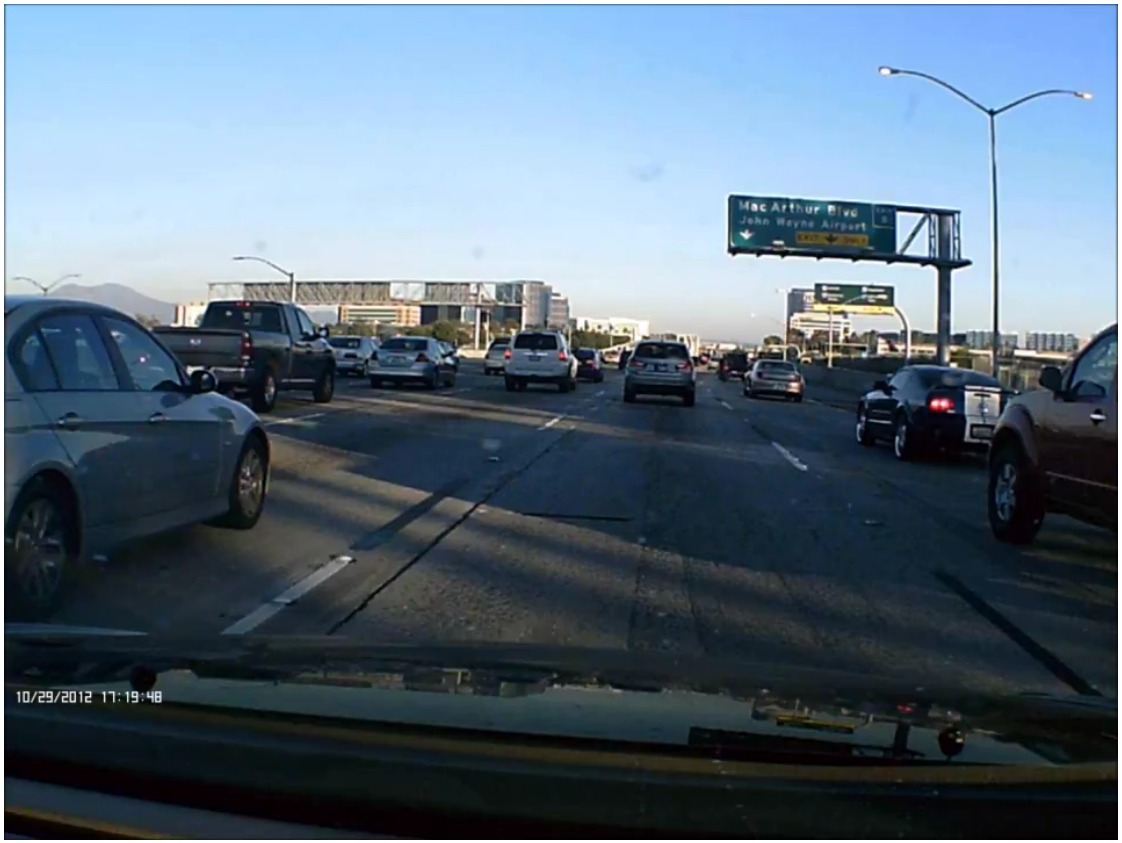
- Introduction
- System Overview
- High Level Design
- Business Plan
- Project Specifies
- Summary
- Questions

Team Introduction

- Car Sense Team :
  - Khalid Almoammar (CEO)
    - Sensing System design, Wireless Transmission and Software.
  - Aziz Mikwar (COO)
    - Sensing System design, Wireless Transmission and Software
  - Shaham Shafiei (CFO)
    - Hardware and PCB boards and User interface.
  - Angel Tian (CMO)
    - Documentation, Software and testing.
  - Keren Wang (CTO)
    - Documentation, Circuitry and testing.

Introduction

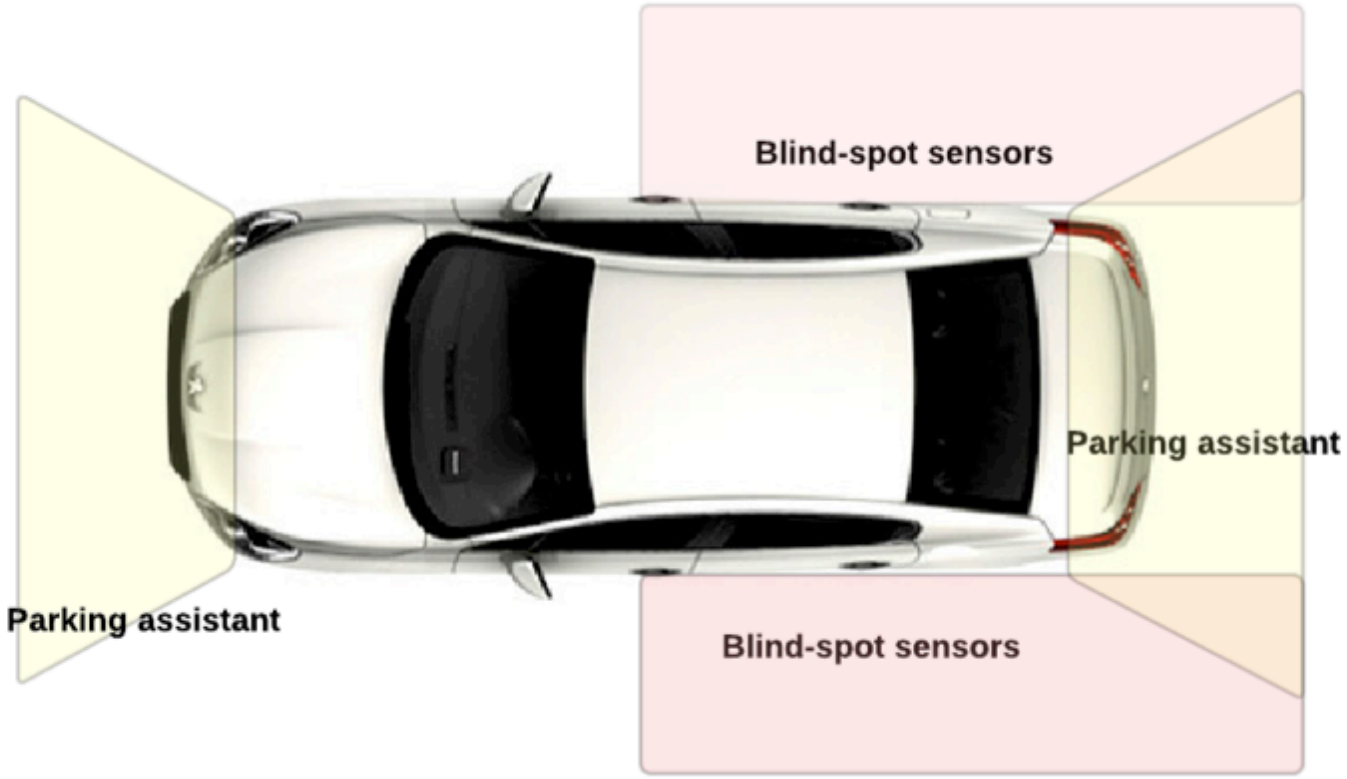
- Motivation



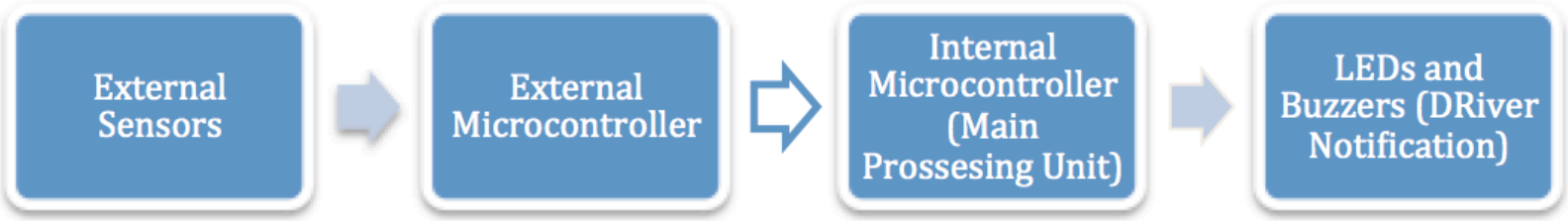
Motivation and Background

- according to U. S. Department of Transportation accident statistics [1]
  - 413,000 accidents/ year are caused by blind spot
  - Causing 160,000 injuries and deaths
  - Damaging around 826,00 vehicles
- Back up collisions were the leading cause for U.S. non-traffic fatalities of children under 15 from 2006–2010 [2]

Safe Direction Overview



High Level System Design

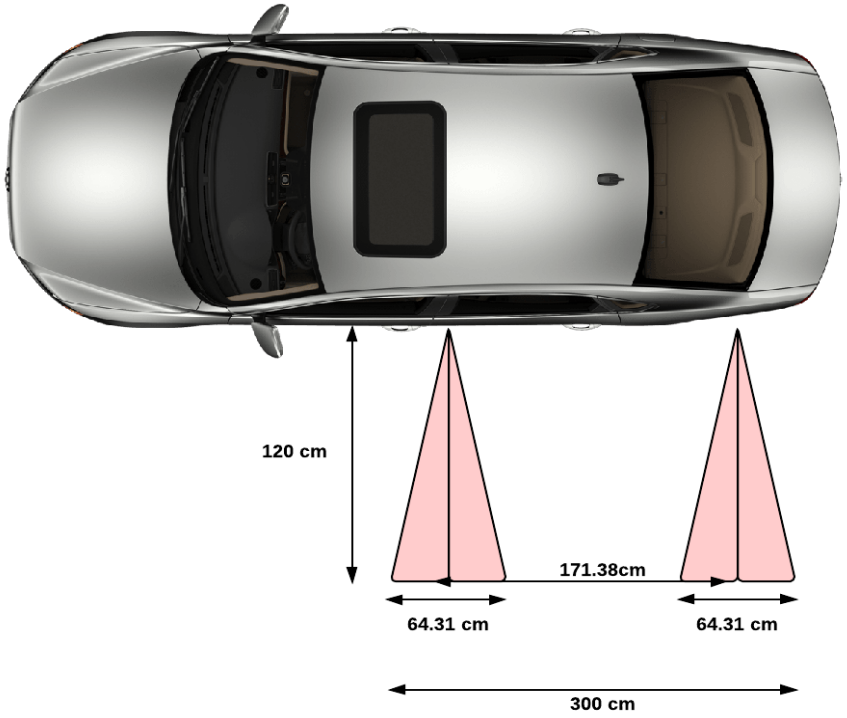


Wire Connection

RF Connection

Blind Spot

- Components:
  - 4 Ultrasound sensors
  - Mega Arduino Microcontroller
  - RF Transmitter
  - Distribution
    - Standard lane width is 3.6m [3]
    - Standard Parking width is 2.4m [4]



Parking Assistance

- Components:
  - 8 Ultrasound sensors
  - Mega Arduino Microcontroller
  - RF Transmitter
  - Distribution
    - Standard Parking width is 2.4m [4]

Main Unit

- Components
  - 6 LEDs
  - Buzzer
  - RF Receiver
  - Arduino Uno Board

Business Plan

- Costs
  - Ultrasound Sensors (50$)
  - Microcontrollers (100$)
  - Wiring (20$)
  - Casing (50$)
  - Labor
- Market
  - Old Models Cars (Pre 2009)
  - Survey Shows that drivers rank blind spot at the top technology among the other safety technologies [5]
- Competition

Project Specifies

- Proposed Costs

Component	Budget ($)
3 ArduinoUno Board	150
Ultrasonic sensors	50
Batteries	20
PCB Boards	50
Power Cord/Car Charger	20
	TOTAL ($) : 290

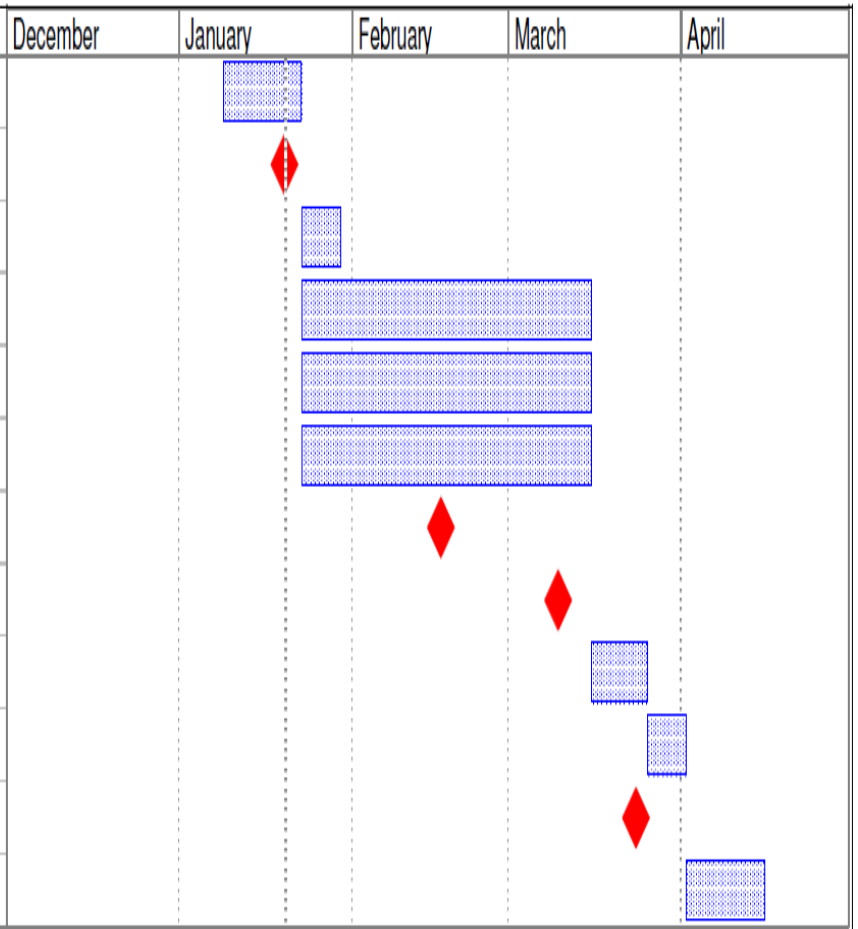
Actual Costs

Component	Budget ($)
Arduino Mega board	65
ArduinoUno Board	35
Ultrasonic sensors	50
RF transmitter /Receiver	15
Batteries	20
Battery Holder	5
PCB Boards	15
Power Cord/Car Charger	20
Casings and wiring	200
	TOTAL ($) : 425

Project Specifies

- Proposed Schedule

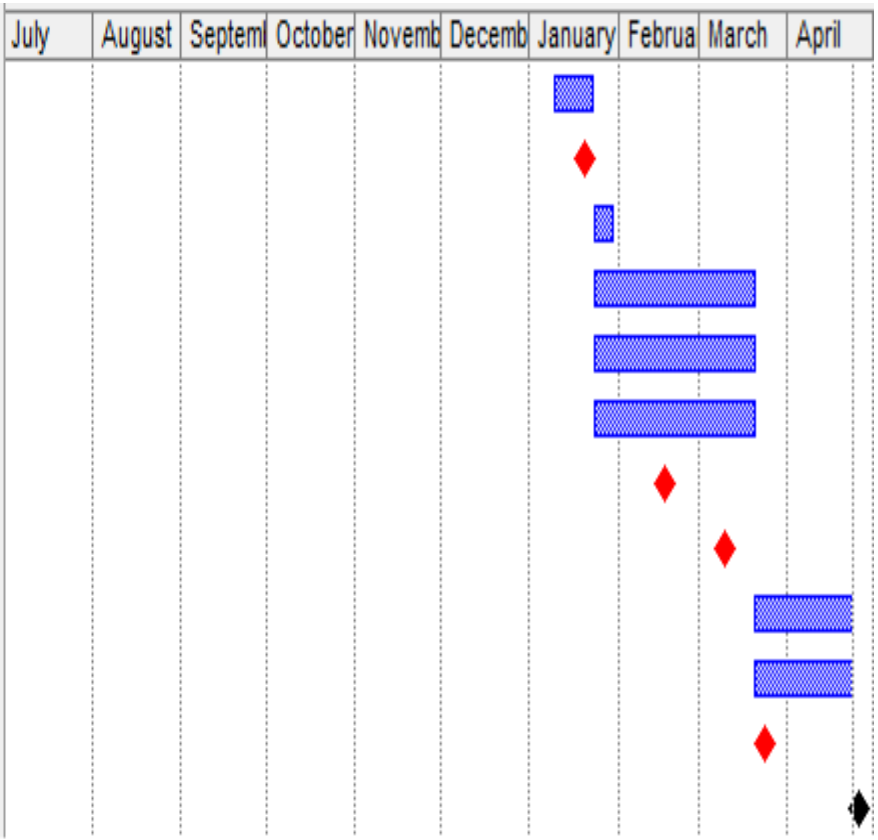
ID	Task Name	Duration	Start	Finish
1	Reasearch	10 days	Thu 1/9/14	Wed 1/22/14
2	Prposal	1 day	Mon 1/20/14	Mon 1/20/14
3	Parts ordering and collection	6 days?	Thu 1/23/14	Wed 1/29/14
4	Parking assisting detection syst	40 days?	Thu 1/23/14	Sat 3/15/14
5	Blind spot monitiring system	40 days?	Thu 1/23/14	Sat 3/15/14
6	Controlling system	40 days?	Thu 1/23/14	Sat 3/15/14
7	Functional specification due	1 day?	Mon 2/17/14	Mon 2/17/14
8	Design specification due	1 day?	Mon 3/10/14	Mon 3/10/14
9	Intergration	8 days?	Sun 3/16/14	Tue 3/25/14
10	Testing	5 days?	Wed 3/26/14	Tue 4/1/14
11	Progress report due	1 day?	Mon 3/24/14	Mon 3/24/14
12	Demo	10 days?	Wed 4/2/14	Tue 4/15/14



Project Specifies

- Actual Schedule

	Task Name	Duration	Start	Finish
1	Reasearch	10 days	Thu 1/9/14	Wed 1/22/14
2	Prposal	1 day	Mon 1/20/14	Mon 1/20/14
3	Parts ordering and collecti	6 days?	Thu 1/23/14	Wed 1/29/14
4	Parking assisting detection	45 days	Thu 1/23/14	Thu 3/20/14
5	Blind spot monitiring syste	45 days	Thu 1/23/14	Thu 3/20/14
6	Controlling system	45 days	Thu 1/23/14	Thu 3/20/14
7	Functional specification du	1 day?	Mon 2/17/14	Mon 2/17/14
8	Design specification due	1 day?	Mon 3/10/14	Mon 3/10/14
9	Intergration	25 days	Thu 3/20/14	Wed 4/23/14
10	Testing	25 days	Thu 3/20/14	Wed 4/23/14
11	Progress report due	1 day?	Mon 3/24/14	Mon 3/24/14
12	Demo	0 days	Fri 4/25/14	Fri 4/25/14



Summary

- Project Summary
- Learning Experience
- Future Work
  - LCD
  - Camera
  - Mounting

Acknowledgments

- Dr. Andrew Rawicz
- Dr.Steve Whitmore
- Dr. Ash Parameswaran
- Jamal Bahari, TA
- Alireza Rahbar, TA

References

- [1] http://www.claimscanada.ca/issues/article.aspx?aid=1000222828&er=NA
- [2] http://www.kidsandcars.org/userfiles/dangers/shared/fatalities-pie-chart.pdf
- [3] 1st Tram Consulting Ltd.(October 2006). Local Road Standards. http://www.cvrd.bc.ca/DocumentCenter/Home/View/1189_
- [4] Ezekiel Data and Mike Furuya. (2nd Quarter 2010)Parking Dimensions. http://www.canadianparking.ca/files/ParkingDimensions_eng.pdf
- [5] http://www.automotive-fleet.com/news/story/2013/10/survey-mature-drivers-rank-blind-spot-warning-systems-as-top-tech-pick.aspx

Questions?