★ GROUP 3 ★

SMART HELMET

Safety does not come with luck

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OBJECTIVE

The thought of developing this project came from social responsibility towards the society. As we can see many accidents occurring around us. Usually people die due to lack of treatment in proper time. The reasons for this may be many such as late arrival of ambulance, no person at place of accident to give information to the ambulance. We came up with this idea of giving the information about accident as soon as possible and in time. So we can minimize death rate in bike accident. We placed vibration sensors in different places of helmet where the probability of hitting is more which are connected to Arduino board. So when the rider crashes and the helmet hits the ground, the sensors sense and the Arduino extract GPS data using the GPS module that is interfaced with Arduino. When the data exceeds minimum stress limit then GSM module automatically sends message to ambulance or police or family members with GPS location.

Highlights

- Everyday around the world a large percentage of people dies from road accident.
- An effective approach is made to solve the problem by using smart helmet.
- A smart helmet is a special idea which makes motorcycle driving safer than before.
- The main objective of this project is to build a safety system which is integrated with the smart helmet and intelligent bike to reduce the probability of two-wheeler accidents and drunk driver cases.
- Smart helmet provides help in case of accident by using GSM and GPS technology.

Problem Statement

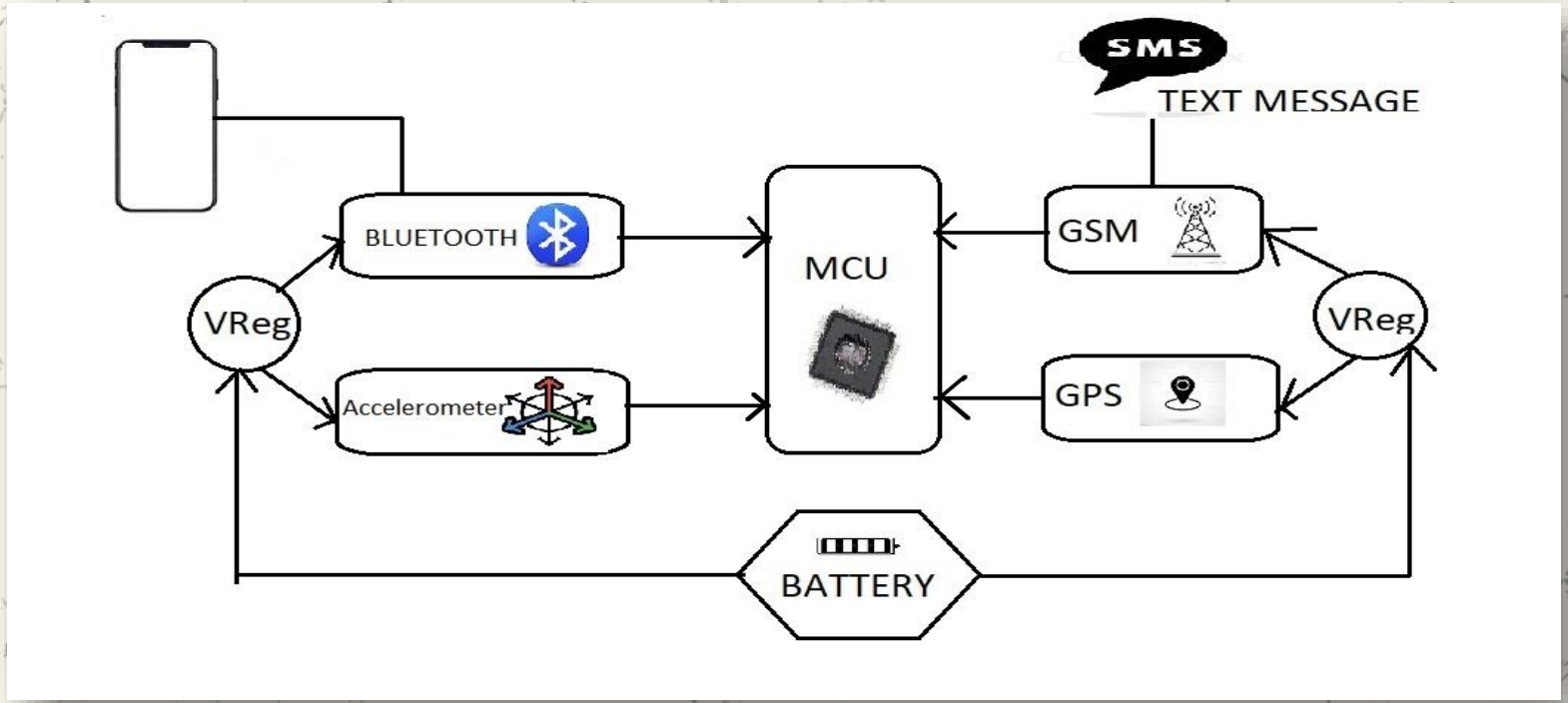
- Very High accident rate specifically bike accidents
- No safety measures
- Lack of public help during an emergency
- No proper help provided on proper time
- Rate of accidents increasing due to alcohol consumption

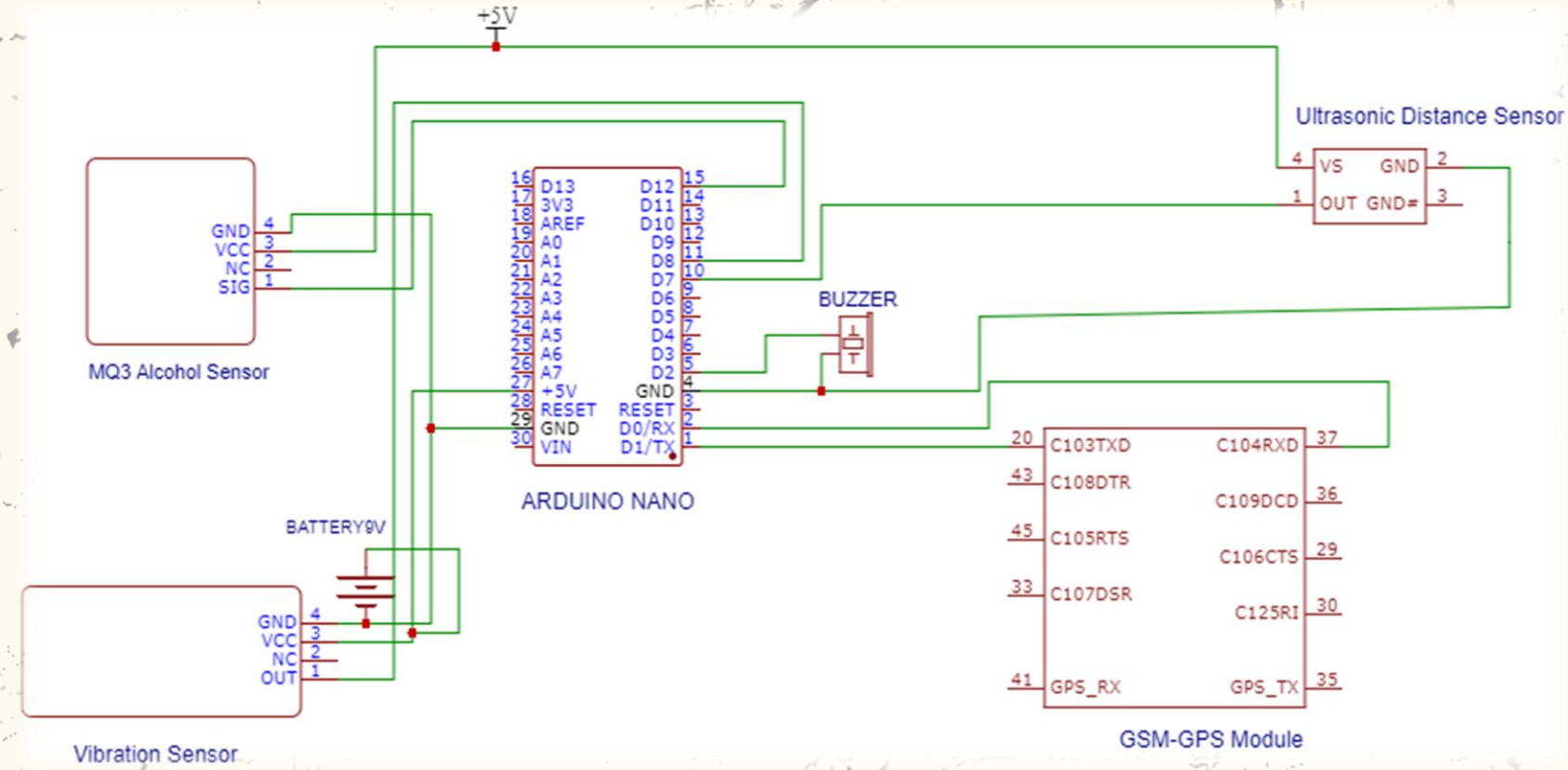
Components

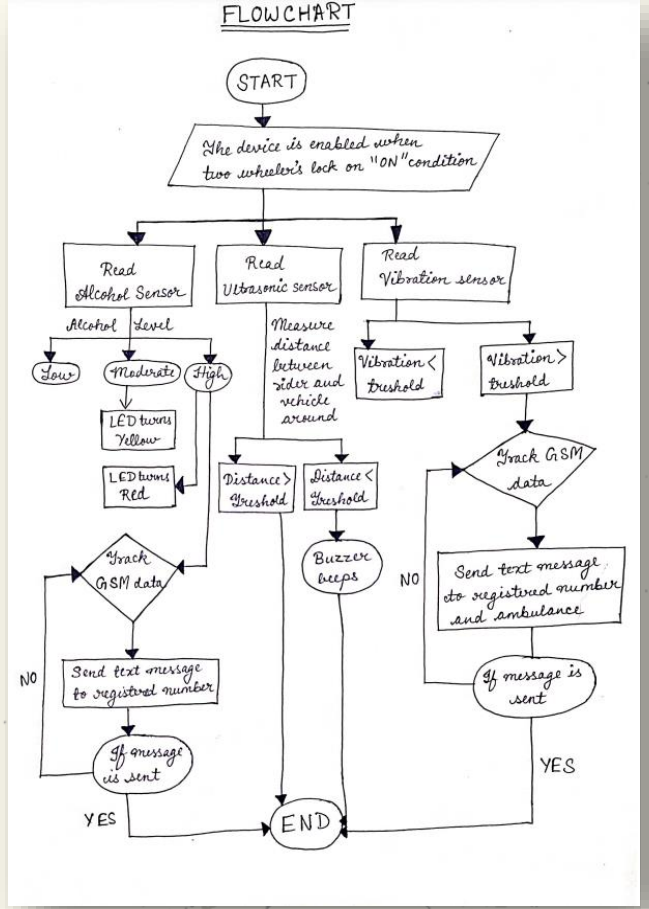
Motorcycle Helmet Arduino Nano ATMega328p
MQ-3 Alcohol And Benzene Analog Sensor
Vibration Sensor Module
Push Button
Switch
Jumper Wires
Active Piezo Buzzer
Bi-Colour LED's
Sim900 GSM Module
12V Lipo battery
Vero board
Soldering Iron
Digital Multi Meter

TinkerCad

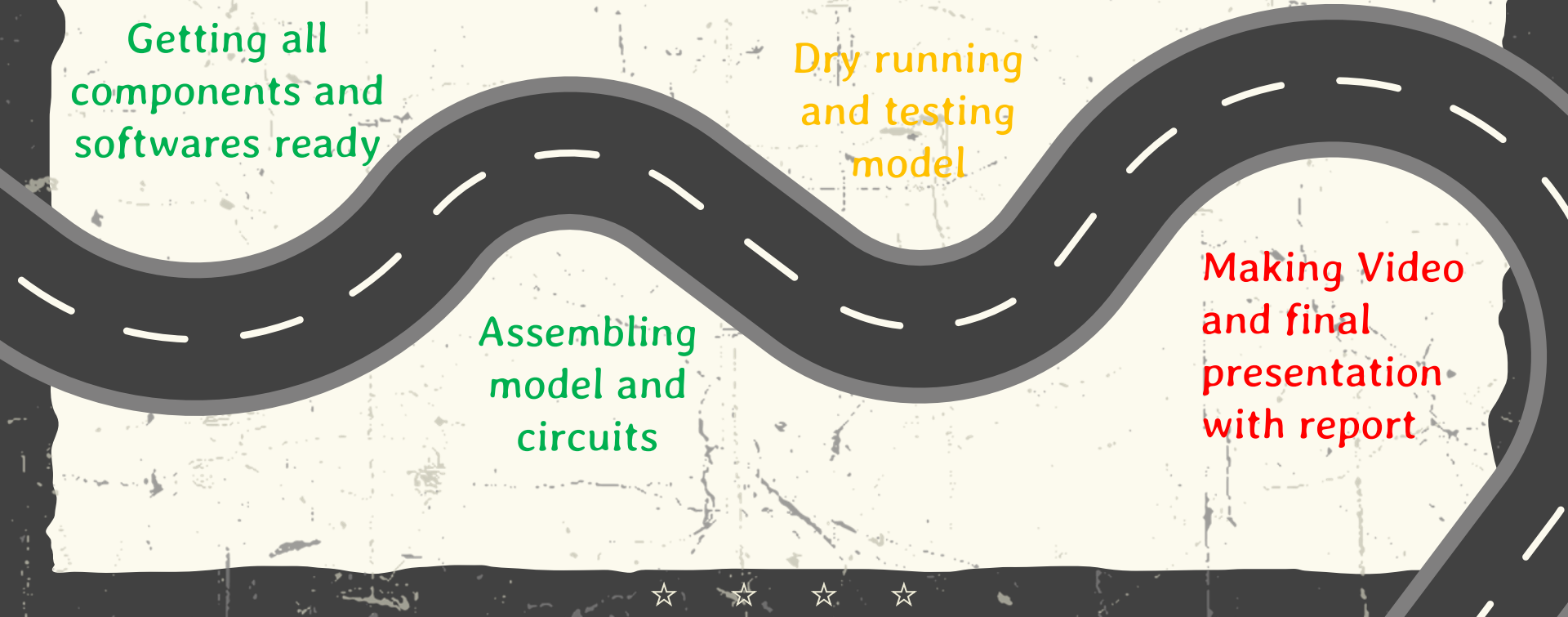
Basic Model Appearance


SMS
TEXT MESSAGE
BLUETOOTH
VReg
Accelerometer
MCU
GSM
GPS
VReg
BATTERY


+5V
Ultrasonic Distance Sensor
VS
GND
OUT
GND=
MQ3 Alcohol Sensor
GND
VCC
NC
SIG
BUZZER
ARDUINO NANO
D13
3V3
AREF
A0
A1
A2
A3
A4
A5
A6
A7
+5V
RESET
GND
VIN
D12
D11
D10
D9
D8
D7
D6
D5
D4
D3
D2
GND
RESET
D0/RX
D1/TX
BATTERY9V
Vibration Sensor
GND
VCC
NC
OUT
C103TXD
C104RXD
C108DTR
C109DCD
C105RTS
C106CTS
C107DSR
C125RI
GPS_RX
GPS_TX
GSM-GPS Module


FLOWCHART
START
The device is enabled when two wheeler's lock on "ON" condition
Read Alcohol Sensor
Read Ultrasonic sensor
Read Vibration sensor
Alcohol Level
Low
Moderate
High
LED turns Yellow
LED turns Red
Track GSM data
NO
Send text message to registered number
If message is sent
YES
Measure distance between rider and vehicle around
Distance > threshold
Distance < threshold
Buzzer beeps
END
Vibration < threshold
Vibration > threshold
Track GSM data
NO
Send text message to registered number and ambulance
If message is sent
YES

Road Map of our progress



THANK YOU !