Project Proposal:

Real Time GPS Tracking

Group Members:

#	Name	Roll Number	Major
1	Muhammad Hassan Nadeem	15100063	EE
2	Massab Ahmad	15100107	EE
3	Danial Nawaz	15100177	EE
4	Soban Shahid	15100083	EE

Project Objective & Introduction:

The aim of the project is implement industry standard GPS tracking and Navigation system, which would be capable of real time tracking and plotting the travel history on Google maps.

Project Specifications:

Component	Quantity
PIC 18F46K22	1
GSM Module (SIM 900D)	1
GPS Module	1
Magnetic Compass	1
Raspberry Pi	1
USB Camera	1
Robot Chassis	1
LCD	1
3.7 V LiPo Battery (>2000mAh)	1
12 V Battery (>2000mAh)	1
5 V UBEC (>1A)	1

Project Deliverables:

- Real Time GPS tracking on Google maps.
- Visualizing the path taken during past trips.
- If time permits: Automatic navigation of robot to provided coordinates.

Project Modules and Design Overview:

1) Writing Interrupt Driven Serial Communication Routines.
   - For fast and efficient serial communication.
2) Parsing GPS - NMEA sentence information.
   - GPRMC sentence would be parsed and revelation information would be extracted to be posted online for tracking and used for navigation.
3) Writing routines to communicate with GSM Module.
   - Intelligent routines to efficiently send/receive data while handling any exceptions.
4) Designing Webserver.
   - A website for the user to visually track his vehicle and view past trips.
5) Writing routines to post GPS data to Webserver.
   - GPS location would be periodically send to a remote sever using HTTP Post.
6) Designing SQL Database to store past travel history.
   - SQL Database would be used to store vehicle locations and other relevant information.
7) Writing PHP scripts to manage the database.
   - PHP scripts would be used on Apache server to communicate with the database and handle user's requests.
8) Interfacing LCD to microcontroller to display current location / debugging.
   - LCD to display the current location and turn-by-turn navigation if time permits.

If Time Permits…

9) Interfacing Raspberry Pi to the microcontroller.
10) Interfacing camera to the Raspberry Pi.
11) Navigation using Google Maps and Computer Vision.

Block Diagram(s):