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…

1. Interfacing Raspberry Pi to the microcontroller.
2. Interfacing camera to the Raspberry Pi.
3. Navigation using Google Maps and Computer Vision.

**Block Diagram(s)**:

