Soldiers Health Monitoring and Position Tracking System

By Parithosh Poojary

Introduction

In today's era, enemy warfare is an important factor in any nation's security. The national security mainly depends on Army, Navy and Air-Force. The important and vital role is played by the soldiers. As soon as any soldier enters the enemy lines it is very difficult for the army base station to know about the location as well as the health status of all soldiers.

So, in order to obtain this crucial information about the soldier's, who protect the nation, there should be some technology to protect them too. So, to address this issue, I have come up with a technological project where the system will track soldiers as well as give their health status during the operation/mission. This system in particular will be useful for soldiers, who involve in missions or in special operations.

Steps to Reach Goal

- ## Information Gathering
  - Study of different areas along with problem statements.
- ## Literature Survey
  - Gathering and studying of papers with in depth research on the topic.
- ## Component Selection
  - Selection of components on the basis of the required specifications.
- ## Analyse components
  - Analysis of all the selected components and in depth study of the components.
- ## Designing
  - Designing of the model.
- ## Simulation
  - Simulation of the project based on the first draft of the design.
- ## Hardware Implementation
  - Implementing the whole project with hardware components.
- ## Testing/Improvements
  - Testing of the designed hardware model, and if any improvements required adding it accordingly.
- ## Final Implementation
  - Simulation of the whole project based on the final draft of the design.
- ## Project Report Writing

Components Required

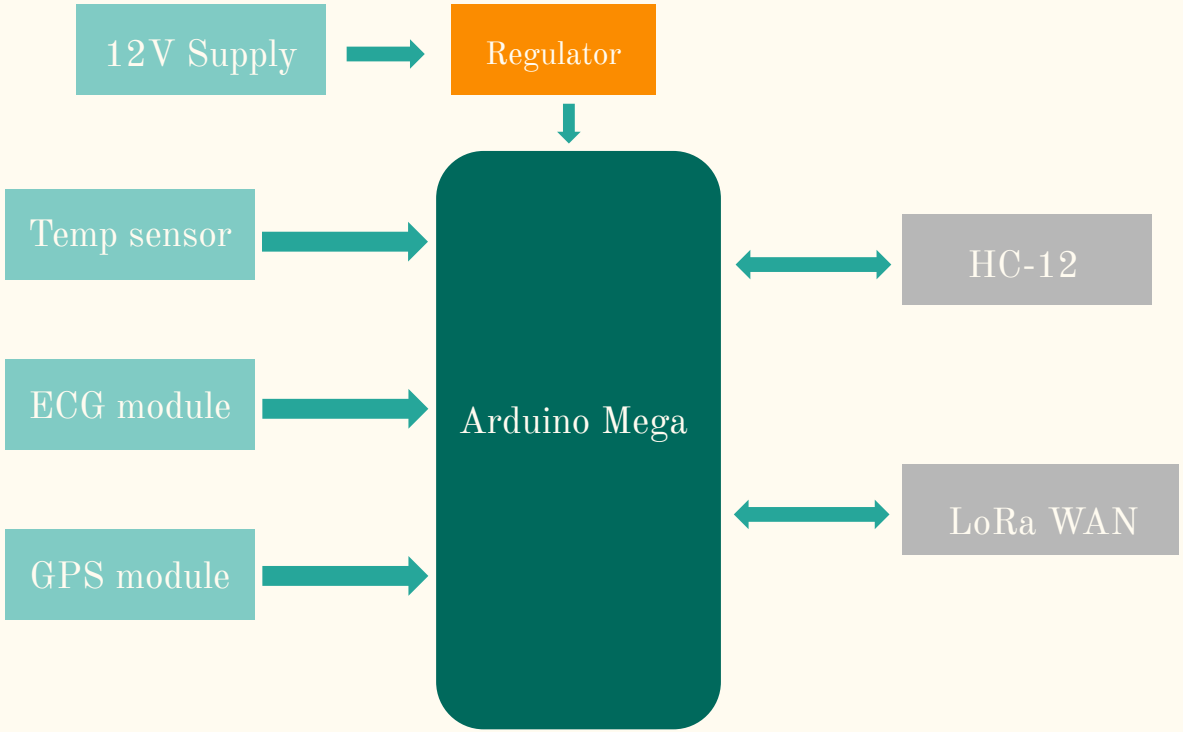
Hardware

- Arduino Mega
- Temperature Sensor
- ECG module
- GPS module
- Breadboard, Jumper cables
- Battery (12V)
- Wireless comm. Sensor
    - HC-12 sensor
    - LoRA WAN sensor

Software

- Arduino IDE

Block Diagram



Methodology

Methodology

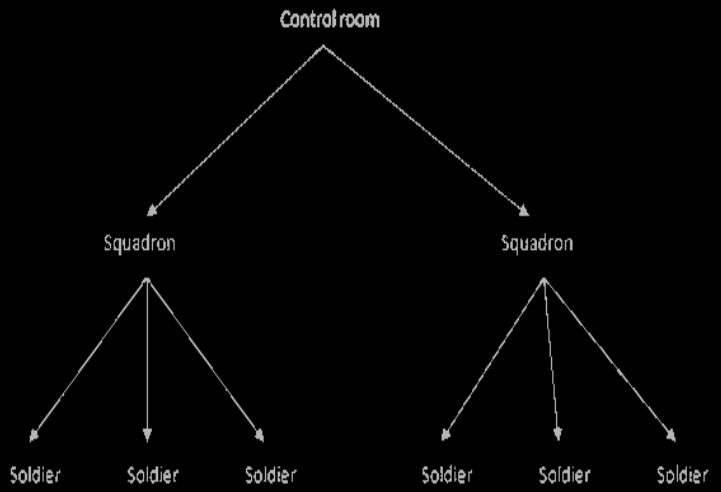
This system enables GPS (Global positioning systems) tracking of these soldiers. It is possible by S-Health. The S-Health can be defined as mobile computing, medical sensors and communication technologies for health care. In this system, smart sensors such as (Temperature sensor, Heartbeat sensor, Pulse sensor, Wireless comm. sensor) are attached to the body of the soldiers in order to have their health status and their position in the warfield.

The hierarchy of obtaining data from the soldier is divided into three segments:

1. First Unit (Soldiers S-Health System)
2. Second Unit (Squadron (Grp leader))
3. Third unit (Control room (Army base))

Network Architecture

Soldier (data of individual soldier) ➡ Squadron Leader (data of the individual soldier + data of the Squadron leader) ➡ Control Room



- All the data collected from the S-Health system (of each individual soldier) is sent to the Squadron leader of the second unit via a wireless sensor module.

- The same procedure is repeated and the data from the second unit (including the data of the each soldiers and the squadron leader) is sent to the third unit...i.e. Control Room, where it is all about collecting all the data at one place so if any soldier is in trouble then he/she can be tracked down and help can be sent for the individual.

* two different wireless communication devices used in the system. For the communication b/w the first and the second unit - a low range device is used, whereas for the second and the third units communication - a long range wireless communication device is used.

Project Schedule

Information Gathering

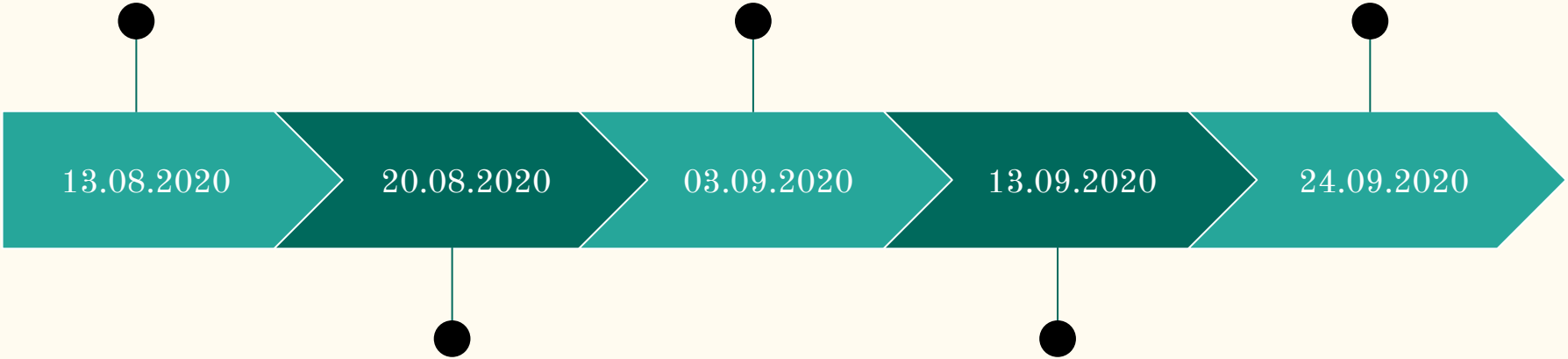
Study of different areas along with problem statements.

Component Selection

Selection of components on the basis of the required specifications.

Designing

Designing of the model.



Literature Survey

Gathering and studying of papers with in depth research on the topic.

Analyse Components

Analysis of all the selected components and in depth study of the components.

Simulation

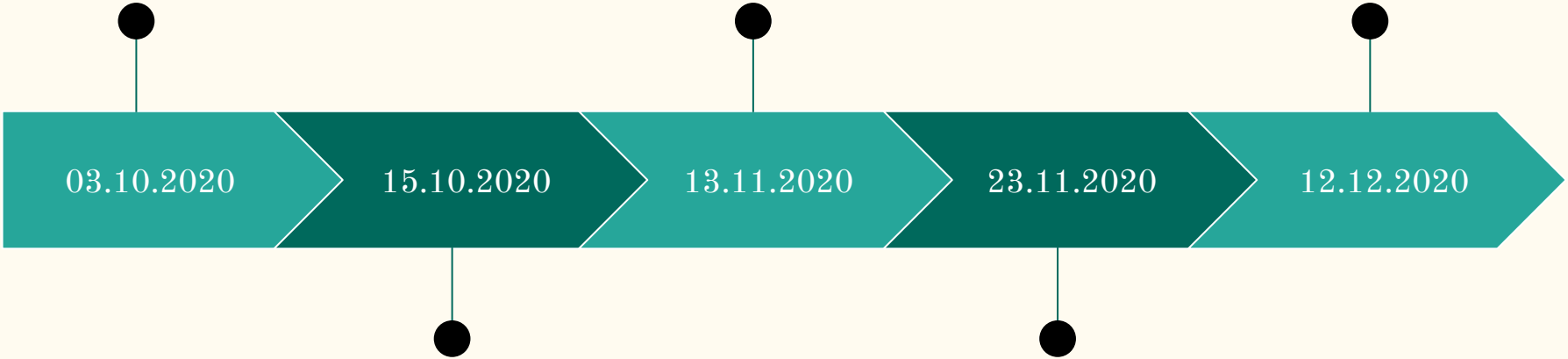
Simulation of the project based on the first draft of the design.

Testing/Improvements

Testing of the designed hardware model, and if any improvements required adding it accordingly.

Project Report Writing

Preparation of the final report for the capstone.



Hardware Implementation

Implementing the whole project with hardware components.

Final Implementation

Simulation of the whole project based on the final draft of the design.

Thank You