Remote Sensor Network
for Solar Power Monitoring

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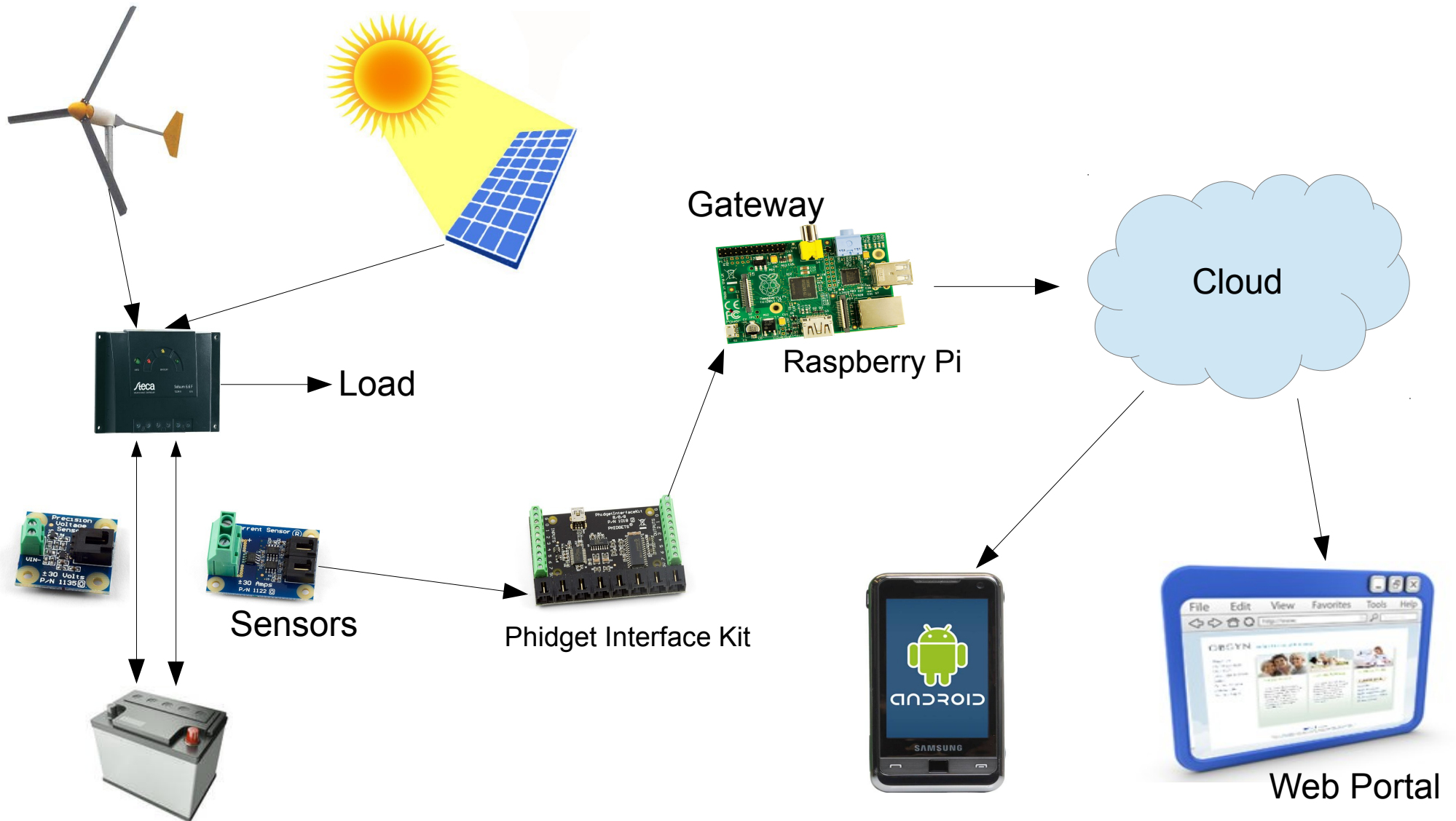
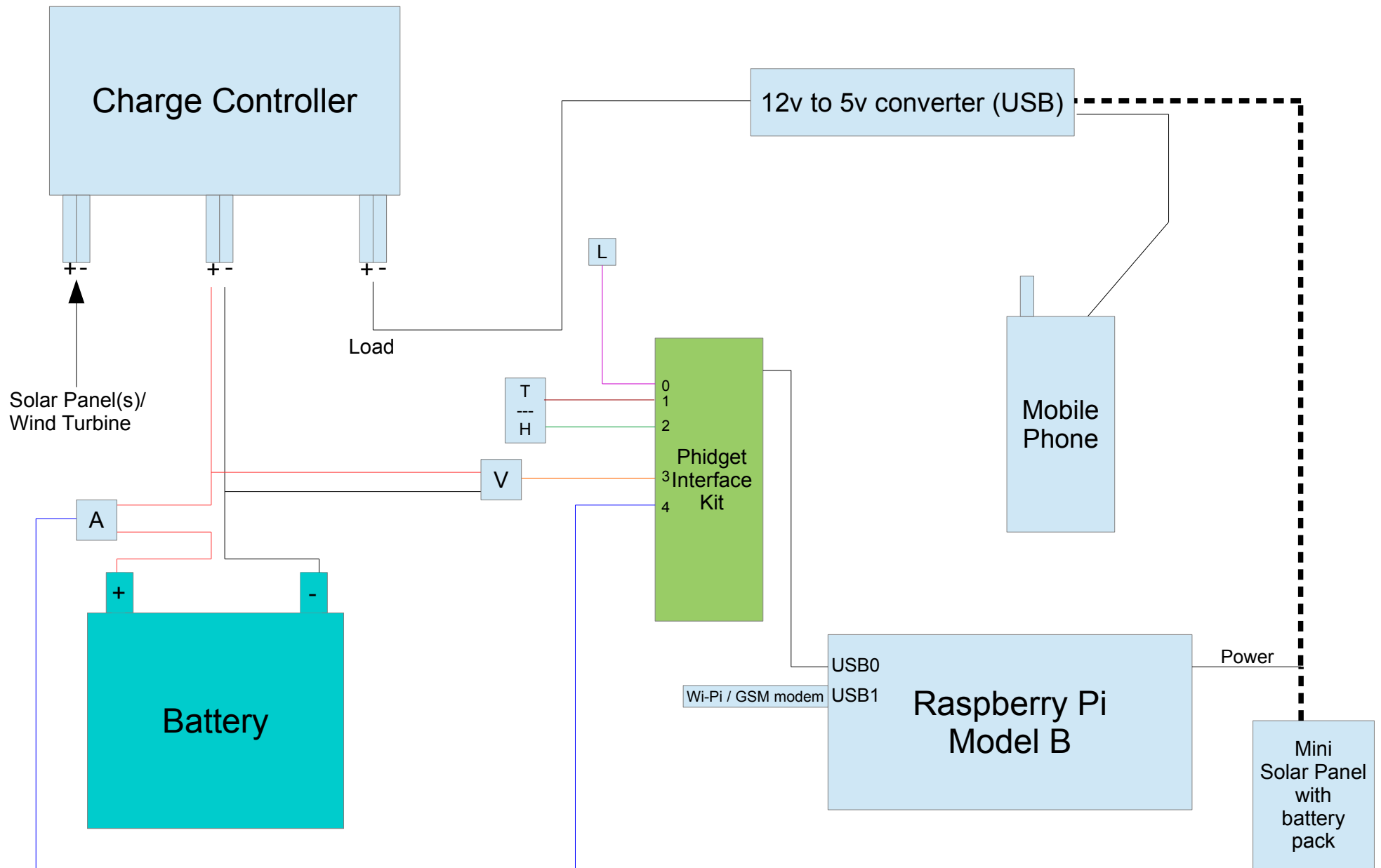Research type: Intelligent Systems and Advanced Telecommunication

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A quick recap...

Gateway

Raspberry Pi

Cloud

Load

Sensors

Phidget Interface Kit

Web Portal

Schematic of Implementation

Sensing with Raspberry Pi

- Raspberry Pi runs the sensing python script via a crontab/cronjob

#m   h   dom   mon   dow   command

 *   *   *   *   *   sudo python /home/pi/pi_wifi_1min.py

- Crontab runs the script **every minute of the hour** for **every hour of the day** for **every day of the month** for **every month of the year** for **every day of the week**

Tools used for User Interfaces (UIS)

- ## Web Portal

  www.cs.uwc.ac.za/~zerasmus/login.php

  PHP, MySQL, JSON,

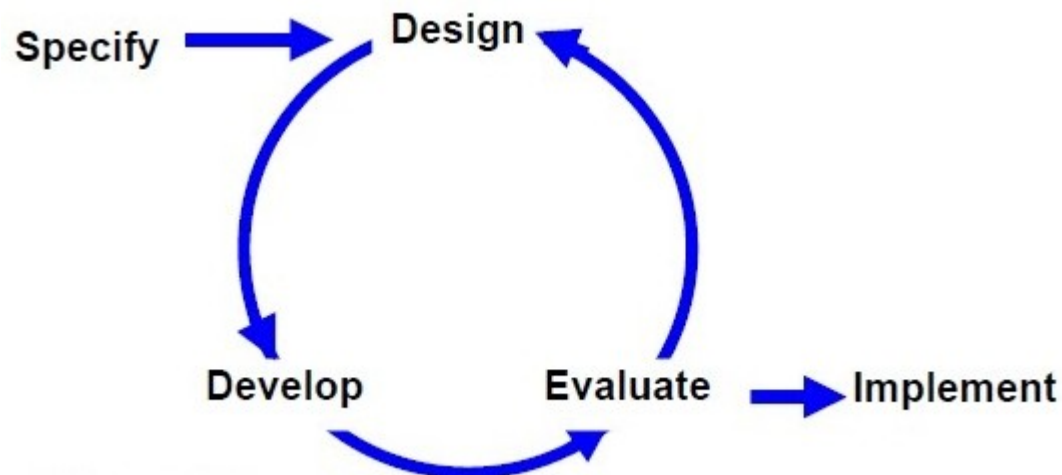 AJAX, Javascript, HTML, CSS

- ## Android App

  Java combined with XML

Web Portal - Changes

- Used AJAX to asynchronously load readings on Portal

- Added calculations for 12 Volt battery State Of Charge (SOC)

- Included averages of last 3 days

- Daily luminosity tracking

- Plotted averages of sensor readings against each other

Android App - Execution

- Timing handled via android.os.Handler;

  - Sensor readings handler

    - TimeUnit.SECONDS.sleep(1);

  - State of Charge handler

    - TimeUnit.SECONDS.sleep(10);

- HttpPost

  - Make POST Request to server for readings

- Display
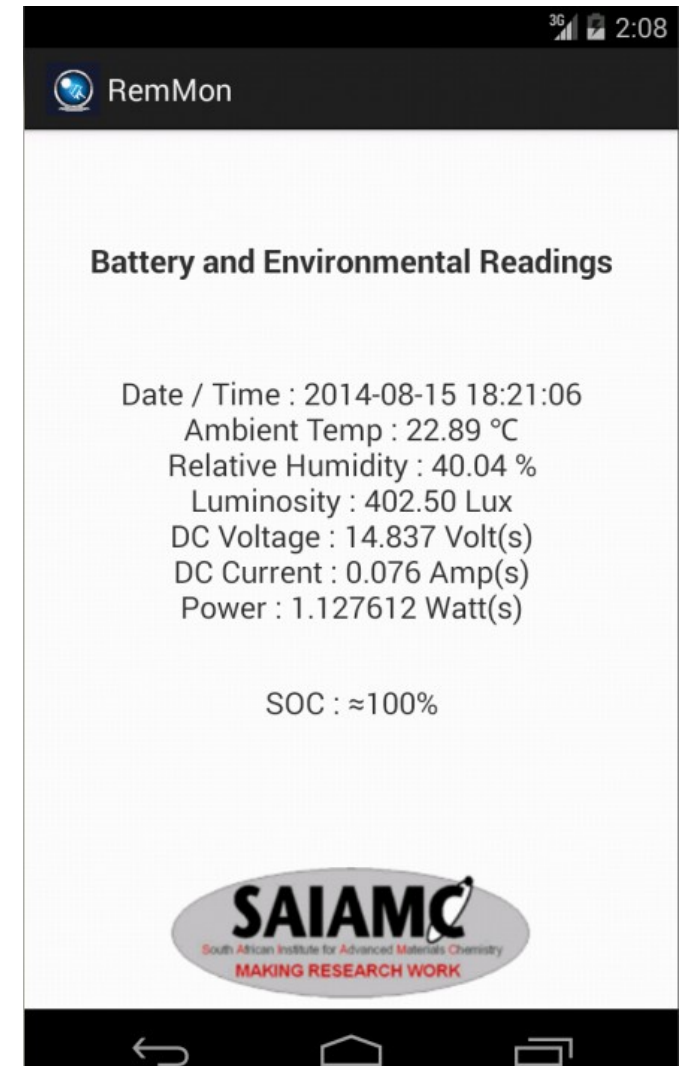
Project Plan

Term 1	Term 2
✔ Meet client for user requirements gathering ✔ Analyze their requirements and determine the hardware and software required	✔ Design the web portal ✔ Link it to a database ✔ Research code examples and modify to meet project objectives ✔ Prototype the remote monitoring system
Term 3	**Term 4**
✔ Improve the prototype and begin the testing phase ✔ Develop the android app ✔ Test the app	✔ Code documentation ➢ Testing document ➢ User's Guide

Questions