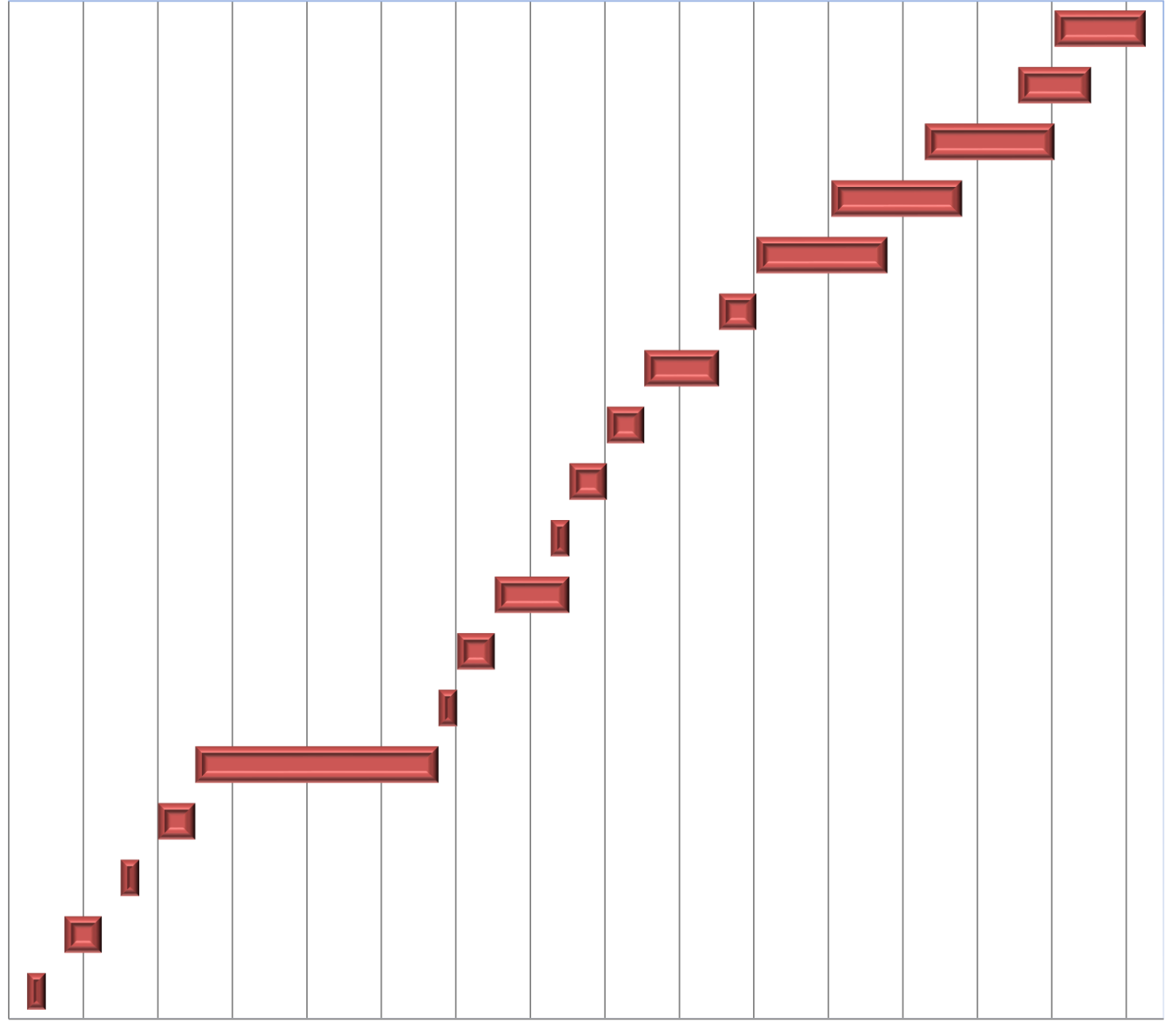


WiFi- Indoor Prositioning project [CAMP-NAV]

Tasks and Deliverables

- QA & Analysis of results.
- Final Field Testing
- Server Access
- Android Map Integration
- Intergrade algorithm to the phone app
- Testing of location resolution
- Develop/Implement the algorithm to resolving positions
- Select data structure
- Georefencing floor plans
- (OPTIONAL) Visualization of data
- Process data
- Survey test area
- Select and monument survey grid
- Final Exam Break
- Test survey software
- Select test site
- Complete WiFi Survey Software
- Select and Purchase Android Device



Dates (DD/MM)

Project Timeline Table

Tasks	Start Date	Duration (days)	End Date
Select and Purchase Android Device	11/25/2013	1	11/26/2013
Complete WiFi Survey Software	11/27/2013	2	11/29/2013
Select test site	11/30/2013	1	12/1/2013
Test survey software	12/2/2013	2	12/4/2013
Final Exam Break*	12/4/2013	13	12/17/2013
Select and monument survey grid	12/17/2013	1	12/18/2013
Survey test area	12/18/2013	2	12/20/2013
Process data	12/20/2013	4	12/24/2013
(OPTIONAL) Visualization of data	12/23/2013	1	12/24/2013
Georeferencing floor plans	12/24/2013	2	12/26/2013
Select data structure	12/26/2013	2	12/28/2013
Develop/Implement the algorithm to resolving positions	12/28/2013	4	1/1/2014
Testing of location resolution	1/1/2014	2	1/3/2014
Intergrade algorithm to the phone app	1/3/2014	7	1/10/2014
Android Map Integration	1/7/2014	7	1/14/2014
Server Access	1/12/2014	7	1/19/2014
Final Field Testing	1/17/2014	4	1/21/2014
QA & Analysis of results.	1/19/2014	5	1/24/2014

Choose Android Device

- An android tablet device will need to be selected. The device will most likely need to contain access to cellular networks as well as have a very accurate WiFi receptor.

Complete WiFi Survey App

- We will need to complete our WiFi logging application for the Android Tablet device, this application will be used to log the data of each point in a N, E, S, W directions.
- This app will have very simple user interface of a “start logging button”, “direction button”, and the ability to identify point number.
- If it is not possible to create this survey app in the given deadline the already freeware program “insider” will be used in its place to log the data.

Select Test Site

- The test site will be in the Vari Hall building.
- The initial area will consist of the first floor of the dome area in the Vari Hall building and will expand outwards on successful results.
- This will be done to keep this project as simple and as attainable as possible.

Test Surveying App Software

- The app will be analyzed to see if it’s working properly by checking to see if it saves the files properly this will include how to format the data.
- As stated before if the app is not working properly by the deadline insider will be used in its place.

Final Exam Break

- Since all of the group members are also taking a full course load on the side of this project, there will be a study break for the exams running

Select and Monument Survey Grid

- The grid spacing will be chosen to optimize the accuracy well at the same time taking the minimum amount of time to collect.
- Solomon recommended using a grid spacing of slightly more than a meter for a smaller test area.
- Larger grid spacing will be used if the implementation area were to expand significantly.

Surveying Test Area

- The initial implementation area will be surveyed over the course of a couple days.
- Each WiFi fingerprints will be measured in four orientations North, East, South and West.
- Each orientation corresponds to the direction towards the face of the building roughly perpendicular to that direction.
- The Surveying will be done with either our developed app or the pre-established “insider” software.
- Each fingerprint will need to be properly labelled on the floor plans in order for the database to be organized and assembled.

Process Data

- The raw surveyed fingerprints need to be processed and sorted.
- This will be done to check for outliers.
- This will also involve sorting the raw data into a suitable format to be easily queried and analyzed.

Georeferencing floor plans

- Use ArcMap to georeference floor plans.
- Render the gridded (georeference) survey area on the floor plans.

Select data structure

- Choose an optimal storage structure for the raw surveyed data.
- Research requirements for the structure based on the server query parameters for fetching data.
- At this point a final decision will be made on whether calculations will be cloud-based or preformed natively on the device.

Develop/Implement the algorithm to resolving positions

- Investigate any changes that need to be implemented in Solomon's algorithm for resolving locations of fingerprints.
- Implement changes as necessary.
- Ask Solomon for assistance and advice relating to the selected data structure.

Testing of location resolution

- Test Solomon probability based algorithm for resolving locations of fingerprints using input based on the selected data structure.
- Preliminary QA and statistical analysis of results.

Integrate Algorithm to the Phone App

- Integration of Solomon probability based algorithm.
- Conversion to native Java-Android language.

Android Map Integration

- Gather available floor plans and maps for server upload.
- Work with Hadi to incorporate ESRI mapping tools.
- Investigate native navigation and geolocation methods available from the ESRI toolbox.

Server Access

- Select Storage Server
- Store surveyed finger print data base on server in the format of selected data structure.

Final Field Testing

- Attempt to resolve locations at known points.
- Test location resolution for points ON grid marks.
- Test location resolution for points between grid marks.

QA & Analysis of results

- Statistical analysis of location testing results.
- Accuracy of system.
- Reexamine and comment on system limitation.
- Discuss results and compare to expectation.