

Project Proposal - Sensor Group One

Team Members - Isha Date, Abraham Hadaf, Mark Hagiwara, and Jasleen Sohal

Part I: Project Description

The goal of our final project is to utilize the orientation, magnetic field, and acceleration sensors to mimic the functioning of a compass. This will be accomplished by collecting data through matlab's mobile application. This data will then run on a matlab computer program. ThingSpeak will be utilized to upload the sensor data and there will also be interaction with Twitter. The collected data will be visualized through relevant plots and tables.

Part II: General Description

The first aspect of this project is data collection. Isha and Jasleen will acquire data through matlab's mobile application for the orientation, magnetic field, and acceleration sensors. In order to make this data dynamic, the data will be collected from multiple orientations and different accelerations. After accomplishing this, the data will be processed into a matlab table and a comma separated .csv file will be created. From here, the application development will begin. The relevant tables and graphs will be presented with clearly defined units, width intervals, axes, titles, and keys.

Part III: Reach Component and Special Features

We are aiming to employ three sensors in our app designer as opposed to two. The data from these sensors will be uploaded to ThingSpeak. We will have an acceleration versus time graph and table, a polar coordinate compass plot, and an Euler Angle vs. time orientation plot. On ThingSpeak, we will display statistical analytic data using the mean, variance (var), and standard deviation (std) commands. We are also thinking of displaying a boxplot through utilizing the `boxplot(datafile)` command. The boxplot will display outliers and the amount of data that falls within the first and third quartiles to recognize skewness. The additional functionality requirement will be met by interaction with Twitter.

Part IV: Division of Tasks

<u>Name</u>	<u>Responsibilities</u>
Isha Data --- data collection	<ul style="list-style-type: none"> (1) Brainstorm ideas on implementing data collection (2) Find helpful links for both data collection and application architecture (3) Figure out ways to screen record in an effort to edit videos (4) Will make sure that the reach components are functioning correctly
Abraham Hadaf -- app development	<ul style="list-style-type: none"> (1) Brainstorm ideas on application architecture (2) Design and research compass sensor (3) Responsible for the image view portion of the Project Proposal (4) Will work on coding for .csv file and load data buttons (5) Youtube Video Editing
Mark Hagiwara -- app development	<ul style="list-style-type: none"> (1) Brainstorm project ideas (2) Research about relevant sensors and understand how they function (3) Will work on coding for the

	acceleration vs. time graph and Euler v. Time graph
Jasleen Sohal -- data collection and app development	(1) Contribute to choosing specific sensors (2) Wrote the Project Proposal (3) Data collection for sensors (4) Will work on coding for the compass polar coordinate graph (5) Youtube Video Editing

Part V: Timeline

I) Deadlines

<u>Date</u>	<u>Tasks</u>
Friday, November 6th	We will have submitted the project proposal.
Monday, November 30th - Friday, December 4th	We will present our core component to our TA, Neil, in a scheduled consultation.
Friday, December 11th	We will have the reach component completed and we will have submitted the final video project onto YouTube.

II) Course of Action

<u>Date</u>	<u>Aspects Accomplished</u>
Saturday, November 14th	Isha and Jasleen will have the data collected for the relevant sensors using the matlab mobile application.
Saturday, November 21st	Coding for the polar coordinate graph, the acceleration versus time graph, the Euler Angle vs. Time and the coding for the .csv files/load data buttons will be complete.
Thursday, November 26th	The reach components for the app designer will be complete.
Saturday, December 5th	We will have filmed the YouTube video and hopefully have submitted it by the night.

Part VI: YouTube Video

All team members will be present and will explain the contributions they have made to the final project. Group members will elucidate the code he or she has written and how it functions. The projected time span for this video is between five to ten minutes and it will be uploaded to YouTube for grading.

Part V: Image View

