Mr. Bear - User Requirements

Increments

Increment 1 - Image matcher

A system that matches a photo taken by user on a smart-phone and matches it to high definition photos of campus. The software will provide a ranking of photos based on how well they match. This system will have no specific end user, and as such a low priority will be placed on developing an effective user interface and making the software more usable

Increment 2 - Building Identifier

The building identifier will use an image to attempt to identify which building the image is of. A set of possible buildings is sent to the user, along with information about the buildings

Increment 3 - User Locator

The user locator will use images taken by the smart-phone to determine location of the user.

Increment 4 - Mr. Bear University Guide

Fully integrated end user software. This software will allow users to find their way to any building on campus using all of the features in the previous increments. A user can search for a building by name or photograph, and use the system to help them locate where they are and guide them to where they are going.

Increment 5 - Web Service & Editor (from Lucio's email)

A web service that other external systems can use in order to obtain the location of users indoors or outdoors. This software will be a simple extension of the app to allow web browsers to participate. In addition, a place where an editor can add images and relevant meta-data for future buildings or indoor/outdoor spaces will be included (as an online service, or just an API??)

Increment 6 - Augmented Reality

Include feature to augment reality by identifying buildings while using the camera in Mr. Bear. Buildings in the viewer will have markers on them that display information about the building.

Functional Requirements

Ref#	Requirement
1.1	Use image recognition software to match images taken on a smart phone to high

	definition images taken of campus.
1.2	Display ranking of matching images on smart phone and allow user to select most relevant image.
2.1	Match a picture to a set of possible buildings that the picture may be of, and display info about these buildings.
2.2	Use selections made by user to improve building matcher for future use.
3.1	Use information gathered by the smart-phone (pictures, GPS, compass direction) to determine the location of a user with no greater than ???m error.
4.1	Provide menu that provides access to the various features of the Mr. Bear guide.
4.2	Provide a building selected mode that displays multiple pictures of the building, information about the building, and a directional arrow that points in the direction of the building.
4.3	Provide building identifier feature that allows user to take a photo of a building and use it to enter the building selected mode for that building.
4.4	Provide building search engine that allows the user to search for a building on their phone by name and use the results to enter the building selected mode with one of the results.

Non-Functional Requirements

Ref#	Requirement
1.3	Software must be usable on an Android AND/OR iPhone.
1.4	Display ranking of matching images on smart phone and allow user to select most relevant image.
2.3	Building identifier must return results within ??? seconds of taking photo.

Use Cases

Increment 1

Main course of action

1. User takes photograph of building on smart-phone
2. User waits for processing of image
3. User views possible matches of the image in order of their matching rank.

Increment 2

Main course of action

1. User takes photograph of building on smart-phone.
2. User waits for processing of image.
3. User views list of possible buildings based on how well they match the photo.
4. User selects building that may be the building photographed.
5. User views a selection of photos of the building.
6. User confirms that this building is correct and views detailed information about the building.

Alternative course of action

4. User indicates that this is not the matching building and goes back to the building selection screen.
5. User selects a different building and continues from step 4.

Increment 3

Main course of action **(why don't you use GPS to get location information?)**

Phone GPS is rarely more accurate than 100m around campus, it is part of the locator but by itself not accurate enough for our needs.

1. ??? Depends on necessary information for locator.

Alternative course of action

1. ???

Increment 4

Main course of action

1. User selects camera (building identifier) from menu.
2. User views campus through smart phone camera and take a photo of a building.
3. User views list of possible building matches.
4. User selects relevant building and is taken to building selected mode where information about the building is displayed.
5. User selects 'go back to menu' and returns to start screen.

Alternative course of action

1. User selects building search mode.
2. User is given text field and list of commonly searched buildings.
3. User types in building name (narrowing search results as characters are entered)
4. User selects building, entering building continuing from step 4.

Increment 5

Main course of action

1. User selects camera (building identifier) from menu.

2. User views campus through smart phone camera, building identifiers augment view by placing identifiers on the view.
3. continue from Increment 4 step 2.