Pocket Beer Reference Application for Android Mobile

An application for Android Smartphones

Committee Members and Signatures

Approved by  

Date

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Abstract

Completion of this project will involve the development of an Android “mashup” application that will provide a mobile beer style reference for home brewers of beer. The application will provide several useful methods of mapping widely accepted style guidelines to specific commercial beer examples. In addition, the application will allow user interaction for the purpose of determining the source of an “off flavor” in a beer.

Related Work

As this is my first experience with an Android application, I will read one paper that gives a thorough high-level overview of the operating system itself[6]. Several other Android-related research papers and technical publications will be studied to assist in the development of various portions of the application. The areas in which this prior research will help greatly are: Web Client usage for HTTP requests[7], parsing of a JSON formatted response to a web request[8], security considerations necessary when developing a new Android application[9] and implementation of phonetic string matching algorithms[11].

Introduction

Brewing beer at home, known as “Homebrewing”, is a hobby for many people around the world. In America, it is estimated that more than 750,000 households brew at least once each year.[1] One of the most popular American Homebrewing online forums runs a thread to track its members’ yearly beer production. In 2009, members of the forum logged roughly 31,000 gallons of beer brewed at home.
Members estimate that the tally on that forum thread most likely represents about 1% of the world’s homebrewing production.\textsuperscript{[2]} If those stats are true, then homebrewers produce somewhere around 3 million gallons of beer each year.

In the world of homebrewing, styles reign supreme. Beer style guidelines provide both beginner and expert brewers with a framework that their creation should fall within. Crafting a quality beer is actually quite difficult because there are many variables that play into the brewing process. A brewer must be conscious of time, temperature, ingredient quality, equipment, cleanliness, procedure and technique. In addition, a typical beer takes around 6 weeks from brewing to consumption, meaning that the opportunity for mistakes is spread out over a long period of time. Even a small mistake can lead to a beer with noticeable “off flavors”, resulting in a waste of time and money \textsuperscript{[10]}. Building a beer recipe to conform to a particular style guideline gives a brewer some level of assurance that aroma, mouthfeel and taste in the creation will turn out better than they might have if a random recipe was thrown together with no guidelines.

The style guidelines used by almost all homebrewers are published by the Beer Judge Certification Program (BJCP)\textsuperscript{[5]}, and updated every few years. BJCP styles are used for categorization and judging in just about every homebrew competition in America. These styles come in extremely handy for a homebrewer, as they include ranges for beer gravities, bitterness levels, color, and alcohol level. They also contain descriptions of aroma, feel, taste and other characteristics one would judge when tasting a specific beer. They also hold lists of ingredients often used in each style and a few example beers of each style. Whereas most other beer style lists are just names used for categorization, the BJCP styles contain a wealth of valuable information for a brewing hobbyist.

**Problem Description**

As useful as they are, the BJCP styles really fall short when it comes to finding popular example beers for a particular style, or the inverse, taking a beer that you like and figuring out what style it would fall under. These two scenarios actually pop up quite often for a homebrewer. A brewer might taste and fall in love with a new commercial brew, and then decide to brew his own clone version. Inversely, a brewer might read through the details of a particular style and grow interested in brewing a beer of that style. But, before brewing they’d like to try an example first and see if they actually like it well enough to spend the time and effort on it.

Even if a brewer is armed with a great recipe that adheres to a particular BJCP style guideline, there will inevitably be times when things go wrong. In these cases, an individual with an experienced palate will know almost immediately by judging aroma, mouthfeel or taste that something is not quite right. However, tracking down the cause of an “off flavor” in a beer is not an intuitive process.

**Solution**

It became clear to me that a mash up application would help the brewer to quickly pinpoint the style of a particular beer or a list of example beers for a particular style. I set out to find a place on the internet with a comprehensive list of example beers that I could reference in a mash up with the BJCP Style
Guidelines. I quickly found that BeerAdvocate.com is the place for beer on the web. In fact, the #2 result in a Google search of “beer” is BeerAdvocate.com, right after the Wikipedia entry for Beer. \[3\] Luckily for me, BeerAdvocate categorizes every single beer on their site into a style that they came up with, separate from BJCP.\[4\]

A little bit of research on homebrewing forums and the Android market has shown me that even simple BJCP style reference applications have generated reasonable numbers of downloads. By creating a stylish and intuitive BJCP reference and then adding an extremely useful mash up with data provided from the best beer community on the internet, I think that my application will have the potential to garner great interest in the homebrewing community. I know, for a fact, that nothing else like it exists for any computing platform, which makes this an exciting capstone project to finish off my Masters course of study.

**Project Description**

Using BeerAdvocate’s existing categorizations, I will be able to create a simple mapping between BJCP styles and BeerAdvocate styles. With that mapping in place, and given a BJCP style, I will know exactly which BeerAdvocate style page to visit and poll for top beer examples for that style. Inversely, given a specific beer page on BeerAdvocate, I can grab the BeerAdvocate style number and use the mapping to return the associated BJCP style.

To simplify the process of pinpointing a specific beer on the BeerAdvocate website, I will add a search View that will accept a user’s query and provide results from Google’s REST Search API. Those results will be filtered to BeerAdvocate index entries. Adding this search function into the mix will allow me to provide a quick method for getting a user to that specific beer page on BeerAdvocate.

In addition to these style-related functions, the application will have an interactive feature that will allow a brewer to track down the cause of an undesirable flavor in his beer. This feature will use a database of flavor characteristics, which will be related to causes of those characteristics. Each cause will also have a description of things that can be done to make sure that the flavor doesn’t show up in future brews and, in some cases, what can be done to remedy the “off flavor” in the currently affected beer. This feature will employ a search using a phonetic algorithm \[11\]. This algorithm will help to catch spelling errors and should prove very helpful in tracking down specific flavor characteristics.

The final step will involve placing an intuitive UI on top of all of these different sources of data to create a seamless experience for the user.

**Tasks & Schedule**

This is the list of tasks that must be completed in order to achieve success in this project.

**Tasks already completed this semester:**

1. Create database to hold style data (.5 day)
2. Create database tables for BJCP Styles, BA Styles and BJCP to BA style cross reference. (1 day)
3. Write back-end database logic for initializing database and performing selections. (3 days)
4. Write View for listing BJCP Styles. (3 days)
5. Write View for displaying all style details for a given BJCP Style. (1 day)
6. Write back-end logic for cross referencing a BJCP Style with a BA Style. (.5 day)
7. Write back-end module for retrieving top example beers for a given BA Style. (2 days)
8. Write View for displaying top example beers for a given BA Style. (1 day)
9. Write back-end module for retrieving a specific example beer and its data. (3 days)
10. Write View for displaying a specific beer and its data. (1 day)
11. Write function to launch BeerAdvocate in a web browser for a specific beer example. (.5 day)
12. Write back-end logic to search BeerAdvocate for a given query string using Google Search. (1 week)
13. Write View to take search term and show Google Search Results. (1 day)
14. Write a main view to provide a choice between Browse and Search Actions. (.5 day)
15. Write and hook in logic to handle disconnected state gracefully for Top Examples, Beer Search and Beer Details. (2 days)
16. Test application and fix discovered bugs. (1 week)
17. Create graphical elements. (2 days)
18. Refactor search code to use Google REST Search API rather than scraping Google search result pages. (1 day)
19. Write database logic for populating flavors and performing selections. (3 hours)
20. Write back-end logic for performing phonetic searches over flavor characteristics. (8 hours)
21. Write View for displaying details about a particular flavor characteristic. (1 hour)
22. Update Main View to include flavor search. (1 hour)

**Tasks to be completed prior to project delivery:**

23. Write View for searching flavor characteristics. (4 hours)
24. Compile a list of future application features. (1 day)
25. Final Project Report to document process and results. (5 days)
26. Complete Project Defense Presentation (1 day)

**Deliverables**

The deliverables of this project include

- A fully-functional Android Application for:
  - Referencing BJCP Beer Styles.
  - Finding style-associated BeerAdvocate beer examples.
  - Searching for any given beer by name, brewery, characteristics, etc (i.e. a beer search engine).
  - Associating a specific beer with its BJCP style category.
  - Identifying off flavors in a beer and learning about causes and remedies for those flaws.
• A project report documenting the processes followed, design decisions made, and implementation challenges faced while implementing the Android Application.

References

http://www.homebrewersassociation.org/pages/government-affairs/talking-points


http://www.google.com/search?q=beer

http://beeradvocate.com/beer/style

http://www.bjcp.org/2008styles/catdex.php


http://ntnu.diva-portal.org/smash/get/diva2:348784/FULLTEXT01


http://www.howtobrew.com/section4/chapter21-2.html