

ViviView

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Table of Contents

Introduction.....	3
Use Cases	3
Vivis.....	4
Defining the Vivi.....	4
Vivi Types.....	4
Vivi Levels.....	4
Gesture Interface	5
Use of Vivis	5
Social Vivis.....	6
The Future: Seamless Advertising	6
Target Market	7
Potential Issues	7
Implementation	8
ViviVieWer	8
ViviVieW Android.....	9
ViviVieW Online	9
Future Growth	6
Detailed Implementation Information	10
ViviVieW PC Prototype.....	10
ViviVieW Android.....	14
ViviVieW Online	17



Introduction

Television and internet video viewers do not watch the content for the commercials (with the occasional exception for some viewers of the Super Bowl). In order to exist, however, this content needs the revenue stream from the advertisement money spent on those commercials. For this reason, and for lack of other options, viewers endure the commercials with their video content. Since they do not desire these commercials, they find ways around them. Viewers surf channels and go do other things during the commercial breaks. This causes the viewer to miss portions of the shows they are attempting to view and simultaneously defeats the original purpose of the commercials. No one would place a billboard under a rock. So why would someone advertise on a commercial, when the viewer is going to go to the bathroom or change the channel as soon as that commercial comes on?

ViviVieW simultaneously solves the problems of unwanted and unviewed commercials. It's a win-win. Both the viewer and the advertiser get what they want: no more commercial breaks disturbing the viewing experience (i.e. TV and Hulu), no obtrusive embedded advertisement (i.e. YouTube), no more wasted advertisement dollars on commercials that no one will watch (i.e. TV). ViviVieW allows viewers to pick exactly which advertisements they are interested in, eliminating unwanted advertisements from the viewing experience and therefore eliminating wasted advertisements from the advertisement budget. ViviVieW does this by allowing everything (i.e. clothing, appliances, vehicles, food, other products, actors, characters, makeup artist, hair stylist, wardrobe, set design, real estate, roads, scene locations, music, and anything else) in any video to be associated with the content and seamlessly accessed by the viewer whenever desired.

Use Cases

An example of a video content viewer using ViviVieW would be a young urban professional sitting down to watch TV after a long day of work and cocktails with colleagues. She turns on Gossip Girl, her favorite TV show. She sees her favorite character, Blair Waldorf, played by Leighton Meester, wearing the most gorgeous dress she has ever seen. The protagonist of our story, also a fashionista, has to have it. With a few simple gestures, she sends the "vivi" attached to the dress to her ViviVieW account. She accesses the vivi on her laptop and sees that it's a Versace that retails for \$900 at NeimanMarcus.com. She finds out that she can get free shipping if she spends \$1,000 or more, so she sends the dress to her shopping cart and gets back to watching the show to see if Blair is wearing any other must haves. The next day she is at a Macy's and sees a pair of shoes she loves but can't decide on a color. She opens the ViviVieW application on her mobile phone and looks up the dress she vivied the day before. Based on the picture of Blair's dress, she decides that blue shoes will match much better than black, and makes the purchase.



A movie enthusiast decides he wants to shave his head. He recalls that Brad Pitt had a shaved head in *Fight Club*, one of his favorite movies. Before taking the plunge and shedding all those lovely locks that took so long to grow out, he decides to take a look at how Tyler Durden's (Brad Pitt's character in *fight club*) buzz cut was shaped. Was it longer on top or even all over? He Googles "Tyler Durden Brad Pitt Buzz Cut." The "image" results are at bad angles, often too dark, and don't paint a clear picture of exactly how the cut is styled. The Vivi results (archived from the ViviVieW ViviBase, a full database of all public vivis created by advertisers, certified viewers, and social viewers), however, include numerous vivis that point to exact scenes from the film (on readily available sources of video content, such as Netflix, Hulu, YouTube, or OnDemand content) that vividly portray the exact hair style that our viewer wants to replicate. He clicks the "Netflix: play instantly" button and gets the crisp view of the hair that he will soon have. He saves the vivi to his favorites so he can later show it to his hair dresser using his mobile phone.

Vivis

Defining the Vivi

A vivi is formed by the combination of an object contained in a video and set of information pertaining to it. The object can be anything that can possibly occur in a video – a scene, a person, a can of soda, clothing, the audio track etc. The associated information is a set of well defined fields including name, description, a web page, an image and a vivi level (described later).

Vivi Types

With ViviVieW, advertisers create sponsored vivis that associate items in video content with the online stores or websites of the retailers that distribute the item. This is similar to how facebook picture tags associate the image of a facebook user to their facebook page. Contributors to websites such as Wikipedia and IMDb may sign up to be certified viewers who can create certified vivis, like the advertisers' vivis, that are visible to all ViviVieW viewers. All other ViviVieW viewers can create vivis as well, but these will only be available to other ViviVieW viewers whose ViviVieW profiles are linked through a friend system such as those used on facebook and myspace. This system allows for unique sponsored and certified vivis that are visible to all ViviVieW viewers, and social vivis between friends.

Vivi Levels

ViviVieW vivis are stored in the VviBase and are readily available to all viewers viewing video content through a ViviVieW optimized platform. In addition to the three



types of vivis (sponsored, certified, and social), there are also three levels of vivis. Level one vivis are distinct objects, such as Ray-Ban sunglasses, a Versace dress, or even a trendy buzz cut. Level three vivis encompass the entire scene. These include the soundtrack and location, such as a car that all the characters are in, an apartment, or an open field. Level two vivis are groups of level one vivis. They are generally anything one might want to vivi that is within the scene, but encompasses more than one distinct object. A few examples of level 2 vivis would be a character and his or her outfit consisting of distinct articles of clothing, a car seen as it drives down the street with distinct passengers visibly riding inside, or a dining table set with all the silver and flatware. All vivis have a type and a level.

Gesture Interface

A viewer can access vivis using simple gesture commands that are detected by cameras that will be included in the next generation of TVs. These gestures can be used while video content is playing or paused. Pointing a single index finger at the screen highlights the level one vivi that the viewer is pointing at. In order to highlight a level two vivi, the viewer points their index finger and middle finger at the screen. For level three vivis, the viewer will point their hand with all fingers extended. When the viewer highlights the object or scene she wants information about, she can then pull in her fingers and extend her thumb backwards, as if to pull the vivi out of the screen. . This gesture sends the vivi to the viewer's ViviVieW account.

Uses of Vivis

A viewer can find more information about saved vivis by accessing his ViviVieW account on the Internet or from a mobile device. If the item in a vivi is for sale, the viewer may place it in his shopping cart to purchase alone or with other items he has viewed. Vivis that contain informational content such as Wikipedia or IMDb pages allow viewers to find out more information about anything they are viewing, even if it's not for sale. Other vivis contain real estate information for locations with houses or condominiums for sale, rental property available, or booking information for an airline or hotel in the video content.

Anything can be in a vivi, and anything can be marketed in a vivi because video content is a representation of our real lives that includes products we use. Viewers who view content relating to a subject are more likely to be interested in that subject and related merchandise than those who choose not to view that content. For example, video content that includes parents can market diapers and content that involves bar patrons can market alcohol. Viewers can place their infants in the same Pampers diapers that John and Kate use or drink James Bond's Kettle One Vodka Martinis, shaken, not stirred.



Social Vivis

On their ViviVieW accounts users can group level one and/or level two vivis to “vivi” (create) new social level two vivis. They can also vivi level one, two, and three vivis to associate with existing vivis. Users can send vivis to their viviFriends directly or post vivis to their viviFeeds. Their viviFeeds can be set to post their social vivis to their favorite social networking sites such as facebook or twitter. If the vivis in their viviFeeds are public, they will be visible in the main viviFeed for all ViviVieW users to see. Users can view vivis that their viviFriends have sent them or have posted to their respective viviFeeds. Because of these possibilities, ViviVieW is not just a tool for advertising. It is also a social platform that people will be excited to use. A viewer can view the video content that any given vivi comes from by playing it from one of their preferred video content sources (i.e. Netflix, Hulu, YouTube, or any form of OnDemand content).

The Future: Seamless Advertising

Currently the market for video advertisements is populated by commercials, product placement, and the much less widely used obnoxious and obtrusive YouTube pop-up style ads. With ViviVieW, commercials are a novelty, something you tell your kids about. “When I was your age, we only got to watch 15 minutes of a TV show in a half hour episode. The other half was some kind of advertising they called ‘commercials.’” If companies want to make commercials, they can post them online. Youtube can get rid of their pop-up ads and instead use ViviVieW to enrich the viewing experiences of the site’s users. Product placement is a different story. Retailers will likely pay to increase the placement of their products in video content. This is, however, not necessary. Content creators need products to populate the scenes of their content. All the retailers really need to do is make sure they create products that content creators want to use in their content.

ViviVieW will create advertisement revenue that previously could not have existed for feature films that are released for home viewing. TV programs will be able to simultaneously advertise more and supply more content to the viewer because there is no need to stop content for commercials and no need to stop advertisement for content. Advertisers will be more certain that their advertisements are being seen, because the ratings for a show directly correlate to viewers seeing the products. Beyond this, ViviVieW creates a system to measure exactly how many times viewers are looking at the particular products in video content. The number of vivis sent to ViviVieW viewer profiles is an extremely powerful measure of the popularity of a product and the value of a potentially expensive product placement contract. The ratio of vivis sent to ViviVieW profiles to actual purchases made via ViviVieW can also be used as a tool to measure the market accuracy of pricing. Too many viewers viewing a product vivi, but not purchasing is a sign that a product is desired, but overpriced in the eyes of the viewers.



Target Market

ViviVieW is an innovation that should be available to everyone. For this reason, social ViviVieW accounts are free and open to anyone who signs up. The sign-up process can be integrated into the purchase of a new ViviVieW capable TV and the sign-up will be available on the ViviVieW website. Certified ViviVieW accounts are simple upgrades from a social account.. The exchange of money will be centered around the sponsored ViviVieW accounts. Video content providers, such as TV channels and film distribution companies, will be paid by sponsored account holders for the products used in their content. Sponsored accounts will have multiple payment options. Account holders can pay by individual vivi viewed, by number of vivis shown in video content, or by flat rate. ViviVieW takes a percentage of the exchange of money from sponsored account holder to content provider and also takes a percentage of the purchase price of all products (retail, real estate, rental, reservation, or otherwise) purchased through the viewing of vivis. Sponsored account holders are encouraged to offer discounts to customers who purchase through ViviVieW, as this will aid them in focusing product placement.

Potential Issues

What about the people who never use vivis or just do not care about the products on the screen? People that do not care about the products on the screen do not watch commercials. They will be more likely to be reached by subtle advertisements and product placement, than by obvious commercials that interrupt their viewing experience.

Will the increased use of product placement make TV and movies less attractive to viewers? With ViviVieW, there is no need to increase product placement. The products are already there in every show on television and every movie in theaters. If advertisers and content creators collude to inject video content with obnoxious product placement, then their content will likely be unsuccessful. With poor ratings, the diluted video content will fail and the market will correct itself. Viewers will view only the shows and movies that they like.



Implementation

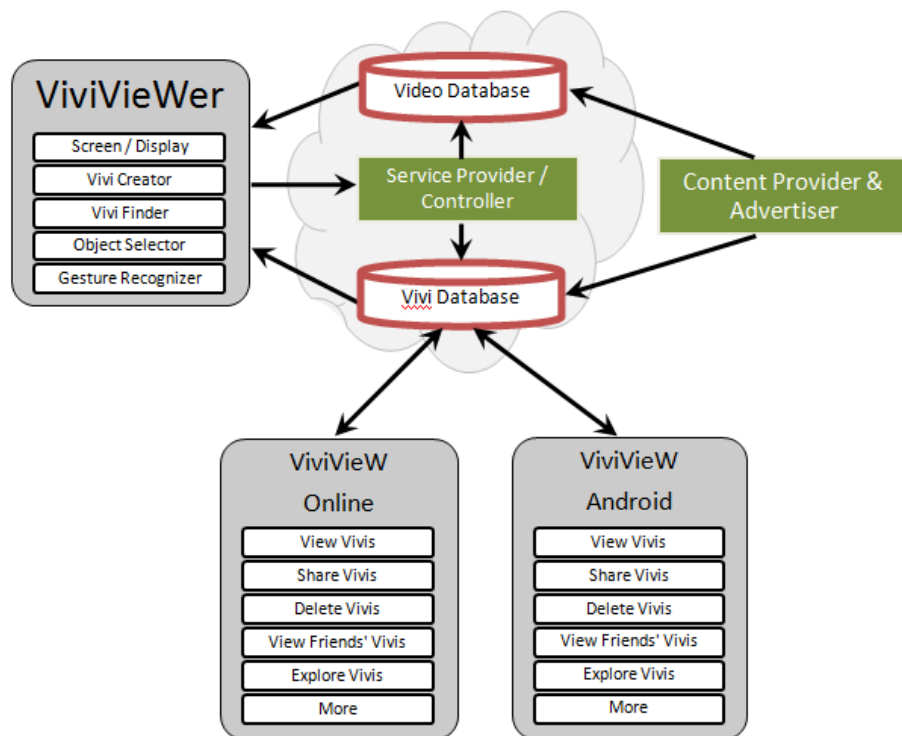


Figure 1. System architecture.

ViviVieWer

This is the main interaction gateway for the user and the proposed system. Using this interface, which is envisioned to be a Television or a Laptop, the viewer can select and/or add vivis. The means of interaction would be using a simple set of gestures to be performed by the user. The gesture recognizer identifies different user gestures and selects objects in the video stream using the object selector. The Vivi Finder then searches for Vivi's for the selected object using the ViviStream coming from the ViviDatabase. If found, the viewer can select it for later use by performing the assigned gesture. Otherwise, to add a new Vivi for the selected object, the user can either add information on the interface itself using some form of data entry like a virtual keyboard or decide to save it and add information later. The two streams – Video and Vivi stream should be time synchronized. The ViviStream will have information regarding which Vivi corresponds to which set of objects (pixels or audio tracks) in the video.

When a user selects a vivi through the Viviviewer, both the Android and Online interfaces receive updates to display this newly added vivi. Viviview Android and Online are described below:



ViviVieW Android

This is the mobile interface that allows users to access information about vivis they have retrieved, wherever they go and whenever they want. It provides a variety of display options for the users to find vivis of interest:

- Recent Episodes: The most recently watched episodes which contain the user's vivis of interest are presented to the user.
- Recent Shows/Movies: This feature retrieves all the shows or movies which contain the user's vivis of interest and displays them in the reverse chronological order. This is useful when the user remember the shows associated with their vivis, but does not recall the exact episodes or dates when the shows aired.
- Recent Vivis: This option allows the user to view all of the vivis they were interested in from their favorite shows or movies.
- Dates: This features enables the user to search for vivis by the date on which the containing show or movie was viewed.

ViviVieW Online

This is the user's interface to the vivis they have created and retrieved. It is designed as a website, and intended for viewing through a web browser. The vision for the website is to allow a number of users connected to the web to share vivis with each other, potentially generating excitement about sponsored products as well as the shows or movies in which they appear. The website retrieves information from a central database. Users' operations on the database to choose and share specific vivis are realized through updates to the database.

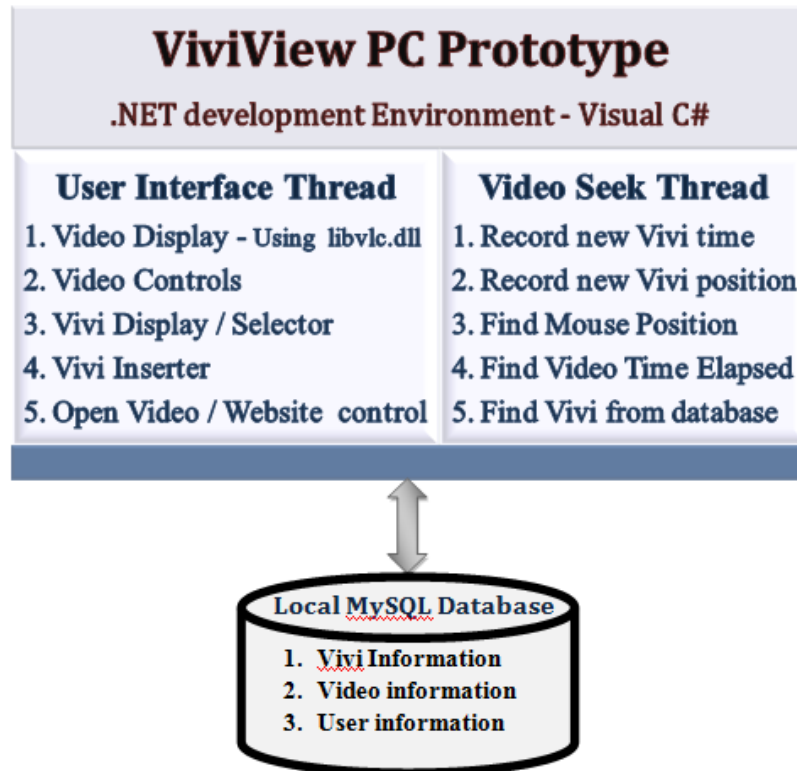
Future Growth

The next step for ViviVieW is introduction to the market, so that the ViviBase can grow with meaningful vivis. Free trial sponsored accounts will be offered to create sponsored vivis. Certified and social vivis will grow organically as people hear about ViviVieW. ViviVieW use on computers will grow first with early adopters. TV use will follow with the development of the ViviVieW gesture recognition box and/or after TVs are equipped with cameras. Development of the gesture recognition box and gesture recognition software, to be used therein and within TVs with internal cameras, will commence immediately. Integration of existing image recognition software will proceed simultaneously. This will be used to identify objects that can be vivied and to instantly vivi objects that are identified, similar to the identification done by facial recognition software that is already included in photo software such as iPhoto. The entire change over can happen quickly since all of the technology exists in some form and only needs to be optimized for use in ViviVieW.



Detailed Implementation Information

1. ViviView PC Prototype (ViviVieWer)



Features

The following steps summarize all the features provided by the ViviVieWer platform:

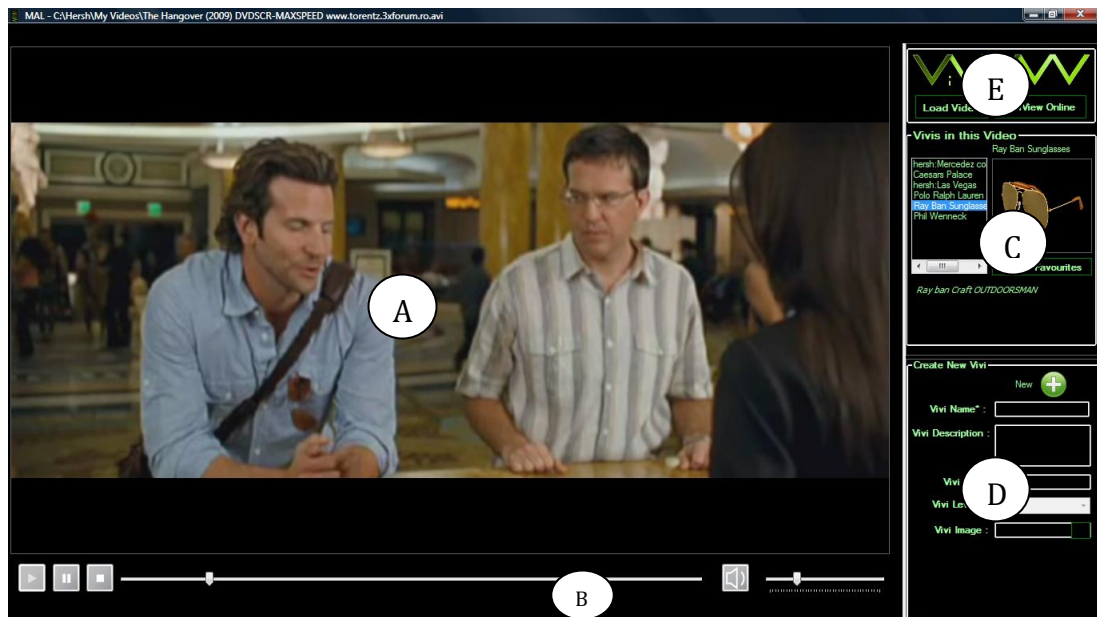
1. Login
 - a. Provides an interface to enter username and password.
 - b. Exit anytime from this interface by clicking on Exit or hitting the close window button.
 - c. Non-empty username and password will enable 'Enter viviview' button.
 - d. Clicking on 'Enter ViviView' will result in the following:
 - i. Check AUTHENTICATION table for the presence of the username and password entered by the user.
 - ii. If Step i results in an empty query, message pops up informing the user that the username and/or password entered is invalid. User can retry in case of invalid login parameters.



- iii. If Step i results in non-empty query, the application stores the username and password to be used for the entire session. It also checks for user type and sets appropriate parameters to identify the access level of the current user. Two access levels exist - Tagger (advertiser) and the application user. The terms Tagger and User will be used to identify different types of users henceforth. The Login interface is closed and the main ViviView interface opens.



2. ViviViewWer





This interface has four main sections:

- A. Video viewing section
 - i. Once a video is selected using the Load Video button from section E, the video starts playing in this area.
 - ii. While recording Vivis, this area acts as the image in case the user or the tagger decides to take a screenshot. Else, the user can specify regions of this area as containing the objects for which a vivi is being added.
 - iii. While viewing Vivis, the user has to scroll over objects of her interest in the video being played, and if a vivi is found for that object, it is shown appropriately in section
- B. Video controls section
 - i. This section provides video playback controls. All controls provided are the traditional ones which are available with any video –play, pause, stop, seek, mute, unmute, change volume.
- C. View Vivi section
 - i. This section provides information about vivis in the video.
 - ii. Initially, all containers in this section are empty. A label instructs the user to "Hover over video objects to check for vivis" once a video is selected for playback.
 - iii. Once the user hovers over a video object with an attached vivi, the following changes take place in this section:
 - a. The listbox shows the name of the Vivi. If it is a Vivi added by the user during his previous session, the vivi name is prefixed with the user's name.
 - b. The 'last_viewed' label shows the latest vivi selected by the user.
 - c. The picturebox shows the associated image for the vivi.
 - d. On clicking the image, the web browser opens with the URI associated with the vivi.
 - e. The label having the initial instruction changes to the description of the selected Vivi.
 - f. In case of multiple objects having vivis in a particular mouse and seekbar position, the first in the database gets selected as default and is displayed in this section. However, all other vivis are also added to the listbox.
 - g. The user can select from vivi's of his interest in the listbox and the other details change appropriately.
 - iv. The 'Add to favorites' button is enabled once a vivi is added to the listbox. On clicking this button, the selected Vivi will be recorded in the database as being among the current user's favorite vivi.



D. Add Vivi Section

- i. This section allows taggers and users to add new vivis to the object.
- ii. All fields can be enabled by clicking on New button. Once New is clicked, the video pauses. Vivi Recording can be cancelled at any point by clicking on the End button. End also resumes the playback.
- iii. It provides fields to enter/select the following information about a Vivi :
 - a. Vivi name
 - b. Vivi Description
 - c. Vivi URI
 - d. Vivi level : 1, 2 or 3
 - e. Vivi image: This can be either a screenshot of the current scene or a user selected image. The button adjoining this field results in a file dialog being opened upon click using which the user can add a image for the vivi.
 - f. Take Screenshot button: This performs two actions. Firstly, it captures the section A as the vivi image and saves it. Secondly, it resumes the video and starts recording location and timing information for the current vivi. The Take Screenshot button toggles to End Recording. Once the scene for which the Vivi was being recorded ends, clicking on 'End recording' will record all the information into appropriate tables in the database. The buttons are toggled appropriately.
 - g. Tagger: Suppose the user decides to use custom images, then the 'Tagger' control can be used to select areas where the vivi object is being shown in the video. Recording of the vivi is started by clicking on the tagger. The next click stops the recording and adds all the information about the vivi into the database. The tagger's size and location can be changed during the recording of the Vivi.
- iv. Appropriate labels in this section provide sufficient instructions and information to the user for recording the vivi.

E. Video and Web Load section.

This section performs only two functions:

- a. Load Video: This button is used to choose a video for playback. On clicking this button, a file dialog opens using which the user can select the video. If the video has been tagged before, it starts playback immediately. Otherwise, depending on whether it is the tagger or the user, appropriate messages are displayed. If it is the tagger, he/she is asked to make a choice if this video should be added to the database and new vivis will be added or just the video should be played back. If it the user, then he is just shown a message that there are no vivis but he may add if he wishes to.



- b. ViviView online: Clicking this button will open the web browser with the ViviView URI.

2. ViviViewW Android

Features

The Mobile Application is a part of the Viviview project which allows users to have their vivis of interest with them wherever they go and whenever they want.

The Mobile App has the following features:

i. Login:

- a) The users and the advertisers are authenticated by their unique username and password. This provides a level of security to the users and the advertisers of the mobile app.
- b) The user then clicks the Login button and is authenticated by the application.
- c) If the users have successfully logged in they are provided with a list of recent episodes that has vivis of interest to the users.





ii. Interface Section:

The interface section provides the following search options for the users to find their vivis of interest. The user can modify the search criterion with a spinner that is present in the page with the following options:

a) Recent Episodes:

The Recent Episodes is the default view for the users which lists those recent episodes which has vivis of interest to the users. The most recent episodes where the users interesting vivis are present are fetched from the database and displayed to the user.

b) Recent Shows/Movies

The Recent Shows/ Movies option when chosen by the user retrieves all the shows or movies that the user has vivis of interest in and displays them in the reverse chronological order. This is especially useful when the user remember the shows where their vivis are but not the exact episodes or date of airing. Upon choosing a specific show the users are free to choose the respective episode in the show and find information about their vivis.

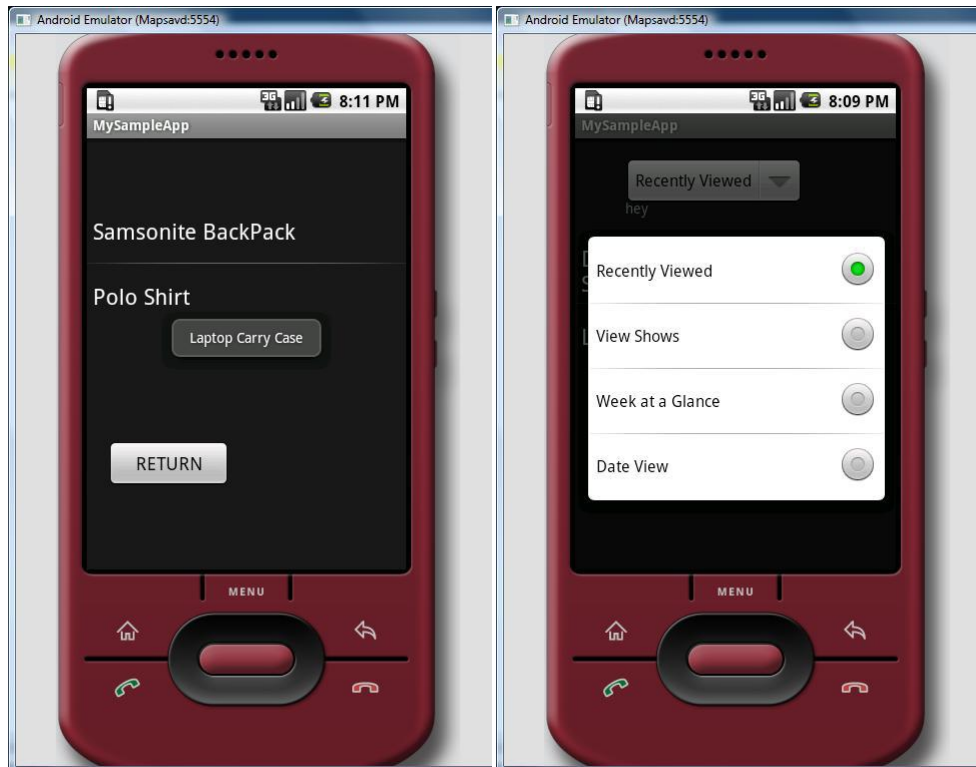
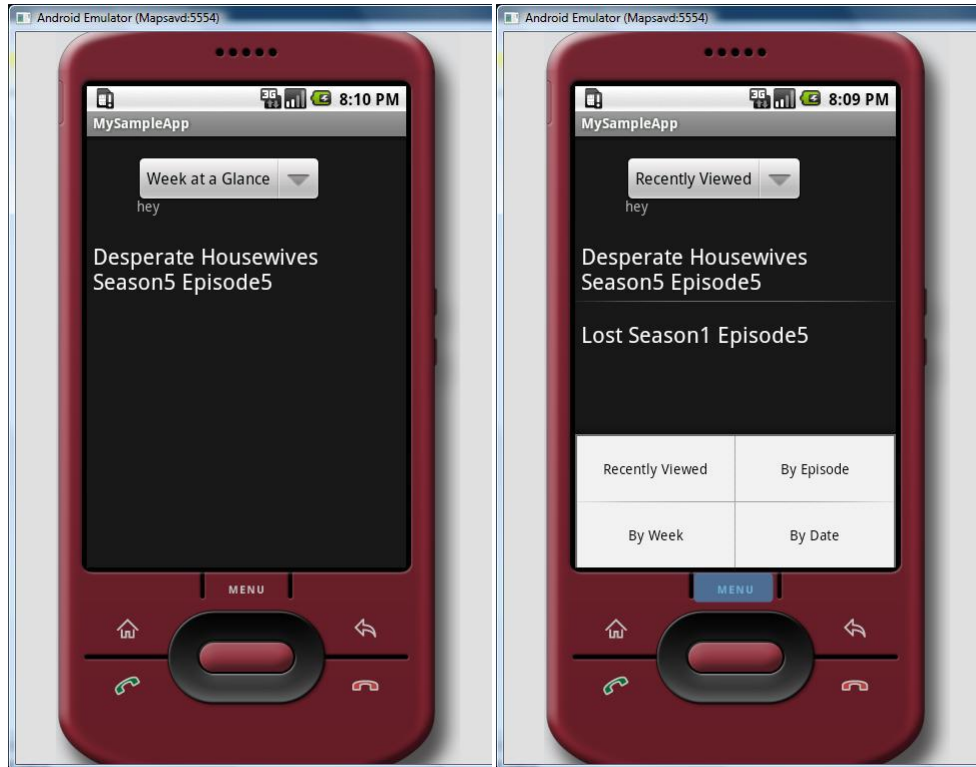
c) Recent Vivis

The Recent Vivis option enables the users to view all the vivis that they were interested from their favourite shows or movies. All these vivis are also displayed in the reverse chronological order as users are mostly interested in the recent ones and can have an entire list of vivis that they were interested in.

d) Dates

The Dates option enables the users to search for vivis by the date when they watched the show/movie. A specific date when chosen will all the shows/movies that were watched on that specific date and the users can choose any vivis of interest from any of the shows/movies listed for the date.

Once these options are chosen by the users, the information pertaining to the vivis such as its name, description, image and link with other information are displayed in a dialog box to the user which they can dismiss by pressing the Ok button. At any point of time the users can modify their search criteria with the help of the spinner with options.





3. ViviVieW Online

Features

The Online portion of ViviVieW allows users to view vivis that they have saved and created.

i. Technologies Used

- a. Developed using WampServer 2.0i, which provides: Apache 2.2.11, MySQL 5.1.36, PHP 5.3.0
- b. Compatible with my3gb.com, which supports older versions PHP 5.1.6 and MySQL 5.0.27
- c. Used JavaScript compatible with latest stable release JavaScript 1.8

ii. Working Functionality

- a. Authentication
 - i. Works on localhost
 - ii. Done with wizard of oz for demo since my3gb.com does not allow PHP "header" function redirection
- b. Retrieve vivis from MySQL database and display using PHP
- c. Display Show/Movie filter - extract show/movie names from database as checkboxes for Show/Movie filter
- d. Filter vivis: by (1) show/movie name, (2) level, or (3) a combination of both
- e. Retain checked boxes after viewer clicks "Submit"

iii. Future Functionality

- a. Sharing with friends and viewing friends' shared vivis
- b. Linkage to Amazon or other websites for quick shopping
- c. Linkage to facebook, twitter, digg, etc.
- d. Access to other levels from current vivi level
- e. Advanced sorting, removing, and combining vivis capabilities
- f. Exploration of public vivis and vivi sets



ViviVieW [Vivis](#) [Friends](#) [Explore](#)

With selected: [Blur](#) | [Share](#) | [Create New Vivid](#) | [Remove From List](#)

Type
 Retrieved by Me
 Made by Me

Date
 Past hour
 Past day
 Past week
 Past month
 Past year
 Forever

Show/Movie
 Desperate Housewives
 Gossip Girl
 The Hangover
 The Office
[more...](#)

Level
 Level 1
 Level 2
 Level 3

Andy Bernard [f](#) [t](#) [d](#)
The Office, Season 5, Episode 1
April 17, 2015

 Andy Bernard (played by Ed Helms) is a character on The Office. Ed Helms was recently in the comedy film "The Hangover".
[IMDb.com](#)
[Netflix](#)

[Level 1](#) > [Level 2](#) > [Level 3](#)

MacBook Pro Laptop [f](#) [t](#) [d](#)
The Office, Season 5, Episode 1
April 17, 2015

 Jim Halpert (John Krasinski) uses this computer to chat with Pam Beesly (Jenna Fischer).
[Apple.com](#)
[BestBuy.com](#)

[Level 1](#) > [Level 2](#) > [Level 3](#)

Blair Waldorf [f](#) [t](#) [d](#)
Gossip Girl, Season 2, Episode 19
April 22, 2015

 Blair Waldorf (played by Leighton Meester) is a rich and popular girl in Gossip Girl.
[Wikipedia.com](#)