”Tonight”
An event agregation app
Outline Project Specification

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1 Overview of the project

The project itself revolves around producing an iOS app that allows a user to discover new events that maybe happening in a particular area or of interest to them. The app itself will give the user the ability to follow a venue or event for regular updates and to allow the system to learn about them and suggest events that maybe of interest to them. The app itself will communicate with a REST API that will hold the relevant information about each event, venue and user. The server element of the project will conduct the bulk processing of data mining from the various data sources. It will also apply the machine learning algorithms to the data to produce the, personalised feeds and the automatic categorisation of events. To undertake the machine learning aspect of the project I will need to research the various algorithms and techniques that are currently being used and decide the most appropriate method.

1.1 Machine Learning

As for the machine learning side of it all I have decided to use the 'Bag of words' approach to train the system, along with a K-Nearest Neighbour algorithm to give a higher accuracy of the predicted category. This also goes in hand with the recommendation system by using events that a user has liked/followed and tags they are interested in I can find events near to them using a similar approach and recommend those events.

2 Work to be tackled

There are 2 main elements to the project the iOS app and the serves side interface.

2.1 iOS App

- Retrieve following data from the API
  - Events
  - Venues
  - Profile information
  - Notifications
- Modifications to the following data through CRUD methods
  - Profile information
  - Notification information
  - Events/Venues a user is following

2.2 Server side application

- Retrieve the following data through various API's
  - Event
  - Venue
- Categorise each event via it's description into a category such as 'House Music' or 'Symphony Orchestra'
- Set up jobs to routinely mine new and updated data from the API's
- Produce a recommended feed for a user from the following data

Event

- ID for our system
- ID from data source
- Name
- Description
- Date/Time
- URL
- Location
- Price
- Categories
- Users following

Venue

- ID for our system
- ID from data source
- Name
- Description
- Address/Location
- Website
- Users following

User

- ID
- Name
- Username
- Email
- Password
- Recommended feed values.
- Facebook/Twitter auth

  - Registration tags
  - Events and Venues being 'followed'
  - Previously starred events

2.3 Data models

3 Project Deliverables

The two major deliverables will be a working server side application and an iOS application. Along the way I plan on producing;

- Design Specification
  - Basic UML of each pieces of software
  - Database design
  - Functional test plan
  - Feature list
    - Requirements per feature
- Documentation on use of the API
- Documentation of the code
- Blog of what I have done and why

4 Bibliography

Annotated Bibliography

[1] Various, "Houston," https://github.com/nomad/houston, Feb. 2014, accessed Feb 2014.

A Github repository with noteworthy modular code to allow for push notficaitons to iOS devices through a ruby application

[2] ——, "K nearest neighbour in ruby," http://gurge.com/2009/10/22/ruby-nearest-neighbor-fast-kdtree-gem/, Feb. 2014, accessed Feb 2014.

A guide to how to use the K Nearest neighbour algorithm and ways to optimise the code in a ruby environment

[3] ——, "Machine learning data sets," http://mldata.org/repository/tags/data/multi-class/, Feb. 2014, accessed Feb 2014.

Various machine learning data sets I can utlilise

[4] ——, "Support vector machines and ruby," http://www.igvita.com/2008/01/07/support-vector-machines-svm-in-ruby/, Feb. 2014, accessed Feb 2014.

A guide to how to use the SVM gem inside of ruby