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## **Interim Report**

Project: 3D Real time Reddit visualisation for Virtual Reality

### **Project Goals**

The main objective of my final year project is to develop a useful Reddit visualisation tool for use in a Virtual Reality environment. I have four main goals I wish to achieve as I complete my final year project:

- 1) Collect data from Reddit using the Reddit API and PRAW.
- 2) Implement an algorithm to analyse and process the Reddit data using Python 3.
- 3) Use TypeScript and Babylon3D to create a Virtual Reality ready 3D experience of the Reddit data.
- 4) Implement manipulation functionality into the application through the use of a Leap Motion.

The first of my goals is to collect data from Reddit, specifically sub-Reddit names, subscription sizes and comment information using PRAW (Python Reddit API Wrapper). Secondly I plan to implement an algorithm to process and analyse the data from Reddit and give some form to the data in order to guide the representation of the information.

On the visual side of the application, I will aim to use TypeScript and Babylon3D to develop a 3D, visual experience of the data for use in a Virtual Reality environment. I intend to implement a visual experience that is both engaging and effective in its portrayal of the information.

### **Overview of Background**

Data visualisations have become integral to the way we consume information. Due to the massive processing capabilities that our visual senses possess (akin to the bandwidth of a computer network), capitalizing on visual representations of complex information is an obvious choice.

In the world of social-media we are often fed information through a filter bubble of our own views and prejudices, hence we often only experience rehashes of what we already know, like or have previously experienced. The text-first, click to progress nature of social media can mean we are protected by a wall of similarity before we ever experience the universe outside our personal filter bubbles. To paraphrase [www.fastcodesign.com](http://www.fastcodesign.com); Reddit is "the front page of the internet", but what if you want to head straight to page 52?

To burst this filter bubble, representations of social-networks, in this case Reddit, and the media they contain can be deployed to greatly simplify and enhance how we view social-media, the complex networks they contain and most importantly, what we are missing.

The rise of Virtual Reality in recent years has opened up a new frontier for information consumption. Not only can we represent complex information in new and exciting ways, we can begin to experience the information. As we continue to produce data at historic rates the ability to put on a headset and step inside your data, to view your Reddit feed as if you were immersed in the 0s and 1s produced by every click, comment and upvote represents the future of data representation and potentially even social networks.

Data representations are moving on from flat visualisations of information to immersive experiences that can better represent the complex world we live in and the sheer amount of data we produce. With Virtual Reality we can better exploit the power of our visual senses, to experience information as opposed to simply viewing it. Immersion is the new king of data representation.

## **Progress to Date**

Thus far I have implemented PRAW and have begun to collect Reddit data and develop the foundations of an algorithm to give meaning to the data.

On the visualisation side of the application I have studied data visualisation techniques and explored how to creatively and effectively present data in a three-dimensional environment in order to draft a series of potential final designs for the visualisation. Using TypeScript and Babylon3D I have developed some initial static visualisations of the data.

Finally, I have worked on improving my development skills and knowledge of the Leap Motion development environment for when I implement the manipulation aspects of the application.

## **Problems Encountered**

I have encountered four main problems during my work on the project:

- 1) Minor algorithm issue where lack of data leads to skewed and misleading results.
- 2) The Reddit API allows a call to Reddit every 2 seconds, this small delay creates a large lag as it increases linearly with the amount of calls needed. The amount of calls needed is large due to the amount of data collection necessary for the project. I plan to counter this issue with a SQL lite database.
- 3) Problems with dynamic creation and update of Babylon3D visual objects in TypeScript.
- 4) Testing for Virtual Reality as I don't yet have an appropriate VR headset with which to view the application.
- 5) Dealing with text in Virtual Reality.

My application has suffered from a data processing issue due too smaller sub-Reddits containing less comments, I plan to counter this issue by regularizing the data and better accounting for the smaller sub-Reddits.

The Reddit API delay creates a large lag as it increases linearly with the amount of calls needed. The amount of calls needed is large due to the amount of data collection necessary for the project. I plan to counter this issue by implementing a database to hold old data as new calls are made.

As the data is updated I have encountered issues with smoothly updating the visualisation and creating new objects in the correct positions. Finally, text can appear alien floating in the 3D worlds of Virtual Reality, to deal with this issue I am trying to minimize the amount of text used in the application and improve its overall accessibility.

## **Planned Next Steps**

Next I plan to finish the algorithm and implement a database to hold the Reddit data and account for the API lag issues.

On the visual side of the application I plan to statically implement two of my visual designs in Babylon and decide which design to move forward with. I then plan to implement the chosen design with dynamic object creation and update functionality. Finally, I plan to implement manipulation functionality through the Leap Motion.