Final Project Design

Team No: 23

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Project Name

Nexus

Project Synopsis

Social Media profile that takes input data of a user’s videogame interests and creates a dashboard/collage of different videos and topics pertaining to those interests.

Project Description

This project is being undertaken as a method of compiling several sites into one “hub”. This way, a user will be able to keep sights on several different content sites at one. Our app and website are designed to limit the need to switch between sites and create a more specified space for each user. One can input what game titles or genres they like, and the algorithm will display to them highlights, update notes and articles, and live streams of those games and games like them. This project will need to address the security of user profiles. Keeping the experience individual and allowing the user to have their own name and password that is kept secret. The end result will be a kind of social media conglomerate where someone can access different kinds of content based on their gaming interests. The “social media” aspect is meant to be less of a communication website and more of a self-enjoyment space.

Project Milestones

First Semester:
-Research Resources to be Used - 10/06/21
-Complete Web Application Design - 10/27/21
-Complete iOS Application Design - 11/24/21
-Design Algorithm for Personalized Content - 12/15/21

Second Semester:
-Implementation of Web Application UI/Front End - 02/2/22
-Implementation of Web Application Back End - 03/2/22
-Implementation of iOS Application UI/Front End - 03/16/22
-Implementation of iOS Application Back End - 04/13/22
-Implementation of Online Services - 04/21/22

Full Size PDF of Gantt Chart available as attachment in this submission.

Project Budget

Resources and Languages used:
BackEnd: Python, API pulls from Twitch, YouTube, Instagram, TikTok, Xbox, and Steam
Deep Learning: SciKit, Pandas, Kaggle.com
FrontEnd: React, React Native
Pricing: $0

Software Needed:
Submit app onto App Store - $99
Adobe software for graphic design of app logo - $19.99/month for students

Final Project Design

Our algorithm will build a compilation of videos to throw on their feed. The mix will be a scroll down feed in which the user will be able to like YouTube videos, Instagram posts, Twitch live streams and videos, TikTok videos, Xbox and Steam game clips, and video captures of other players that play the same games the user plays. The user will have access to a content filter. The user will be able to like videos and also choose “not interested” so the back end can pick up on this, the algorithm will update itself so when the feed is refreshed it will then throw

Overview

This project has many working components. This software is meant to have its deep learning algorithm learn what social media content the user interacts with the most. The algorithm will learn from the users’ choice and update itself to become more proficient. Since every experience will be personalized, it will have username and password authentication, it will also have a deep learning algorithm to learn the user preferences. It will have both a web and mobile front end. Back End will use Python SciKit and Pandas to decipher JSON data that is pulled from API. There are multiple API’s from the multiple social media and gaming plugins used. This information will be fed to the deep learning algorithm which will decide what the user will most likely be interested in. The user will have the option to choose what media they want to view, be it 1) social media videos, posts, and trends, 2) gaming clips, posts, popular games, or 3) a mix of both gaming and social. Based on what is found in the backend, React will be used in the front end to display to the user what they choose to have on their “home” page.

Back End + Design Constraints

Starting with the back end, our language of choice is python. Python has libraries for resources we will be using for our deep learning algorithm and API pulling capabilities. For the user profile identification, we can make free requests to Phone Verification API which send code via SMS or request from mOTP which is also free and which does a one time password via missed call. Python has well developed libraries to help with the machine learning algorithm building portion. These libraries include both sci-kit and pandas. Sci kit is a collection of machine learning algorithms including classification, regression, clustering, etc. Sci Kit will be used to train the machine learning algorithm and Pandas is used for the visual representation of the data. Pandas can be used for data analysis, statistics and visualization of the data using charts, graphs, etc. Pandas functions include data cleaning, data normalization, merges, etc.

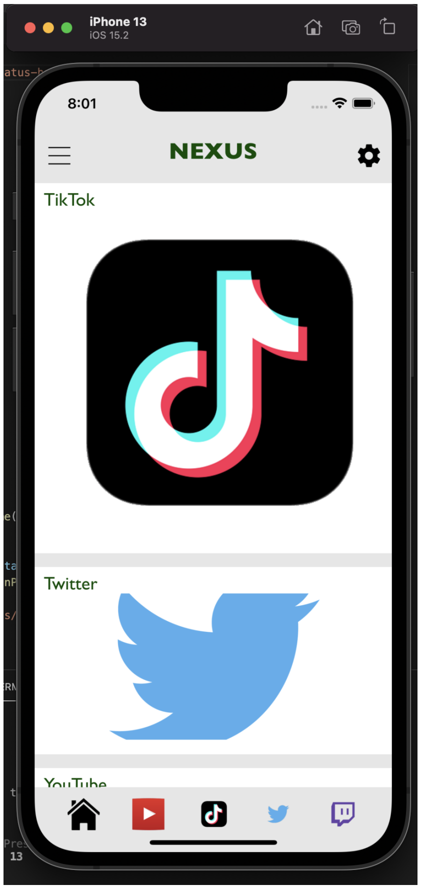
Part of the backend is also connecting to the social media which the users will engage with. As of now, social media connections include Twitch, YouTube, Instagram, TikTok, Xbox, and Steam. API's will help in obtaining the data needed to train the deep learning algorithm as well as connect the user to it. Some examples of what can be done with these API include: Example 1: The YouTube API makes it so the user will be able to create their own playlist of YouTube videos they liked. Example 2: The Xbox API makes it possible for the user to sign into their xbox account and depending on what games they play, clips of those games can be added to their feed on our application. Example 3: We can use the Twitch API so the user can see their favorite streamer through our app as well as save and explore new streamers. Example 4: Through the Steam API we can make it so whatever game the user is currently playing can be picked up by the algorithm to send them Steam videos of possible games they may be interested in. API restrictions on medias we will include are, YouTube 10,000 requests free per day, Twitch has a limit of 30 requests per min using client id and 800 per min having an app access token, Instagram has 200 free requests per hr, Xbox Services API request which had no documented limit on their requests, TikTok which had 200 requests per day and Steam which had a limit of 100,000 requests a day. For the current scope of this project, these are less design constraints and more limits to have on hand.

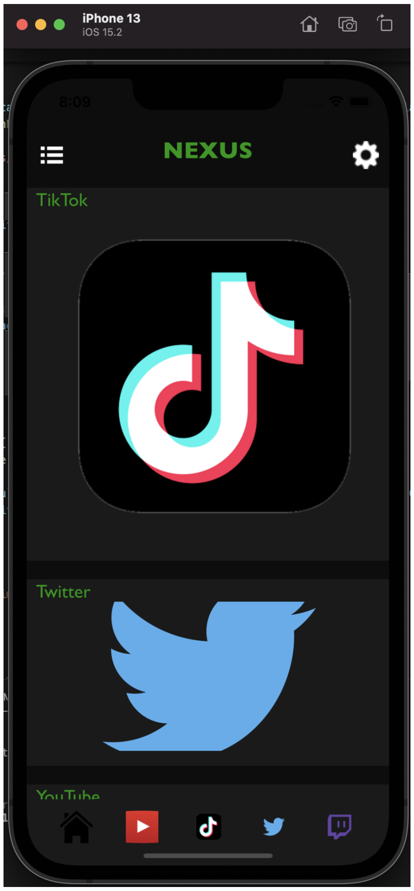
Python, Sci Kit, and Pandas will be able to make use of the JSON files from the various API's. This will help the algorithm learn what data the user interacts with the most. Through the APIs we can do things like log into their already existing accounts in the media the user chooses to interact with. The algorithm uses this data to throw the user what they interact with the most through the front end. Front end will have two different viewing platforms, React for web and React Native for application. Once we are able to pull data from these social media platforms, we will need to format them in uniform data sets, then they can be sorted and filtered in the machine learning algorithms. For backend routing and web server functions, we will start with Node.js for the web application.

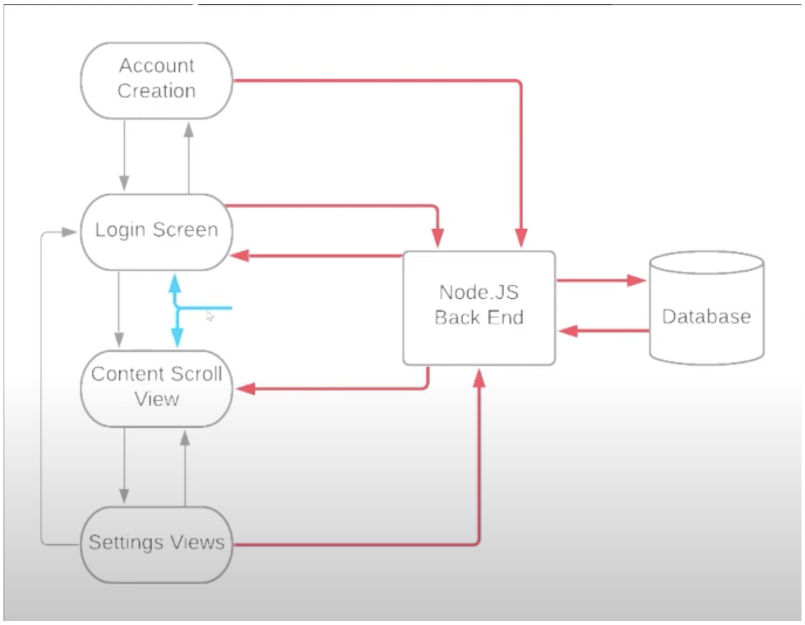
Front-End

This will consist of an app implementation. React and React Native will be used for the application side. The designs will consist of the user login and password. Once the user is either signed in or signed up, the user will be thrown to their “home” page where they can pick from three options. 1) Access social media where they can apply filters such as what medias they want to filter out or types of posts/videos. 2) They can access gaming related media such as their favorite gaming streamers, youtube based on gaming videos they may be interested in. 3) They can choose to be thrown into a “mix” category in which the deep learning will provide them an even more customized feed of videos. The algorithm will take all of this into account to give the user a personalized experience.

UI Design and Flow Chart







Ethical Issues

- Making sure that creators of the content we pull gain rightful credit for the work they put into it. Copyright is going to be one of our biggest hurdles and we want to be sure that we are pulling our data and content legally and fairly. Some in-depth research has and will continue to help us make sure we are doing things correctly. Therefore, our application will not be for commercial use. Our project will be a test application solely for the showcase of the senior capstone. Our goal is to gain valuable experience working with machine learning and processing data automatically. By using the already existing client bases of current social media sites, we can have access to a large, existing base of data to make our app. For this reason, we can't in good conscience make this application public or for profit. Due to the timing of this project, we just don't have enough time to build up a large enough user base to have data and content of our own. For this reason the app will remain a private creation for the use of our team and the capstone presentation. We believe that no ethical issues arise from our team practicing our programming and data analysis skills with this data because the companies that we will pull information from have API support that allows us to pull data from their sites, under the condition that we do not attempt to sell it or present it as our own. We plan to neither sell our application, nor present the data therein as our own. We will give due credit to the company that the content of each module in the scroll view originates from. In addition, companies often include their own watermarks in data or content pulled from their APIs, which will ease our burden to provide due credit.

Intellectual Property Issues

- **Rightful use of content from other sites**: For our project we will be using API to pull the content from other social media platforms to be displayed on our app dashboard for our use. Two problems arise from rightful use of content which is the amount of content we are allowed to use in a specific time frame as well as giving credit to these platforms that their content is thiers and not displayed as original content from our app. The way we combat the first issue is first off this app is for our groups personal use and we do not plan to release this app as a company or distribute it. This allows us to be able to use API and pull content from their platforms and each company has listed what their API limits are per day for free and for personal use. As a group we will document and constrain our limit to the limit the company gives us which solves this current issue. Lastly, the issue of stolen content or giving credit to the platform the content came from. Since we are using this app for personal use as a group and not going public with our app there should be no copyright issues to deal with, but we will either have at the bottom of a post where the content came from for example "original video: Tik Tok'' underneath a video. In addition to adding disclaimers as to the origin of our content, many companies add their own watermarks to content pulled from their applications using the APIs. This will help us to provide due credit to the companies of origin of our content. With both of these sub-issues under the scope of rightful use of content from other sites solved our project has no other intellectual property issues.

Change Log

- Project Overhaul: original project idea was changed from both a website and app implementation to just an app due to the time constraints of the project.
- Budget Change: new project idea involves different services required for success.