TRIBHUWAN UNIVERSITY

INSTITUTE OF ENGINEERING

PULCHOWK CAMPUS

PROJECT TITLE:

SOCIAL MEDIA ANALYSIS

SUBMITTED BY:

BIPLAB KARKI (073-BEX-412)

JAY KISHAN PANJIYAR (073 -BEX- 414)

DEPARTMENT OF COMPUTER AND ELECTRONICS ENGINEERING

PULCHOWK CAMPUS, LALITPUR

CHAITRA 26,2075

SUBMITTED TO:

Dr. Basanta Joshi

Mr. Suresh Pokharel

SUBMITTED BY:

BIPLAB KARKI (073-BEX-412)

JAY KISHAN PANJIYAR (073 -BEX- 414)

APPROVED BY:

_____

Dr. Basanta Joshi

CLASS TEACHER

DEPARTMENT OF COMPUTER AND ELECTRONICS ENGINEERING

PULCHOWK CAMPUS, LALITPUR

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BIPLAB KARKI

(073bex412.biplab@pcampus.edu.np)

ROLL NO. 073BEX412

JAY KISHAN PANJIYAR

(073bex414.jay@pcampus.edu.np)

ROLL NO. 073BEX414

PULCHOWK CAMPUS , PULCHOWK

ABSTRACT

This report is based on the project we made for computer graphics subject. It is web based graphics project. It uses three.js to import 3d objects created by using blender in a web page and web page displays the 3d object in interactive form .it is also used to display the audio in 3d form along with interactive objects along with 3d visualization it also display the data of social media analysis like number of likes , comments, shares of Facebook pages in very interactive way. One can login in and signup in our website and once they login they the view the stats of their Facebook pages and groups. The project is basically focused on graphics objects like lighting effect , rendering, curves generation, polygon representation ,etc. this project demonstrated importing of objects in a web page and manipulating it in various ways to create illumination, shadow effects, etc.

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LIST OF ABBREVIATIONS

js= javascript

Obj=object

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INTRODUCTION

Background

In today world everyone is connected to various social media network like Facebook, twitter, instagram etc. although being large number of users and social media platform there are very few social media analysis tool which can analyze the data of social to produce fruitful results to be displayed in various from like bar graph, charts, box plots, etc. despite being such high demand and scope of social media analysis tool are not developed.

Problem Statement

The existing social media analysis tools lack graphics object, it display manipulated data in traditional forms such as charts, graphs, etc. Though social media analysis tool are developed by few organizations who have developed such tools are they are very rare. The existing tools are not user friendly and show the analyzed data with poor graphics.

Objective

- To visualize the audio in 3d
- To plot graphs in 3d from with graphical object
- To analyze the data of social media

Scope and Applications

The social media analysis tool is required for everyone from simple users to big cooperate who uses social media for advertisement, promotions, luck draws etc. the parents can monitor their children social media data such as how much time they spent , who often they visited. The corporates can use to know about their outreach in certain area, their product sales, etc. it can help to boost their business. Also the audio visualizer can help to visualize the audio in video from

THEORETICAL BACKGROUND

Three.js

Three.js allows the creation of Graphical Processing Unit (GPU)-accelerated 3D animations using the JavaScript language as part of a website without relying on proprietary browser plugins. This is possible due to the advent of WebGL. High-level libraries such as Three.js or GLGE, SceneJS, PhiloGL or a number of other libraries make it possible to author complex 3D computer animations that display in the browser without the effort required for a traditional standalone application or a plugin.

The Three.js library is a single JavaScript file. It can be included within a web page by linking to a local or remote copy.

```
<script src="js/three.min.js"></script>
```

Three.js includes the following features:

- Effects: Anaglyph, cross-eyed and parallax barrier.
- Scenes: add and remove objects at run-time; fog
- Cameras: perspective and orthographic; controllers: trackball, FPS, path and more
- Animation: armatures, forward kinematics, inverse kinematics, morph and keyframe
- Lights: ambient, direction, point and spot lights; shadows: cast and receive
- Materials: Lambert, Phong, smooth shading, textures and more
- Shaders: access to full OpenGL Shading Language (GLSL) capabilities: lens flare, depth pass and extensive post-processing library
- Objects: meshes, particles, sprites, lines, ribbons, bones and more - all with Level of detail
- Geometry: plane, cube, sphere, torus, 3D text and more; modifiers: lathe, extrude and tube
- Data loaders: binary, image, JSON and scene
- Utilities: full set of time and 3D math functions including frustum, matrix, quaternion, UVs and more
- Export and import: utilities to create Three.js-compatible JSON files from within: Blender, openCTM, FBX, Max, and OBJ
- Support: API documentation is under construction, public forum and wiki in full operation
- Examples: Over 150 files of coding examples plus fonts, models, textures, sounds and other support files
- Debugging: Stats.js, WebGL Inspector, Three.js Inspector
- Virtual reality: accessing WebVR

Three.js runs in all browsers supported by WebGL 1.0.

Blender

Blender is a free and open-source 3D computer graphics software toolset used for creating animated films, visual effects, art, 3D printed models, interactive 3D applications and video games. Blender's features include 3D modeling, UV unwrapping, texturing, raster graphics editing, rigging and skinning, fluid and smoke simulation, particle simulation, soft body simulation, sculpting, animating, match moving, rendering, motion graphics, video editing and compositing.

Features

- Support for a variety of geometric primitives, including polygon meshes, fast subdivision surface modeling, Bezier curves, NURBS surfaces, metaballs, icospheres, multi-res digital sculpting (including dynamic topology, maps baking, remeshing, resymetrize, decimation), outline font, and a new n-gon modeling system called B-mesh.
- Internal render engine with scanline rendering, indirect lighting, and ambient occlusion that can export in a wide variety of formats.
- A pathtracer render engine called Cycles, which can take advantage of the GPU for rendering. Cycles supports the Open Shading Language since Blender 2.65.[39]
- Integration with a number of external render engines through plugins.
- Keyframed animation tools including inverse kinematics, armature (skeletal), hook, curve and lattice-based deformations, shape animations, non-linear animation, constraints, and vertex weighting.
- Simulation tools for soft body dynamics including mesh collision detection, LBM fluid dynamics, smoke simulation, Bullet rigid body dynamics, ocean generator with waves.
- A particle system that includes support for particle-based hair.
- Modifiers to apply non-destructive effects.

HTML

Hypertext Markup Language (HTML) is the standard markup language for creating web pages and web applications. With Cascading Style Sheets (CSS) and JavaScript, it forms a triad of cornerstone technologies for the World Wide Web. Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by tags, written using angle brackets. Tags such as <img /> and <input /> directly introduce content into the page. Other tags such as <p> surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page.

CSS

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language like HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.

CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, and reduce complexity and repetition in the structural content.

Separation of formatting and content also makes it feasible to present the same markup page in different styles for different rendering methods, such as on-screen, in print, by voice (via speech-based browser or screen reader), and on Braille-based tactile devices. CSS also has rules for alternate formatting if the content is accessed on a mobile device

Bootstrap

Bootstrap is a free and open-source front-end Web framework. It contains HTML and CSS-based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions. Unlike many earlier web frameworks, it concerns itself with front-end development only.

Node.js

Node.js is an open-source, cross-platform JavaScript run-time environment that executes JavaScript code outside of a browser. JavaScript is used primarily for client-side scripting, in which scripts written in JavaScript are embedded in a webpage's HTML and run client-side by a JavaScript engine in the user's web browser. Node.js lets developers use JavaScript to write command line tools and for server-side scripting—running scripts server-side to produce dynamic web page content before the page is sent to the user's web browser. Consequently, Node.js represents a "JavaScript everywhere" paradigm,[7] unifying web application development around a single programming language, rather than different languages for server side and client side scripts.

Mongo DB

MongoDB is a cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with schemata. MongoDB is developed by MongoDB Inc. and licensed under the Server Side Public License (SSPL)MongoDB is a cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with schemata. MongoDB is developed by MongoDB Inc. and licensed under the Server Side Public License (SSPL).

GPU rendering

Cycles supports GPU rendering which is used to help speed up rendering times. There are two GPU rendering modes: CUDA, which is the preferred method for NVIDIA graphics cards; and OpenCL, which supports rendering on AMD graphics cards. Multiple GPUs are also supported, which can be used to create a render farm – although having multiple GPUs doesn't increase the available memory because each GPU can only access its own memory.

Integrator

The integrator is the rendering algorithm used for lighting computations. Cycles currently supports a path tracing integrator with direct light sampling. It works well for various lighting setups, but is not as suitable for caustics and some other complex lighting situations. Rays are traced from the camera into the scene, bouncing around until they find a light source such as a lamp, an object emitting light, or the world background. To find lamps and surfaces emitting light, both indirect light sampling

(letting the ray follow the surface BSDF) and direct light sampling (picking a light source and tracing a ray towards it) are used.

Surface shader

The surface shader defines the light interaction at the surface of the mesh. One or more BSDFs can specify if incoming light is reflected back, refracted into the mesh, or absorbedSurface shader

Volume shader

When the surface shader does not reflect or absorb light, it enters the volume. If no volume shader is specified, it will pass straight through to the other side of the mesh.

If one is defined, a volume shader describes the light interaction as it passes through the volume of the mesh. Light may be scattered, absorbed, or emitted at any point in the volume.[43]

Displacement shader

The shape of the surface may be altered by displacement shaders. This way, textures can be used to make the mesh surface more detailed.

Depending on the settings, the displacement may be virtual, only modifying the surface normals to give the impression of displacement (also known as bump mapping) or a combination of real and virtual displacement.[43]

Demo reels

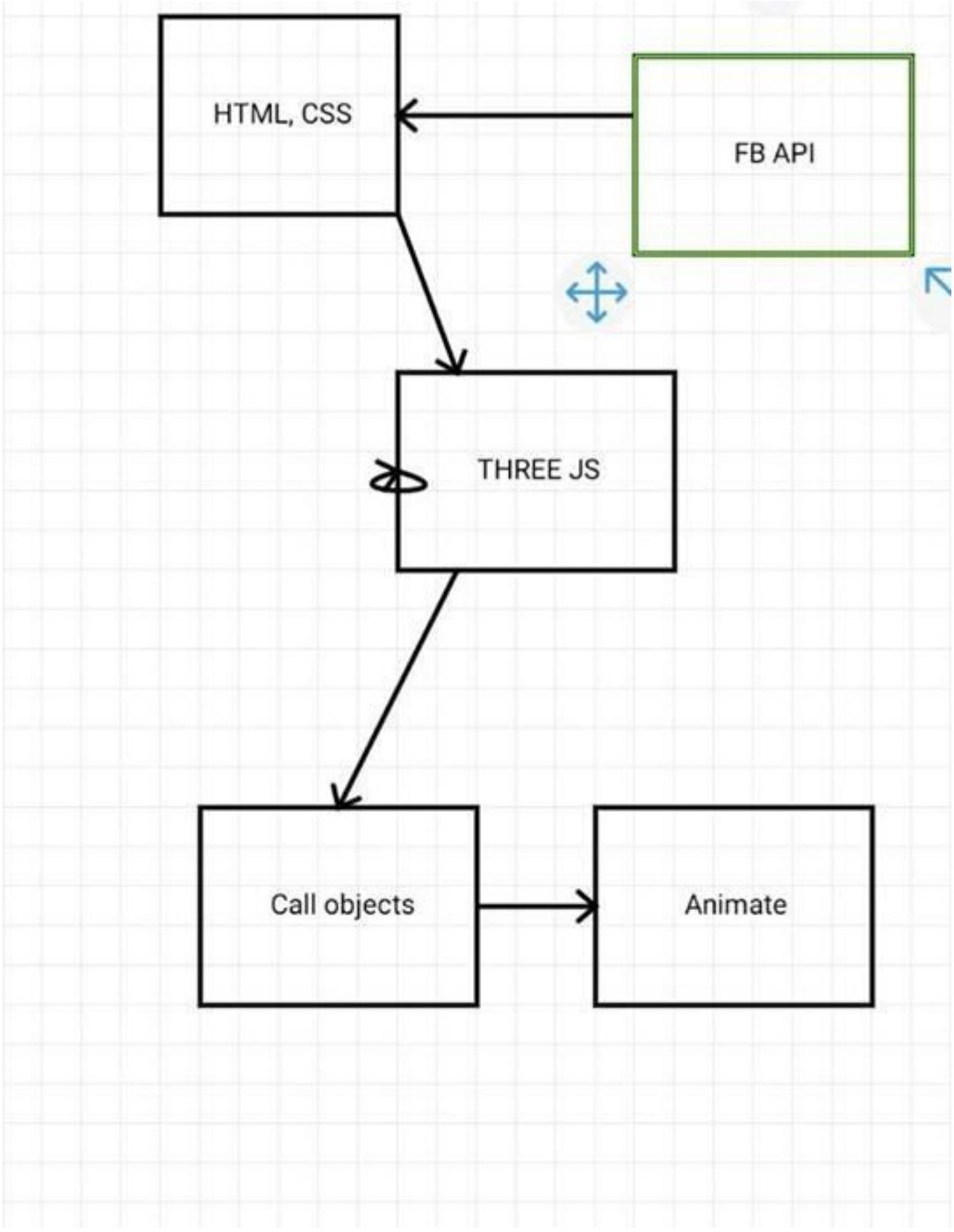
The Blender website contains several demo reels that showcase various features of Blender

Rendering engines

Engines included in Blender:

- Blender Render (Blender Internal) — Is Blender's non photorealistic renderer. Will be removed from Blender in version 2.8.
- Cycles — Unbiased ray tracing renderer. Included in Blender from version 2.61.
- Clay Render — Renderer overwrites materials in BI or Cycles to Render clay with choice of diffuse color. Included in Blender from version 2.79.
- EEVEE — Real-time PBR renderer. Render engine has been nicknamed Eevee, later coined backronym — Extra Easy Virtual Environment Engine.[53] Currently in development, it will be available in Blender from version 2.8

Block Diagram

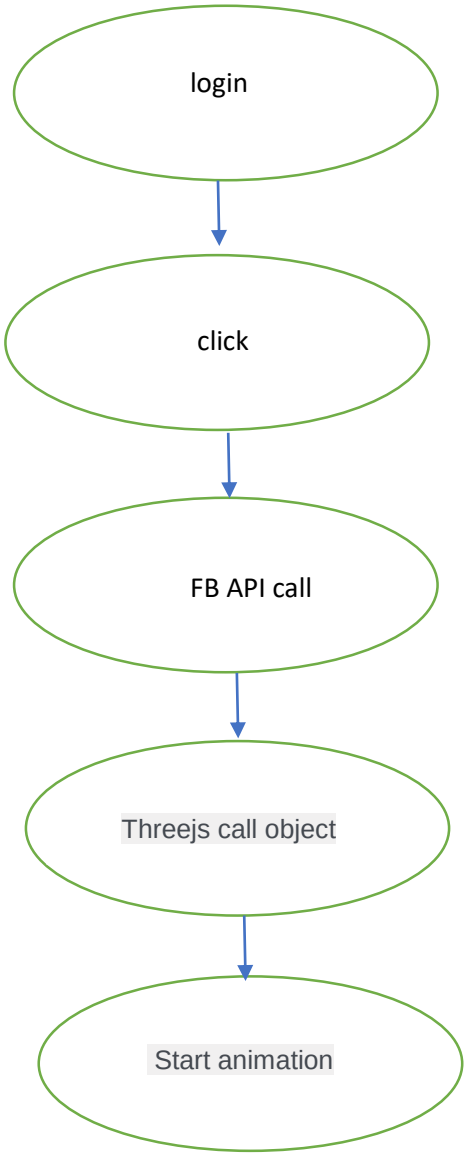


Working

As the Facebook API sends the data from facebook to our software, the HTML and CSS file is used to create the front age . the object file is created in blender and it is loaded with texture using three.js . the three.js is used import the object file . the three.js is used to animate the object.. It uses three.js to import 3d objects created by using blender in a web page and web page displays the 3d object in interactive form .it is also used to display the audio in 3d form along with interactive objects along with 3d visualization it also display the data of social media analysis like number of likes , comments, shares of Facebook pages in very interactive way. One can login in and signup in our website and once they login they the view the stats of their Facebook pages and groups. The project is basically focused on graphics objects like lighting effect , rendering, curves generation, polygon representation ,etc. this project demonstrated importing of objects in a web page and manipulating it in various ways to create illumination, shadow effects, etc. The project has presented a simple visualizer of audio along with the statistics in a very well graphical manner. It used graphics objects to make the visualizer interactive . it uses the social media data to find a statistical data and then plotting and displaying was done through web services

METHODOLOGY

Interpretation with Block Diagram



OUTPUT

Output in pictorial

The output of this project can be realized by the help of following pictures.

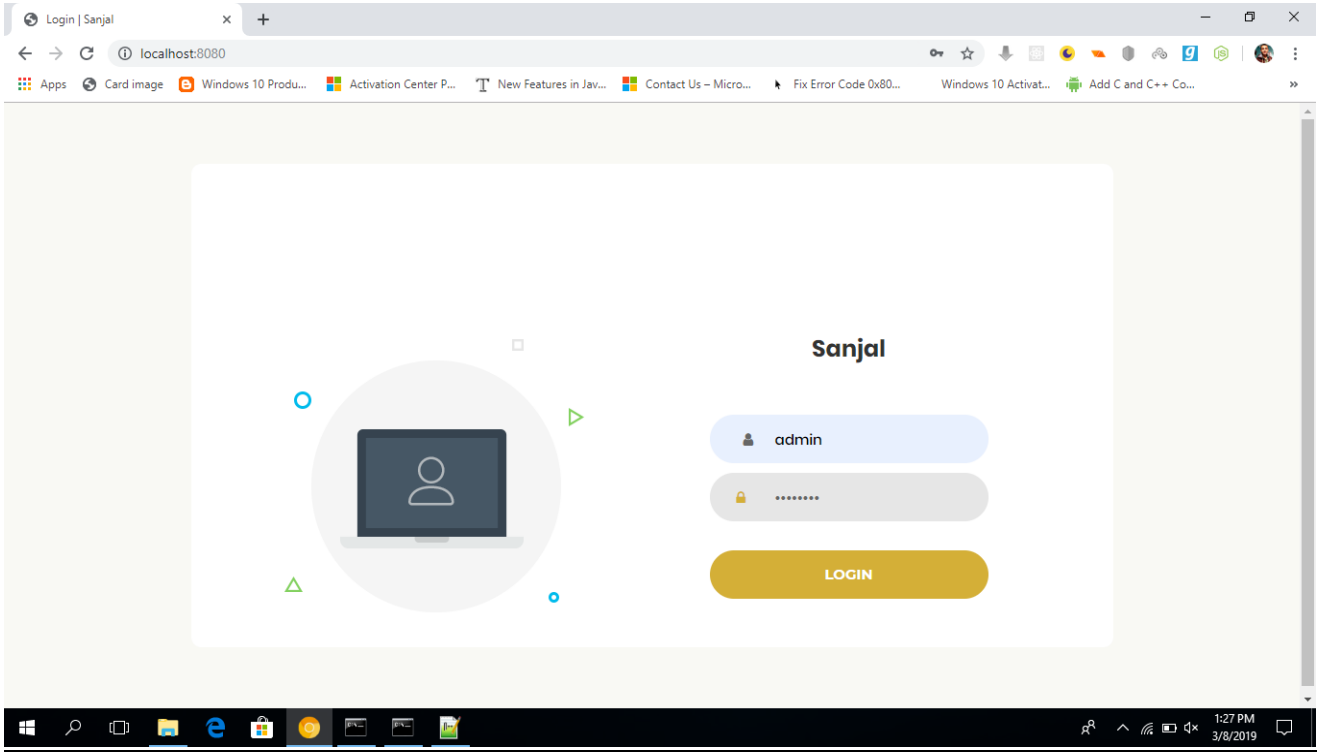


Fig 1: LOGIN SCREEN

When our website is visited it asks for credentials of the user . there are two types of account in our system one for admin whi controls all the users who are using the product. The next account is for users who can browse their respective pages and groups to see their analyzed reports.

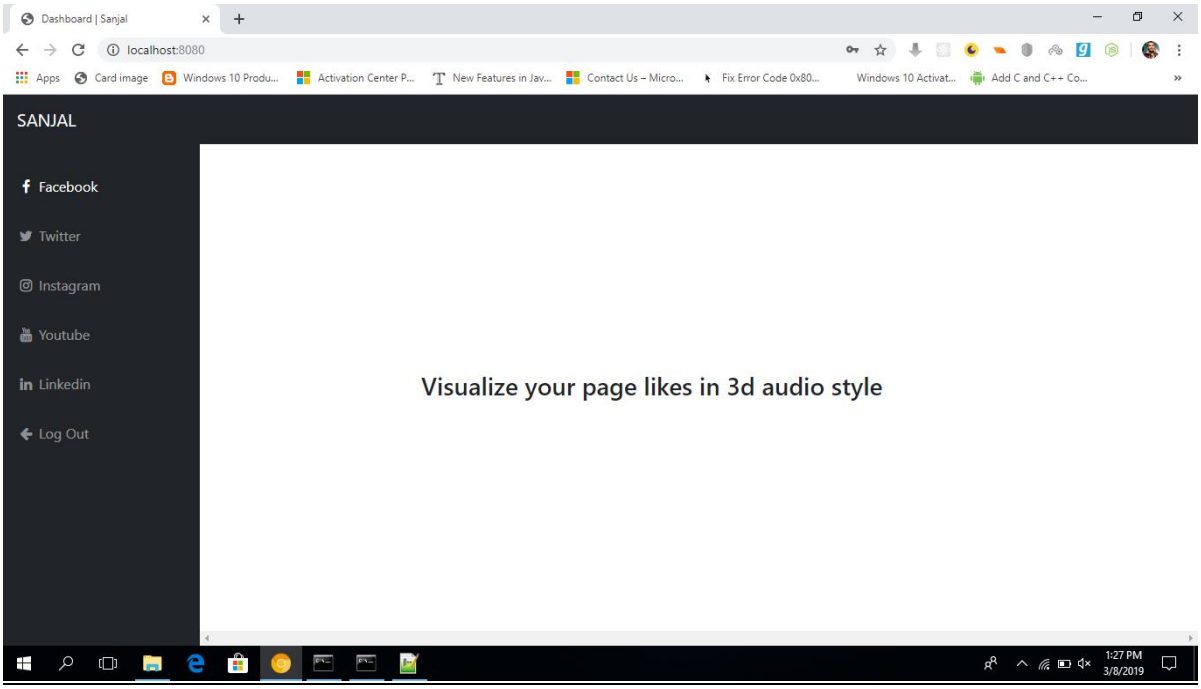


Fig 2: HOME SCREEN

When the user login to the website providing the credentials the above home screen is displayed . in this home page you can browse to facebook, twitter, instagram, or youtube to view your statistics.

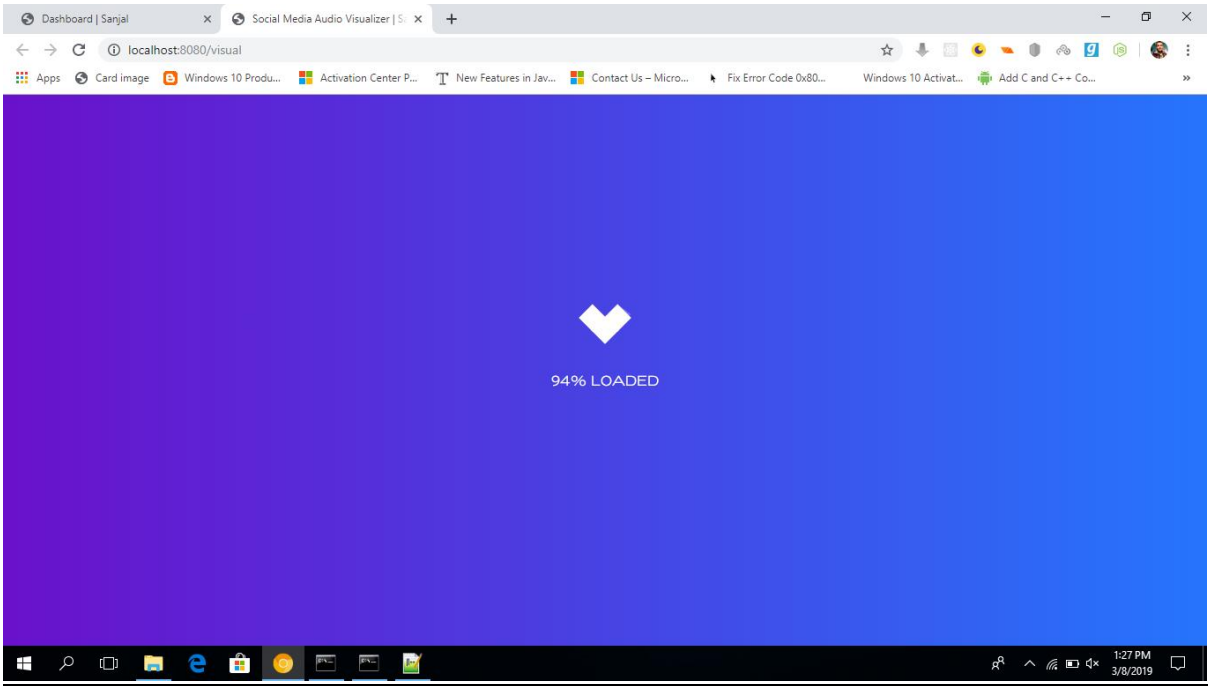


Fig 3: LOADING SCREEN

After the user click on any social network site , the screen loads to process further

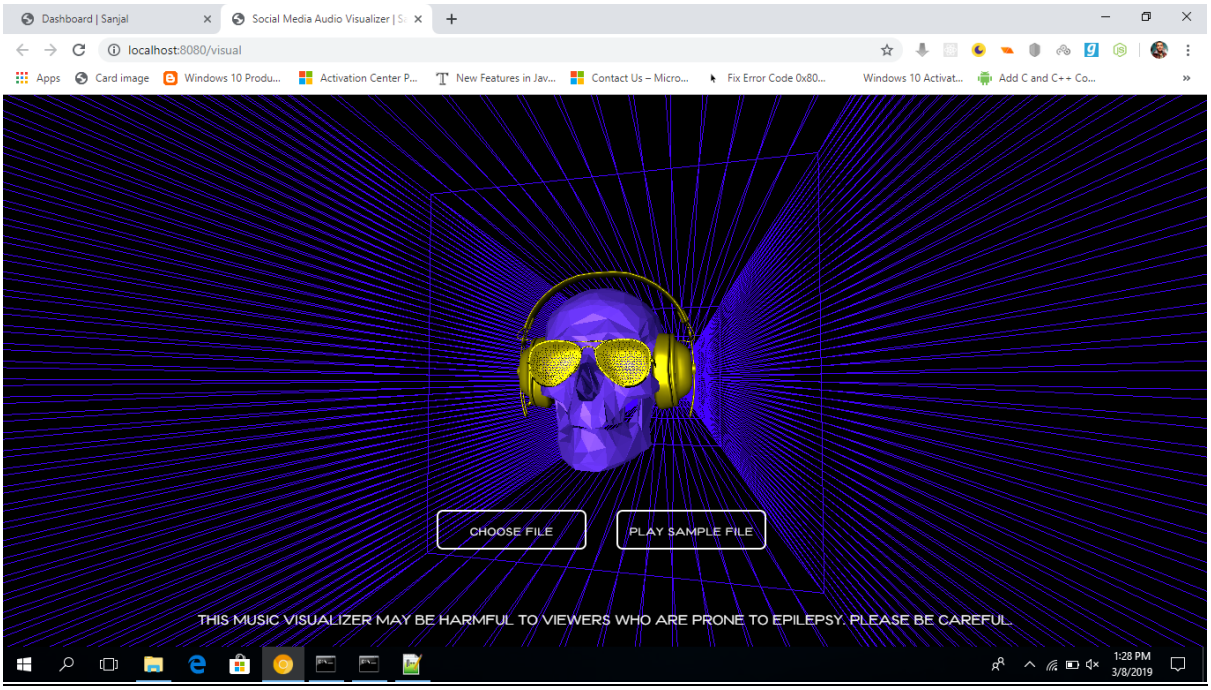


Fig 4: SELECT SCREEN

After the screen loads the page gives option to either choose a file whose visualization has to be displayed or play a sample file .

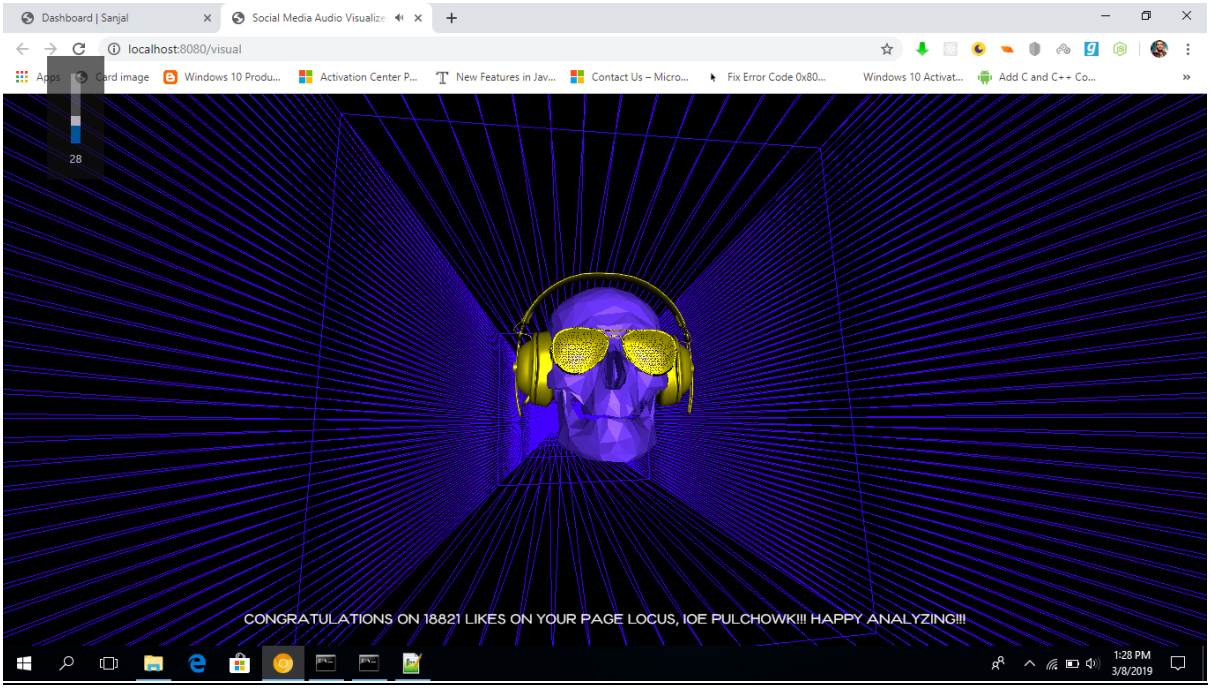


Fig 5: VISUALIZATION SCREEN

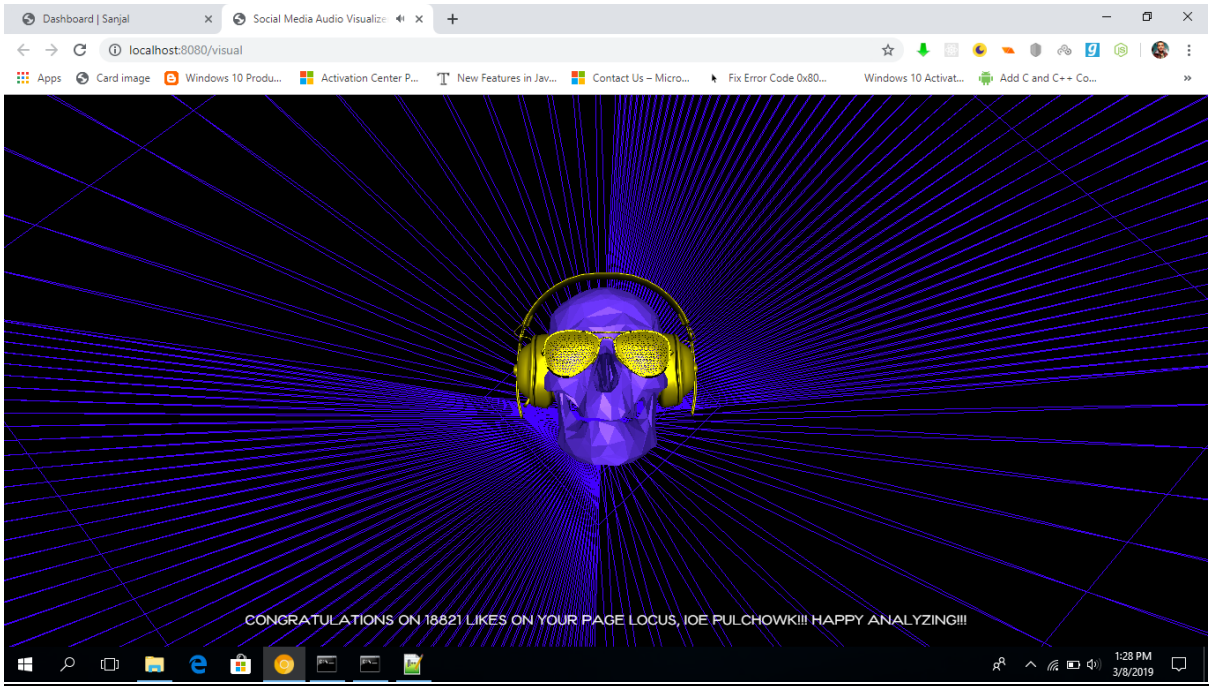


Fig 6: VISULAIZATION SCREEN 2

Once the sample or the file is choosen ,the visulalization screen start to play the audio along with the visual effects.

CONCLUSION

Project's Conclusion

The project has presented a simple visualizer of audio along with the statistics in a very well graphical manner. It used graphics objects to make the visualizer interactive . it uses the social media data to find a statistical data and then plotting and displaying was done through web services.

Limitation

The limitation of this project is that it is only able to display the statistics of facebook .as the facebook only access to its data to limited extent. Also the audio visulalizer works with bass and tremble of sound. It can be modified to sense very sensitive parts of sound to make it more effective.

Future Enhancement

This project can be further advanced to display the audio of various social media sites like instagram,twitter,etc .the visualizer can be made more interactive with enchanced graphics . the visualizer can be used to represent the statistical values in interactive moving objects.such as a man moving on a bar graph , moving around pie chart ,etc which can be very useful for learning as well as understanding purpose. The children can be taught easily through such graph.

Recommendation

This project is a decent enough guide to get started in computer graphics and it deals with

Creating graphical object using blender. r. It used graphics objects to make the visualizer interactive . it uses the social media data to find a statistical data and then plotting and displaying was done through web services.