



CPC354 ASSIGNMENT 1

COMPUTER GRAPHICS & VISUALIZATION

SCHOOL OF COMPUTER SCIENCE

UNIVERSITI SAINS MALAYSIA

SEMESTER 1 2023/2024

ASSIGNMENT 1

3D IDENT PROGRAM

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INTRODUCTION

TV ident in computer graphics and visualization

In the field of broadcast design, a TV ident, or television identification, is a standout and visually captivating component that skillfully combines computer graphics and visualisation to produce a distinctive brand identity for television stations [1]. A TV ident acts as a short visual signature and the channel's visual signature, making a lasting impression on viewers. TV idents use state-of-the-art computer graphics techniques and design ideas to create dynamic and unforgettable visuals. The graphical representations are carefully chosen to effectively and succinctly capture the spirit, character, and theme identification of a TV station.

A TV ident is essentially a meticulously planned animation or video sequence that is put strategically between shows [2]. It usually lasts anything from a few seconds to a minute. This visual break is a story that captures the essence of the channel, not merely a change of pace. TV idents, by combining colour, motion, music, and symbolic images, build a cohesive link between various shows and strengthen the channel's identity.

The use of computer graphics in TV idents has transformed the field of creativity. Technology has made it possible to express creativity through a variety of mediums, from simple animations and static logos to complex 3D designs and dynamic visual storytelling. The way that technology and creative expression come together in TV idents demonstrates how computer graphics have developed into an effective instrument for visual communication in the broadcast sector [2].

In computer graphics and visualisation, a TV ident is essentially more than just a logo or a transition rather, it's a visual manifesto, an immersive experience that has been thoughtfully designed to connect with the viewer [1]. These visual works of art become an essential component of the channel's identity as viewers come to know and love them, creating a sense of familiarity and connection that goes beyond the screen.

Purpose and Function of a TV Ident:

A television channel's identity is visually represented by a TV ident, which condenses and retains the essence of the channel. A TV ident's primary goal is to create and maintain brand identification [1]. Through a succinct visual sequence that encapsulates the channel's principles, personality, and thematic identity, the Ident leaves a profound and enduring impression on viewers. This is an essential weapon in the broadcaster's toolbox since it helps them establish a rapport and feeling of familiarity with the audience. Serving as a visual manifesto, the Ident explains the channel's USP and creates the ideal environment for a distinctive viewing experience [2].

Enabling smooth programme transitions is one of a TV ident's main purposes. The Ident maintains a seamless viewer experience by serving as a visual link across disparate content. But the Ident is much more than just a transition; it's essential to define the character of the channel. The tone of the channel is conveyed through the selection of images, music, and themed elements; these elements might convey an authoritative, playful, sophisticated, or inventive vibe [1]. This role affects how viewers perceive and relate to the channel, which extends beyond aesthetics. In addition, the Ident functions as a tactical instrument for distinction in a crowded broadcast market. Long-term audience loyalty is increased as a result of the channel's ability to stand out thanks to its unique and identifiable visual language. Essentially, a TV ident serves as more than just decorative art; it is an essential component of the audience's interaction and entire channel experience.

Examples

TV Idents	Description
ESPN	ESPN's ident is a vibrant, animated sequence that perfectly encapsulates the spirit of sports. With its strong music, fast-paced graphics, and clips from legendary sporting events, the ident transports viewers to the exhilarating world of sports. It is consistent with ESPN's mission to provide an exciting sport viewing experience.
HBO	HBO's static ident, which showcases an expanding and rotating image of the letters HBO together with a unique sound, is an example of the power of minimalism. It is sophisticated and has come to be associated with top-notch material.
Cartoon Network	Cartoon Network's idents are a colourful, dynamic display of artistic talent. Characters from a wide variety of the channel's shows frequently interact in lighthearted and surprising ways. This strategy makes the audience feel entertained and excited while also reinforcing the channel's emphasis on animated material. [3]
Pixar	Renowned for its animated picture creations, Pixar is well-known for its lovable and endearing opening that showcases the recognisable desk lamp "Luxo Jr." The lamp jokingly climbs onto the "I" in Pixar, giving the viewer a whimsical and unforgettable experience. In addition to representing Pixar's inventiveness, this commercial foreshadows the unique storytelling seen in their films. [4]
National Geographic	The breathtaking visual journey that is National Geographic's ident captures the spirit of adventure and discovery. With its stunning images of the natural world, wildlife, and cultural diversity, the ident reflects the channel's dedication to research and teaching. It does a good job of conveying the channel's goal of encouraging global curiosity.

LITERATURE REVIEW

Overview of the History and Progression of TV Idents in Computer Graphics:

The development of computer graphics for TV idents dates back to the early days of television transmission, when technology was still in its infancy and graphical capabilities were basic. Television networks used to rely on static logos and minimal animations, which were frequently made with analogue techniques or simple optical effects [5]. Although the graphic sophistication of these early idents was limited, they set the foundation for what would eventually grow to be a dynamic and essential part of broadcasting.

TV idents underwent a radical change with the introduction of computer graphics in the second part of the 20th century. More complex and adaptable design possibilities were made possible by the transition from analogue to digital technologies [5]. As computer graphics capabilities increased in the 1980s and 1990s, TV idents began to use digital effects and 2D animations [6]. A new era of visual branding was ushered in by channels experimenting with dynamic transitions, morphing logos, and subtle motion graphics.

When 3D computer graphics were incorporated in the late 20th century, it was the real revolution. Channels used three-dimensional design, allowing them to produce idents that are both immersive and visually striking [5]. Famous advertisements such as MTV's dynamic and constantly changing animations, which demonstrated the power of 3D visuals to draw viewers in and communicate brand identity, served as prime examples of this change. TV idents changed much more as technology developed into the twenty-first century. More realism and detail were made possible by developments in animation software and high-definition monitors. Channels started adding narrative components to their idents, creating little tales or vignettes that spoke to viewers more deeply while simultaneously representing the brand.

TV idents took on a new meaning in the twenty-first century with the emergence of streaming services and digital media. With platforms like Netflix constantly changing its logos based on viewer preferences, personalisation emerged as a major trend, offering viewers a more customised and engaging branding experience. With its immersive and interactive experiences, augmented reality (AR) and virtual reality (VR) technologies have begun to impact TV idents in recent years. These developments indicate a steady progression in the incorporation of computer graphics, expanding the creative possibilities for TV ident design.

Developments in TV idents and related technology

Reference 1: "The Television Will Be Revolutionized" by Amanda D. Lotz In "The [7]

Television Will Be Revolutionised," Amanda D. Lotz offers a thorough examination of how television is changing in the digital age. Lotz investigates how digital technologies affect the branding, distribution, and content of television. The reference explores how digital technologies, such as computer graphics, have transformed the visual aspects utilised for channel branding in the context of TV idents.

Lotz looks at how TV networks adjust to the ever-evolving media landscape, including the use of computer-generated imagery in TV idents. The book explores how technological improvements have influenced the creative possibilities and strategic considerations in TV ident design, as well as the economic and cultural transformations that have shaped the evolution of TV branding.

Reference 2: "Television: Technology and Cultural Form" by Raymond Williams [8]

The groundbreaking book "Television: Technology and Cultural Form," by Raymond Williams, provides a historical overview of the evolution of television and its cultural ramifications. The reference offers insights into the relationship between technology and visual representation in TV idents, even if it largely focuses on the more general features of television technology and its effects on culture.

Williams talks about how technological advancements affect television content's cultural forms, especially its visual components like idents. The source examines how television functions as a cultural medium and how technology affects television branding's visual language. This historical background aids in interpreting the evolution of TV idents as a crucial component of the changing technology and cultural environment.

OBJECTIVE ACHIEVEMENT

General Objectives:

The main goals of the TV Ident programme are to develop an animated logo that is dynamic and engaging while adhering to modern design standards and technological advancements. These goals are primarily focused on three areas: programme extensibility, user interface design, and visual animation.

Implementation for Objectives Achievement:

To implement visual animation to the gasket:

Using the ideas from Angel's programme, the 3D gasket was put into practice, expanding it to accommodate smooth 180-degree rotations to the right and left. The incorporation of gradual size shifts enhances the visual attractiveness. Because the animation is run in a loop, it can continue to move until the user interacts with it.

WebGL is used in the programme to render the 3D gasket. For aesthetic appeal, it has size transitions and dynamic rotations. This is a sample that illustrates the rotating feature:

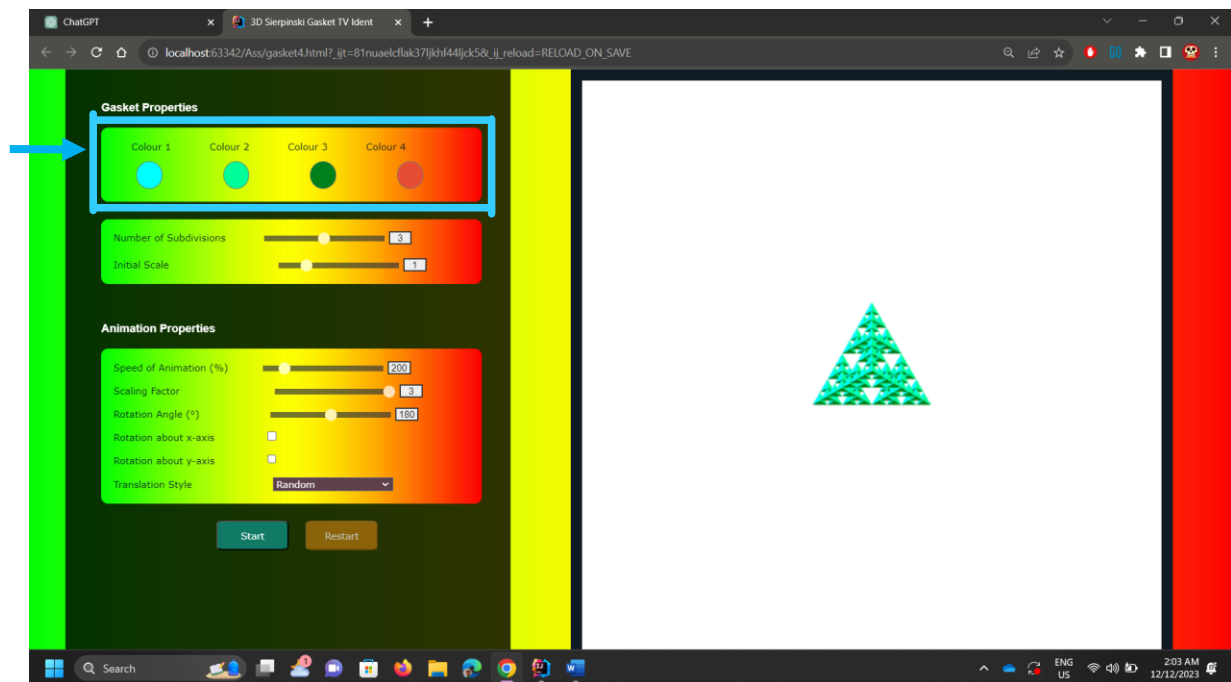
```
function rotation( obj, degree, axis ) {  
    // if rotationX/Y/Z is enabled  
    if ( obj.rotateXYZ[axis] === true ) {  
        let difference = degree - obj.theta[axis];  
        if ( Math.abs(difference) > obj.speed * 0.01 ) {  
            // add/subtract based on sign  
            obj.theta[axis] += Math.sign(difference) * obj.speed * 0.01;  
            return false;  
        } else {  
            obj.theta[axis] = degree;  
            return true;  
        }  
    } else {  
        return true;  
    }  
}
```


To design a user-friendly Interface:

A thorough conversation was created with HTML, CSS, and JavaScript. The UI has colour pickers for adjustable properties and input fields for parameters like subdivisions and animation speed. To ensure a smooth and interactive experience, event listeners are used to record user input. Keydown events are used to give the user even more control.

The UI is created using JavaScript, CSS, and HTML. It has interactive components like colour pickers and input fields. Here's an illustration of an HTML colour picker:

```
<div id="propertybox">
  <label for="color1" class="colorlabel">Colour 1</label>
  <label for="color2" class="colorlabel">Colour 2</label>
  <label for="color3" class="colorlabel">Colour 3</label>
  <label for="color4" class="colorlabel">Colour 4</label><br>
  <input type="color" id="color1" class="colorpicker" name="color1" value="#00FFFF">
  <input type="color" id="color2" class="colorpicker" name="color2" value="#00FF99">
  <input type="color" id="color3" class="colorpicker" name="color3" value="#00801A">
  <input type="color" id="color4" class="colorpicker" name="color4" value="#E64D33">
</div>
```



To ensure the program extensibility:

Modular programming ideas are used to organise the codebase, with functions encapsulating particular functionalities. Future improvements and ease of maintenance are guaranteed by this modular design. Furthermore, without causing any disruptions to the current codebase, the incorporation of new features or updates is made easier by the use of functions and event-driven programming. To improve readability and comprehension for prospective future developers, comments and well-written documentation are included with the code.

Because of its modular design, the programme may be easily maintained and enhanced in the future. This sample illustrates a modular function:

```
function scaling( obj, scaleFac ) {  
    let difference = scaleFac - obj.scale;  
    if ( Math.abs(difference) > obj.speed * 0.0005 ) {  
        // add/subtract based on sign  
        obj.scale += Math.sign(difference) * obj.speed * 0.0005;  
        return false;  
    } else {  
        obj.scale = scaleFac;  
        return true;  
    }  
}
```

CONCLUSION

The TV Ident program's creation and execution have produced both positive results and pointed up areas that require improvement. This conclusion offers an overview of the accomplishments, addresses constraints, examines the causes of results, and makes recommendations for possible improvements for further rounds.

Successes and limitations:

The main goals of the TV Ident programme have been effectively accomplished. The 3D gasket's visual animation, which combines smooth motions, size changes, and rotations, produces an eye-catching and dynamic logo. Users are guaranteed a smooth and engaging experience with the user interface design, which includes an intuitive dialogue with input fields and colour pickers. Future improvements and alterations have been made possible by the program's extensibility and modularity. Angel's program's methodologies have been used to create a strong foundation, and the addition of user interface elements improves the entire user experience. Through aesthetically pleasing graphics and customisable choices, the programme successfully engages users.

Even with the successes, there are still certain restrictions. Because the programme depends on a loop to move continuously, prolonged use or use on devices with lower processing power may cause performance problems. The intricacy of three-dimensional visuals and animations could provide difficulties for systems with constrained computational capabilities, which could affect how smoothly the ident transitions. Furthermore, even if the UI design is simple, users who are not familiar with animation parameters or 3D graphics jargon may need to go through a learning curve. Better instructions or tooltips could improve user comprehension and involvement.

Reasons for Outcomes:

The methods and technologies selected have a major impact on the results. Even while 3D animations and graphics are visually striking, their dependence on them necessitates careful consideration of system requirements and performance implications. Both the user's familiarity with interactive features and the instructions' clarity are critical to the effectiveness of the user interface design. The program's results are also affected by how well visual complexity and

computational efficiency are balanced. Finding the ideal mix guarantees a captivating experience without sacrificing effectiveness.

Suggestions for Future Improvements:

We might want to think about using optimisation techniques to improve the performance of the programme. This can entail improving the 3D animation algorithms to guarantee more seamless transitions, especially on devices with constrained processing power. It is also possible to investigate progressive loading techniques to reduce any possible lag during ident movements. Performance optimisation is prioritised so that the programme can support more devices and provide a consistently high-quality user experience.

To improve the user experience, the interface's user guidance must be improved. Think about adding tooltips or information overlays that offer concise descriptions of each parameter's purpose and effect on the design of the ident. Users who are unfamiliar with 3D graphics vocabulary in particular may find it easier to make educated decisions and fully grasp the customisation options with the help of this additional instruction. A programme is more accessible and user-friendly when the instructions are clear.

To better refine and customise the TV Ident programme to user preferences, a mechanism for gathering and incorporating user feedback must be established. Include user surveys or feedback forms in the user interface to learn more about the expectations and experiences of users. By examining this data, developers may make informed decisions about next releases and feature additions, keeping the programme current and in line with user preferences in a constantly changing user base.

Investigate cutting-edge innovations in computer graphics and interactive design to stay on top of technical developments. To further push the limits of visual complexity and interactivity in the TV Ident programme, think about utilising WebGL's capabilities or investigating real-time rendering technologies. Investigating novel technology not only improves the ident's aesthetic appeal but also establishes the show as a cutting-edge and creative tool for TV branding.

REFERENCES

- [1] D'Aveni, A. (2004). The aesthetics of ephemerality: The case of the television ident. *Media, Culture & Society*, 26(4), 607-624.
[https://www.researchgate.net/publication/336568763_The_Teleological_Nature_of_Digital_Aesthetics -
the New Aesthetic in Advance of Artificial Intelligence/fulltext/5da6741592851ca1ba62940/The-Teleological-Nature-of-Digital-Aesthetics-the-New-Aesthetic-in-Advance-of-Artificial-Intelligence.pdf](https://www.researchgate.net/publication/336568763_The_Teleological_Nature_of_Digital_Aesthetics_-_the_New_Aesthetic_in_Advance_of_Artificial_Intelligence/fulltext/5da6741592851ca1ba62940/The-Teleological-Nature-of-Digital-Aesthetics-the-New-Aesthetic-in-Advance-of-Artificial-Intelligence.pdf)
- [2] Adams, L., & Cairns, P. (2012). The role of animation in television station branding: A semiotic analysis of TV idents. *Media International*, 24(2), 153-170.
https://www.researchgate.net/publication/373679920_The_Semiotics_of_Animation_From_Traditional_Forms_to_Contemporary_Innovations
- [3] Morrill, J. (2017, January 27). *20 fantastic film and TV idents*. Den of Geek.
<https://www.denofgeek.com/tv/20-fantastic-film-and-tv-idents/>
- [4] Guardian News and Media. (2005, December 5). *The big TV channels are deep in an ident crisis*. The Guardian.
<https://www.theguardian.com/media/2005/dec/05/mondaymediasection10>
- [5] Wikimedia Foundation. (2023, November 6). *History of BBC Television Idents*. Wikipedia. https://en.wikipedia.org/wiki/History_of_BBC_television_idents
- [6] Wikimedia Foundation. (2023a, July 8). *History of ITV television idents*. Wikipedia. https://en.wikipedia.org/wiki/History_of_ITV_television_idents
- [7] Google. (n.d.). *The television will be revolutionized, second edition*. Google Books.
https://books.google.com.my/bookshl=en&lr=&id=yeZ8BAAQBAJ&oi=fnd&pg=PR9&dq=The%2BTelevision%2BWill%2BBe%2BRevolutionized%22%2Bby%2BAmanda%2BD.%2BLotz%2B&ots=2SLTYH1C4H&sig=Dwi546RVfjWqmBR734ezT WV85FY&redir_esc=y#v=onepage&q=The%20Television%20Will%20Be%20Revolutionized%22%20by%20Amanda%20D.%20Lotz&f=false
- [8] Williams, R. (1974). *Television: Technology and Cultural Form*. Routledge.
<https://doi.org/10.4324/9780203426647>