Three JS - First Report

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Abstract

This report presents a comprehensive analysis of a script developed using the library Three.js library for creating interactive 3D graphics on the web. Three.js, a powerful JavaScript library was employed to craft a visually engaging experience, exploring the capabilities of three-dimensonal rendering in the online environment.The script covers fundamental aspects, from setting up the environment to implementing complex geometries and advanced visual effects, details about the code structure, design choices, and optimizations.

# Renderer and Scene

These two components, Renderer and Scene, work together to create a cohesive and interactive visual experience. The Renderer processes the Scene and displays it in the viewing environment, allowing users to explore and interact with three-dimensional objects created within the context of Three.js. This basic structure provides a solid foundation for the development of 3D applications and games on the web using Three.js.

# First Result and Problem

This was our first outcome up to the "Color Addiction" chapter, and until this point, we encountered no issues; everything was quite intuitive. However, in this chapter, things started to get complicated as we faced some challenges. All the triangles were "multicolored," and there was some difficulty in creating two models: one multicolored, another two in yellow and purple, and one in wireframe.

# Dataset

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# Visualization Solution

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## Low fidelity prototype and user feedback

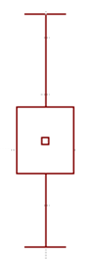
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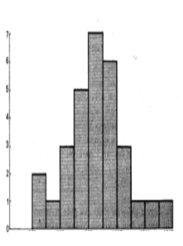
## 

1. Aspect of the low fidelity prototype

## Functional prototype

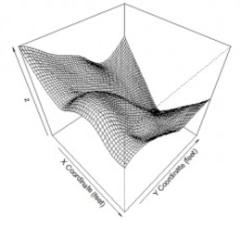
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1. Visualizations to answer question Q1.

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1. Visualizations to answer the question Q2.

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## Implementation challenges

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## Evaluation and changes in the prototype

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# Conclusion and Future Work

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References

1. T. Minzner, *Visualization Analysis and Design*, A K Peters/CRC Press, 2014
2. A. Kirk, *Data Visualization : a successful design process*, Packt Publishing, 2012
3. J. Heer, M. Bostock, V. Ogievetsky, A tour through the visualiza-tion zoo. *Communications of the ACM*, vol. 8, n.1, pp. 59-67, 2010