**ABSTRACT**

This report presents a comprehensive overview of the process involved in creating an augmented reality/virtual reality (AR/VR) project centered around a volcanic eruption using Blender application. The project encompasses various stages, from initial terrain creation to the final rendering and compositing of the volcanic scene. The project begins with the creation of a realistic volcanic landscape using Blender's landscape add-on and sculpting techniques. Emphasis is placed on adjusting terrain parameters to achieve a naturalistic appearance, as well as incorporating rocky textures and lava features through sculpting. Performance optimization techniques are also discussed to ensure smooth operation within the AR/VR environment. Subsequent steps involve setting up particle systems for lava sparks and wind effects, as well as implementing fluid and smoke simulations to simulate the eruption process. The report details the configuration of fluid dynamics and particle settings to achieve desired visual effects, including adjustments for scale, speed, and fluid material properties. Further enhancements to the scene involve the application of image textures and shaders to create realistic volcanic rock materials, as well as adjusting lighting and color management for atmospheric effect. Compositing techniques are then utilized to add mist effects and glows for a heightened sense of realism. Throughout the report, specific attention is given to optimizing simulation parameters, managing force fields, and refining smoke and ash settings for improved visual fidelity and performance. The process of baking simulations and rendering the final scene is also discussed, along with the application of compositing effects to enhance the overall presentation. In conclusion, the report provides a detailed account of the methodologies and techniques employed in the creation of an AR/VR experience depicting a volcano eruption in Blender. By following the outlined steps, developers and enthusiasts can gain insights into the intricacies of AR/VR content creation using Blender application, ultimately leading to the creation of immersive and visually stunning virtual environments.

# **ACKNOWLEDGEMENT**

The satisfaction and euphoria that accompany the successful completion of any task would be incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crowned my effort with success.

I would like to thank **Shri Narayan Rao R. Maanay,** Secretary, BNMEI, Bengaluru for providing an excellent academic environment in the College.

I would like to sincerely thank **Prof. T. J. Rama Murthy**, Director, BNMIT, Bengaluru for having extended his support and encouraging me during the course of the work.

I would like to sincerely thank **Dr. S.Y. Kulkarni**, Additional Director, BNMIT, Bengaluru for having extended his support and encouraging me during the course of the work.

I would like to express my gratitude to **Prof. Eishwar N. Maanay**, Dean, BNMIT, Bengaluru for his relentless support, guidance and assistance.

I would like to thank **Dr. Krishnamurthy G.N,** Principal, BNMIT, Bengaluru for his constant encouragement.

I would like to thank **Dr. Sheba Selvam,** Professor and Head of the Department of Artificial Intelligence and Machine Learning, BNMIT, Bengaluru who has shared her opinions and thoughts which helped me in completion of my Internship successfully.

I would also like to thank **Mrs. Kruthi P,** Assistant Professor, Department of Artificial Intelligence and Machine Learning, BNMIT, Bengaluru for guiding in a systematic manner.

Finally, I would like to thank all technical and non-technical faculty members of the Department of Artificial Intelligence and Machine Learning, BNMIT, Bengaluru, for their support. I would like to thank my Family and Friends for their unfailing moral support and encouragement.

### **Dhruva Kashyap**

### 1BG21AI032

**Table of Contents**

|  |  |  |
| --- | --- | --- |
| **Chapter No.** | **Contents** | **Page No.** |
| - | Abstract | i |
| - | Acknowledgement | ii |
| 1 | Introduction | 1 |
| 2 | System Requirements | 3 |
| 3 | System Design & Implementation | 4 |
| 4 | Results | 10 |
| 5 | Conclusion & Future Enhancement | 13 |
| - | References | 15 |

**Table of Figures**

|  |  |  |
| --- | --- | --- |
| **Figure No.** | **Figure Name** | **Page No.** |
| 4.1 | Volcanic Mountain in Solid Mode | 11 |
| 4.2 | Volcanic Mountain in Render Mode | 12 |
| 4.3 | Volcano Eruption in Render Mode | 12 |