

**Important! Keep in mind that the purpose of writing this document is to showroom your skills, abilities, and accomplishments.**

[**G-Architech website**](https://softarchitech.cs.grinnell.edu/)

1. **Permission to add to the G-ArchiTech website**
   1. Do you give us permission to post the materials from this page into the course online presence G-ArchiTech? Either way is fine. Every team member must provide their decision. If one or more group members does not agree, do you want the project to be shared without your name on it or not at all?
   2. Yes, we give permission
2. **Project title** 
   1. GCIEL Viking Data Visualizations
3. **Group name**
   1. Prototype Testing/Data Visualization Team
4. **Link to your application**
   1. <https://github.com/GCIEL/Viking-Longship-VR>
   2. (This has yet to be fully updated)
5. **Relevant Skills**
   1. R Shiny Programming, Data Visualizations, Virtual Reality Experience, Virtual Reality Learning
6. **Project Summary. What is this project about?**
   1. This project improves on the baseline established by previous CSC-324 groups working on the GCIEL Viking Longship project. We improve upon the data visualizations to make them easier to understand, easy to interact, and easy to interpret. By doing so, we can improve the VR learning experience, enhancing future grants that focus on accelerating ways in which people can utilize VR to learn about things that otherwise weren’t possible. This project sets the groundwork for future VR learning, allowing people that otherwise wouldn’t have access to learning opportunities to take advantage of Virtual Reality. A prime example of this would be the Viking Longship, in which we can depict a visual representation of a Viking ship without having to take a trip to a physical location. Virtual reality presents a unique learning experience by allowing people to learn about things that otherwise wouldn’t be possible.
7. **Relevant tags**
   1. R Programming, Virtual Reality Experience, VR Learning
8. **Add a screenshot of the app developed by your group.**
   1. A screenshot of a computer

      Description automatically generated
9. **End Product**
   1. What is this project about? What are the goals/vision for this project?
      1. This project aims to enhance learning capabilities within Virtual Reality. By providing several useful data visualizations regarding the Viking Longship VR project, we can understand ways to improve VR learning through analyzing the way people interact within VR.
   2. Talk a bit about your audience.
      1. Our audience pertains to VR developers, students, and teachers. By including data visualizations in addition to the ARC VR Evaluation Survey, we can understand improvements we can make to VR learning to improve and increase learning opportunities.
   3. What does your app do? What can a user learn from it?
      1. Our app takes an input of VR data and analyzes it through data visualizations. Users can learn how people interact within Virtual Reality learning opportunities and utilize this information to improve VR learning by understanding optimal placement of pieces/information and controls/tutorials.
      2. A fun/interactive aspect of our app is that our data visualization project animates several things. Via timestamp, we can animate the data visualization that depicts how people move within VR. From there, we can understand how people move within VR and interact with each Viking piece.
   4. Show and describe your process to develop your app.
      1. The application was primarily designed from a group within the previous semester. Since the project was nearing completion due to the end of the GCIEL grant, our primary job was to tidy things up to allow for a smooth transition between Grinnell College and Carlton College, who will pick up where we left off. Hence, our job was to improve the data visualizations such that we could better analyze VR learning and understand how learning works.
      2. To ensure that data visualizations were meaningful, we altered and improved several things. First, we disabled the ‘data vis’ tab until a dataset with five or more observations was correctly uploaded. Following, we altered several data visualizations. To improve our understanding of VR learning, we incorporated visualizations that reflected movements of VR users, such as heat maps and time-lapse animations that displayed how users interacted within the VR. This allows us to better understand how users move, and ways to improve piece location to enhance VR learning.
      3. Following, we also incorporated visualizations that analyzed where players were looking (and for how long) to grasp a better understanding of where users were looking. This is still a work in progress, as we can currently only analyze the singular ‘point’ within the center of the VR headset to know where the user was looking.
   5. Talk about your challenges and achievements.
      1. The largest challenge coming into the project was understanding the code previously written by other students. This was more difficult than starting from scratch, as everyone has a different coding methodology.
      2. The largest achievement we had was improving the data visualizations and rearranging the tabs. By doing so, we can allow data analysis users to better focus on certain aspects of the data, such as user engagement or player-to-piece interactions.
   6. Future work. If you were to continue this project what would be the next steps?
      1. Next steps would include improving the tutorial and compatibility with multiple VR headsets/consoles. By doing so, we can improve the user experience and ensure that those with any VR headset can experience VR learning in a similar manner. Furthermore, adapting and improving the ARC Assessment Strategy Survey would allow us to better understand how learning via VR either improves or hinders learning, and ways we as developers can improve VR learning.
      2. Add images CREATED by your group. Add 2-5 images that illustrate your work e.g., data visualization, journey maps, etc. Pixel Dimensions between 400-600 pixels each dimension. A screenshot of a graph

         Description automatically generatedA screenshot of a computer

         Description automatically generatedA screenshot of a computer screen

         Description automatically generated
10. **Acknowledgements**
    1. We would like to thank Professor Jimenez for guiding us throughout the process.
    2. We would also like to thank our mentor Eli Mendoza for providing critique and inquisitive questions when we presented our current work throughout the semester.
    3. Finally, we would like to thank Dr. Neville for providing us this opportunity to playtest and experience VR through data visualizations, improving VR learning for future students.