Engineering Notes No. 1.1

## INFORMATION

**NAME:** William Reimer

**DATE:** 9/17/24 – 9/23/24

**Sprint:** 1

## JIRA BACKLOG

**Responsible for:**

* ERPOLYV-9: Research 3D Render of ERAU Campus
* ERPOLYV-10: Create Basic Render of ERAU Campus
* ERPOLYV-12: Research RenderDoc
* ERPOLYV-16: Create Tutorial for Rendering in Blender

**Contributed to:**

* Backlog item you contributed to, elaborate in table below

ERPOLYV-5: Establish Meeting Times

ERPOLYV-8: Read PolyVerif Papers

## RESOURCES & DOCUMENTS CONTRIBUTED TO

***Table 1 - Contributions***

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Resource/Document** | **Location** | **Contribution Description** |
| 9-17-24 to 9-21-24 | ERPOLYV-12 | N/A | I researched the applicability of RenderDoc to 3D renders of the ERAU campus. With the addition of Google Maps, Blender v3.5, and the plugin: MapsModelsImporter v0.6.2, a full 3D model of the ERAU campus can be generated and potentially used to create, test, and implement future scenarios. |
| 9-17-24 | ERPOLYV-9 | N/A | I looked into how to generate a 3D render of the entire ERAU campus. Blender showed the most promise, as it was compatible with 3D capture software, like RenderDoc, and supports several plugins to assist in this task. |
| 9-17-24 | ERPOLYV-10 | Blender  GitHub | I created the first iteration of an intersection within the ERAU campus. |
| 9-19-24 to 9-20-24 | ERPOLYV-16 | Github: README file  YouTube | I created a video tutorial on how to create render of the ERAU campus mentioned ERPOLYV-10. |
| 9-17-24 | ERPOLYV-5 | Discord | I participated in the creation of the weekly meeting times. |
| 9-17-24 to 9-21-24 | ERPOLYV-8 | N/A | I participated in the research of PolyVerif, how it works, and how to use it |

## COMPONENTS TESTED

***Table 2 - Testing***

|  |  |  |  |
| --- | --- | --- | --- |
| **Date Tested** | **Component** | **Result** | **Comments** |
| 9/17/24 | ERPOLYV-10:  Creating a test render of an intersection of the ERAU campus | Success: Generated a full 3D render of the scanned area. | The versions of software used were:  Blender 3.5  RenderDoc 1.26  MapModelImporter 0.6.2 |

## PROBLEMS SOLVED

***Table 3 - Solutions***

|  |  |  |
| --- | --- | --- |
| **Date** | **Problem** | **Solution & Notes** |
| mm/dd/yy | Problem description | Solution and notes if applicable |
| 9-17-20 | Solved problem regarding the 3D test render | The issue stemmed from incompatible versions of Blender and RenderDoc. Different versions of RenderDoc only work with their corresponding versions of Blender, so the difficulty arose from attempting to use a newer version of Blender (4.2). To resolve this issue, I used Blender (3.5) along with RenderDoc (1.26), and the next test worked, and succeeded consistently. |
| 9-18-24 | Finish Project Proposal | Set up a meeting to finish proposal based on current information from Dr. Akbas (need more), the research done from the PolyVerif papers, and resources relevant to simulations and digital scenarios to finish the project proposal. |
| 9-19-24 | Determine Project Scope | A meeting with Dr. Akbas was scheduled to better determine the type of scenarios that he wants tested, and a better idea of the direction of the project. |
|  |  |  |

## PROBLEMS TO ADDRESS NEXT

***Table 4 – Future Problems***

|  |  |
| --- | --- |
| **Problem** | **Description** |
| Creating a full campus render | With the success of rendering an intersection on campus, the next goal is to render the entirety of the ERAU campus. |
|  |  |

## MEETING NARRATIVE NOTES:

***Table 5 – Meeting 1***

|  |  |  |
| --- | --- | --- |
| **09/17/24** | **Meeting Type:** StandUp/**Class**/ETC | |
| Met with Product Owner(s): Y/N | | |
| **Problems Brought Up:** | | |
| **Problem** | | **Proposed Solution** |
| Need consistent access to Micaplex computers | | Dr. Akbas will give the group card access to the lab. |
| Are there specifics that the owner wants regarding the simulated scenarios | | Keep the scenarios as generic as possible for now, as they can be tweaked later on down the line.  More details will also be addressed 09/18/24 |
| Project Proposal due Thursday | | Have a meeting on Wednesday to finish the proposal |
| **Other Items Updated on:** | | |
|  | | |
| **Additional Notes:** | | |
| SSH Need to get in contact with Quentin | | |

***Table 6 – Meeting 2***

|  |  |  |
| --- | --- | --- |
| **09/18/24** | **Meeting Type:** StandUp/Class/Other | |
| Met with Product Owner(s): Y/N | | |
| **Problems Brought Up:** | | |
| **Problem** | | **Proposed Solution** |
| Anything we need to know on PolyVerif that is pertinent to project | | Main goal: expanding the application space and examples within polyverif and integrating polyverif with machine learning validation tools.   * Example to learn the tool and to find potential issues and fix them * How can it be combined with tools in the lab to provide more complex research cases * Furure uses in machine learning, like neuroevolution, once the tool is stably integrated |
| **Other Items Updated on:** | | |
| Are there specifics that the owner wants regarding the simulated scenarios?   * Goal: everything other than the main vehicle is preplanned. The vehicle is in a reactionary state * Model an intersection within riddle's campus   + Every action possible, multiple scenarios   + Each scenario is atomic, with low number of decisions taken     - EX: left turn with one car passing     - EX: cars in front with red lights, stop or not   + Get familiar with simulation environment and be able to run 1 –2 simulations each | | |
| **Additional Notes:** | | |
|  | | |

***Table 7 – Meeting 3***

|  |  |  |
| --- | --- | --- |
| **09/19/24** | **Meeting Type:** StandUp/Class/ETC | |
| Met with Product Owner(s): Y/N | | |
| **Problems Brought Up:** | | |
| **Problem** | | **Proposed Solution** |
| Who will be the TA for the project? | | Clay will be the TA |
|  | |  |
|  | |  |
| **Other Items Updated on:** | | |
| I’m focusing on getting tutorial for 3d rendering out tonight. | | |
| **Additional Notes:** | | |
|  | | |

## NOTES:

Progress of the first sprint is going well, making good pace to finish all items on time.