Engineering Notes No. 10.2

INFORMATION

NAME: Isabella Acosta

DATE: 02/26/25 - 03/04/25

Sprint: 10

JIRA BACKLOG

Responsible for:

- EGR Notes 1
- EGR Notes 2
- Isabella's Test
- Test Introductory test cases

Contributed to:

- Determine Final Requirements for End of Semester
- Work on detailed breakdown of test cases
- Plan out AI and neuroevolution scope of project

RESOURCES & DOCUMENTS CONTRIBUTED TO

Table 1 - Contributions

Date	Resource/Document	Location	Contribution Description
N/A	N/A	N/A	N/A

COMPONENTS TESTED

Table 2 - Testing

Date Tested	Component	Result	Comments
02/27/25	Scenic installation	It works!	Scenic works but lacking texture mesh
03/04/25	NEAT test file	It is installed!	NEAT test file was successfully installed and is running on the computer

PROBLEMS SOLVED

Table 3 - Solutions

Date	Problem	Solution & Notes
N/A	N/A	N/A

PROBLEMS TO ADDRESS NEXT

Table 4 – Future Problems

Problem	Description
AI and neuroevolution development	Serena and Hannah will focus on getting the AI and neuroevolution set up.

MEETING NARRATIVE NOTES:

Table 5 – Meeting 1

02/27/25	**Meeting Type:** Class/Standup/Presentation/**MicaPlex**
Met with Product Owner(s): Y/**N**	
Problems Brought Up:	
Problem	**Proposed Solution**
N/A	N/A
Other Items Updated on:	
Additional Notes:	
Met in the Mica Plex. Moving Quentin's model on to the computer. Isabella and Davian will NOT be learning the AI stuff (focus on simulation and documentation), Serena and Hannah will focus on the AI stuff. SDD due in a week, Clay and Akbas want us to focus on and update the document to reflect the NeuroEvolution tasks that we will be focusing on. Fresh start of Scenic-Sumo (Quentin's model) or QSS (Quentin-Scenic-Sumo) User: ScenicSumo Pass: Fall2024 Scenic is installed, SUMO has yet to be installed. Scenic test simulation is functional, but lacks texture mesh.	

Table 6 – Meeting 2

03/04/25	**Meeting Type:** Class/Standup/Presentation
Met with Product Owner(s): Y/N	
Problems Brought Up:	
Problem	**Proposed Solution**
Other Items Updated on:	
Additional Notes:	
Mission planning needs to be handled. Resources for Scenic-Sumo about developing test cases. Focusing on the machine-learning aspect of things. 2D map of Riddle as opposed to 3D model SDD/SDS is due on 03/06/2025 Test cases seem to running fine on the Scenic-Sumo model Get into contact with Quentin and discuss more specific ideas, try to meet his requests. See if Quentin's model can take real-time data, to be implemented. Want it to react using machine learning, mimic aggressive and offensive/passive driving. May or may not use NeuroEvolution. "Sounds interesting" - Akbas Open-Street map is capable of doing 2D views as well. Got the test file running for NEAT	

```
     2   24    45      3.0    0.528    11
     3   11    33      3.0    0.560     0
Total extinctions: 0
Generation time: 0.025 sec (0.040 average)

 ****** Running generation 33 ******

Population's average fitness: 2.37167 stdev: 0.48047
Best fitness: 3.56963 - size: (2, 5) - species 1 - id 4052
Average adjusted fitness: 0.536
Mean genetic distance 2.048, standard deviation 0.799
Population of 151 members in 3 species:
   ID   age  size  fitness  adj fit  stag
  ====  ===  ====  =======  =======  ====
     1   33    73      3.6    0.507     6
     2   25    45      3.0    0.540    12
     3   12    33      3.0    0.559     1
Total extinctions: 0
Generation time: 0.038 sec (0.041 average)

 ****** Running generation 34 ******

Population's average fitness: 2.35038 stdev: 0.49332
Best fitness: 3.91533 - size: (2, 5) - species 1 - id 5095

Best individual in generation 34 meets fitness threshold - complexity: (2, 5)

Best genome:
Key: 5095
Fitness: 3.9153315401452433
Nodes:
        0 DefaultNodeGene(key=0, bias=-0.9772017090016489, response=1.0, activation=sigmoi
, aggregation=sum)
        460 DefaultNodeGene(key=460, bias=-1.0176073304765927, response=1.0, activation=si
moid, aggregation=sum)
Connections:
        DefaultConnectionGene(key=(-2, 0), weight=-3.124621946602609, enabled=True)
        DefaultConnectionGene(key=(-2, 460), weight=3.239180051474458, enabled=True)
        DefaultConnectionGene(key=(-1, 0), weight=-0.7996715722684561, enabled=True)
        DefaultConnectionGene(key=(-1, 460), weight=2.2219998285706026, enabled=True)
        DefaultConnectionGene(key=(460, 0), weight=4.2833171124499145, enabled=True)
```

NOTES:

We are shifting over to Quentin's Scenic-SUMO model to avoid any further issues that we have been having with PolyVerif. Davian and Isabella will be focusing on the test cases while Hanah and Serena will be focusing on the AI and neuroevolution.