

Engineering Journal:



Date: 16/04/2024

Author: Luciano Bustamante

Task done Today:

- We began to consider the artificial intelligence “Yolo8” more thoroughly.
- We learned how to train “Yolo8”, understood its functionality, and identified situations in which it can be used.

	Issues	Solutions
Hardware	—	—
Software	implement Yolo8 in the program	developed as we proceed since we have not yet explored Yolo8 in depth.

Date: 24/04/2024

Author: Ignacio Sosa

Activity: Error debugging

	Issues	Solutions
Hardware	<ul style="list-style-type: none"> - In the camera section: - An error occurred in the "self.center_camera" section due to the removal of a camera for technical reasons to improve resolution. 	These errors arose due to modifications made to the robot for better detection.
Software	<ul style="list-style-type: none"> - In the camera section: - An error occurred in the "self.center_camera" section due to the removal of a camera for technical reasons to improve resolution. 	These errors arose due to modifications made to the robot for better detection.

Date: 27/04/2024

Author: Ignacio Sosa

Task done Today:

- All lines in the executor using the central camera were commented out.
- JSON 8 was created, which includes the central distance sensor.

Date: 04/05/2024

Authors: Ignacio Sosa, Luciano Bustamante, Joaquín Riedel

Task done Today:

- The task of adding victims to the matrices was **resumed**.
- A study on how to modify the robot's navigation was **initiated**.

Date: 06/05/2024

Author Ignacio Sosa

Task done Today:

- The line in mapper.py causing an error was commented out.

Date: 08/05/2024

Authors: Ignacio Sosa, Luciano Bustamante, Joaquín Riedel

Task done Today:

- A new JSON with the three original cameras was created, with a resolution of 40 in height and width.
- The variable `min_fixture_height` was changed to 10, allowing the program to function correctly.
- The `convert_to_matrix` function was created in `compound_pixel_grid`, transforming arrays into number matrices.

Date: 23/03/2024

Authors: Ignacio Sosa, Luciano Bustamante, Joaquín Riedel

Task done Today:

- A program to add victims to the final matrix was started.
- The possibility of implementing Yolo for victim detection was **evaluated**.

Date: 30/03/2024

Authors: Ignacio Sosa, Luciano Bustamante, Joaquín Riedel

Task done Today:

- A logic to classify victims according to their letters was devised.
- Yolo usage was demonstrated.

Date: 06/04/2024

Author: Ignacio Sosa

Task done Today:

- The idea of classifying letters was **abandoned**.

Date: 13/04/2024

Authors: Ignacio Sosa, Luciano Bustamante, Joaquín Riedel

Task done Today:

- Changes in the regulations were reviewed.
- The new version of Erebus was incorporated.
- The new version of Webots was incorporated.

Date: 20/04/2024

Authors: Ignacio Sosa, Luciano Bustamante, Joaquín Riedel

Task done Today:

- A problem with victim and sign detection was identified.
- A task diagram was created on GitHub for better organization.

Date: 21/04/2024

Author: Ignacio Sosa

Task done Today:

	Issues	Solutions
Hardware	The change of simulator implied a change in the resolution of the cameras.	The change of simulator implied a change in the resolution of the cameras. <ul style="list-style-type: none">- The JSON was modified to increase the resolution quality of the cameras:- The front camera was removed, and the resolution of the side cameras was increased.- A color sensor was added.
Software		The code was modified to meet the software requirements.

Date: 11/05/2024

Author: Ignacio Sosa

Task done Today:

- The `matrix_to_arrays` function was created in `compound_pixel_grid`, transforming arrays into matrices for better mobility.
- The creation of a matrix comparator was [planned](#).

Date: 15/05/2024

Author: Luciano Bustamante, Ignacio Sosa and teacher's help

Task done Today:

- The `preload_matrix` function was added to `final_matrix_creator`, converting the array (wall_array and victims_array) into a boolean array.

- The `preload_final_matrix` function was created, which combines the victims array with the walls array, adding the victims in the rows.
- The `preload_final_matrix2` function was created, which combines the victims array with the walls array, adding the victims in the columns.

Date: 18/05/2024

Author: Ignacio Sosa

Task done Today:

- The `correct_preload_victim` function was created in `final_matrix_creator` to add more TRUE values to the victims array for correct addition.

	Issues	Solutions
Hardware	—	—
Software	- An error in the recognition of pits was detected.	The code will be reviewed and later updated with the function working

Date: 31/05/2024

Authors: Ignacio Sosa, Luciano Bustamante, Joaquín Riedel

Task done Today:

- Today, matrix comparisons were performed to verify the correct functionality of the program we developed.
- A sketch of our team logo was also created.

	Issues	Solutions
Hardware	—	—
Software	- Several errors were identified in the code. One of them is the imperfect detection of wells, which causes issues in the code.	- To solve this problem, was suggested modifying the following parts of the code: `non_fixture_filterer` and `data_extractor`.

Date: 6/06/2024

Authors: Ignacio Sosa, Luciano Bustamante, Joaquin Riedel

Task done Today:

-The "Team Description Paper" (TDP) documentation was started.

Date: 05/06/2024

Author: Ignacio Sosa

Task done Today:

- The goal is to add the victims to the final matrix, for which the following functions are created and the following modifications are made:
In compound_pixel_grid, an array is created to modify the robot_detected_fixture_from array to receive data in string format.
In fixture_mapper, I modify the map_detected_fixture function to add victims to the array with a number that escalates according to their detection order.
In fixture_detection, I add the map_fixture_type function to add victims to another array.
In final_matrix_creator, I add the get_tile_status_victim, transform_robot_detected_to_string_node_array, and __orientation_grid_to_final_fixture_grid functions. These functions will allow forming a matrix consisting only of victims.

Date 08/06/2024

Author: Ignacio Sosa.

Task done Today:

- In executor, the variable "victimas" is added and the state_end function is modified to receive this variable as a parameter.
- In final_matrix_creator, the get_victim_text_grid and unificador_de_matrices functions are added. These functions will add the victims to the matrix.

Date 10/06/2024

Author: Luciano Bustamante.

Task done Today:

The idea of using gimp ((<https://www.gimp.org/downloads/>)) was implemented, to be able to get the HSV values out of the grounds, since it fell inside and began to give us errors in the program.

Some of the modified files in the program are Data_Extractor and Non_fixture_filterer.

	Inssues	Solutions
Hardware	—	—
Software	The problem is that our robot falls into a pit since it does not get to see its colors well. Because of the low resolution values.	The idea is to use Gimp (https://www.gimp.org/downloads/) To be able to get the HSV values out of the grounds, and thus get more accurate values.

Date 11/06/2024

Author: Ignacio Sosa, Joaquin Riedel, Luciano Bustamante.

Task done Today:

The documentation (TDP) continued to be carried out in the software part.

Date 12/06/2024

Author: Ignacio Sosa.

Task done Today:

	Inssues	Solutions
Hardware	—	—
Software	The problem was that the letter of the victims (S, U, H) was not implemented in the final matrix.	In Final_matriz_Cretor, in the matrix unifier function, the value that determines the area to be analyzed is modified to establish the possible position of the victim, this allows greater efficiency when determining the corresponding type of victim..

Date 13/06/2024

Author: Luciano Bustamante (profesor Enzo Juarez, apporto la idea).

Task done Today:

A function called convert.py was created, which is used to take more accurate images on the grounds, Final_matriz_creator was also modified to detect the passage changes that we needed to implement.

	Inssues	Solutions
Hardware	—	—
Software	The problem is that it is not detecting the sediments so we fall into them. Also the changes of passage would not be detecting it.	One of the solutions we used was to create a function called convet.py, which we used to take more accurate images of the grounds, final_matriz_creator was also modified to detect the passage changes that we needed to implement

Date 14/06/2024

Author: Ignacio Sosa Joaquin Riedel Luciano Bustamante.

Task done Today:

We continued to work with the TDP, in the Software part.

Date 15/06/2024

Author: Ignacio Sosa, Joaquin Riedel, Luciano Bustamante.

Task done Today:

The draft of the TDP was finalized, and an attempt was made to obtain better images to be able to classify the wells and types of soils.

Date 17/06/2024

Author: Ignacio Sosa, Luciano Bustamante.

Task done Today:

The Poster for its presentation in the competition began to be made

The design of the robot, the presentation of the equipment and a part of the vision of the robot were achieved.

Date 19/06/2024

Author: Ignacio Sosa Luciano Bustamante

Task done Today:

The Poster continues to be made, in the sections of: navigation, vision of the robot and mapping.

Date 21/06/2024

Author: Ignacio Sosa Luciano Bustamante

Task done Today:

- We finished the making of the documentation and practiced execution of the controller by remote controller

Clarification: We will continue working on the development of the program code until the date of the contest. We will try to improve the mapping and implement YOLO. All changes will be uploaded to the team repository:
<https://github.com/IITA-Proyectos/RCJ-2024-Rescue-Simulation-Team-ABC.git>