Marine Autonomous Communication and Cleaning System

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Redes e Sistemas Autónomos, 4º ano, MIECT

2024

Abstract

The Marine Autonomous Communication and Cleaning System objective is to create a network capable of controlling autonomous boats for collecting trash in a water space.

To make this possible, the project uses a protocol named MQTT to establish efficient and reliable communication between boats and buoys.
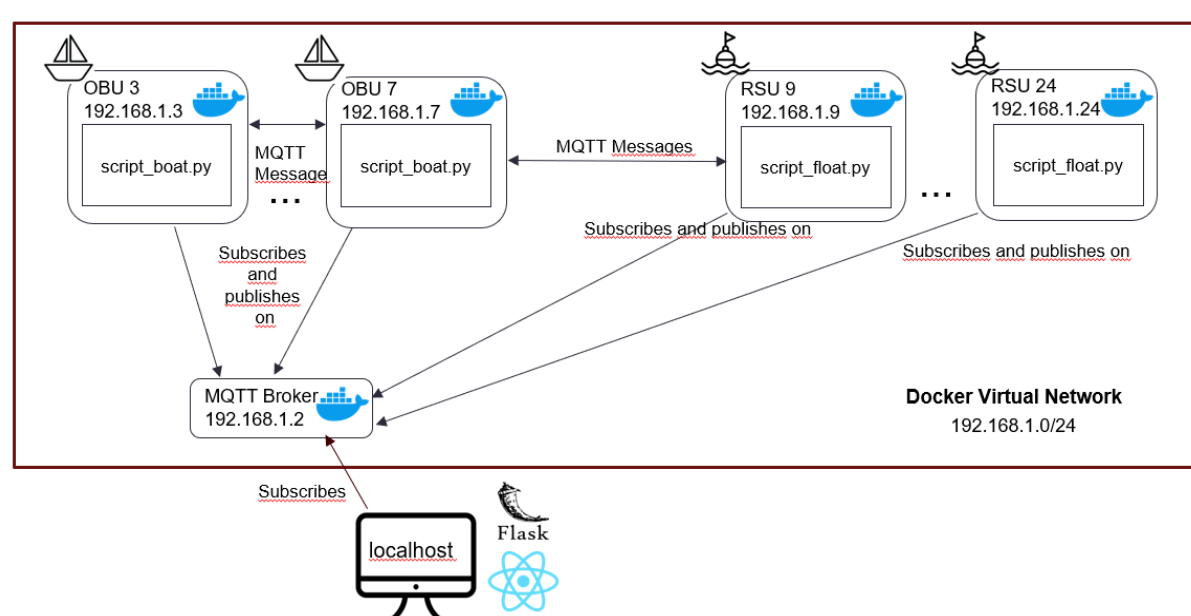
Fig. 1 - System Architecture

Fig. 3 – Boats finding each other

Fig. 4 – Boat finding a buoy

Methods

Each boat performs a radial search to efficiently identify a nearby, random, unvisited location to find the dirty buoys.

When the boats find each other, they swap information regarding the buoys that were already cleaned and the locations that they already visited.
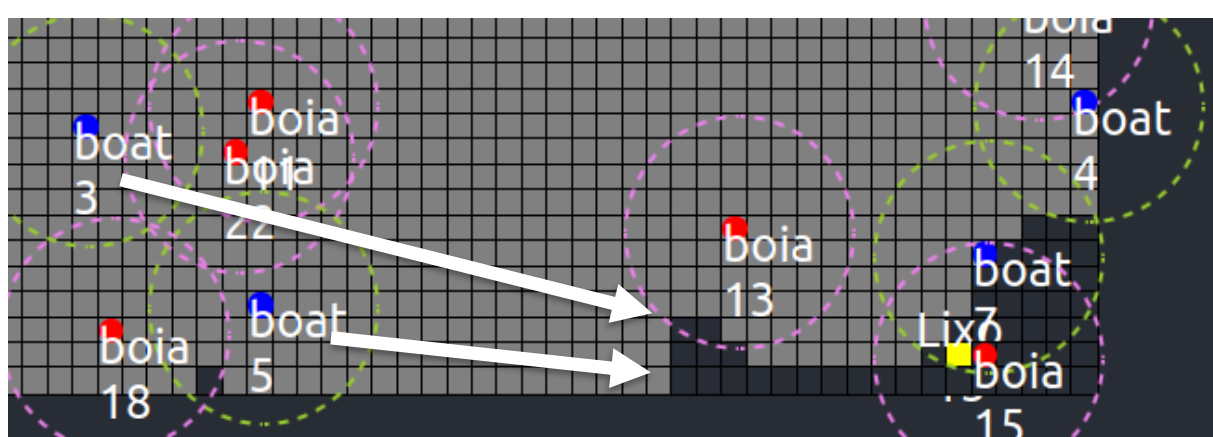

Fig. 2 – Boat searches and picks the next location to go to

The boats and buys communicate using two different types of messages and there are three possible scenarios that can happen.
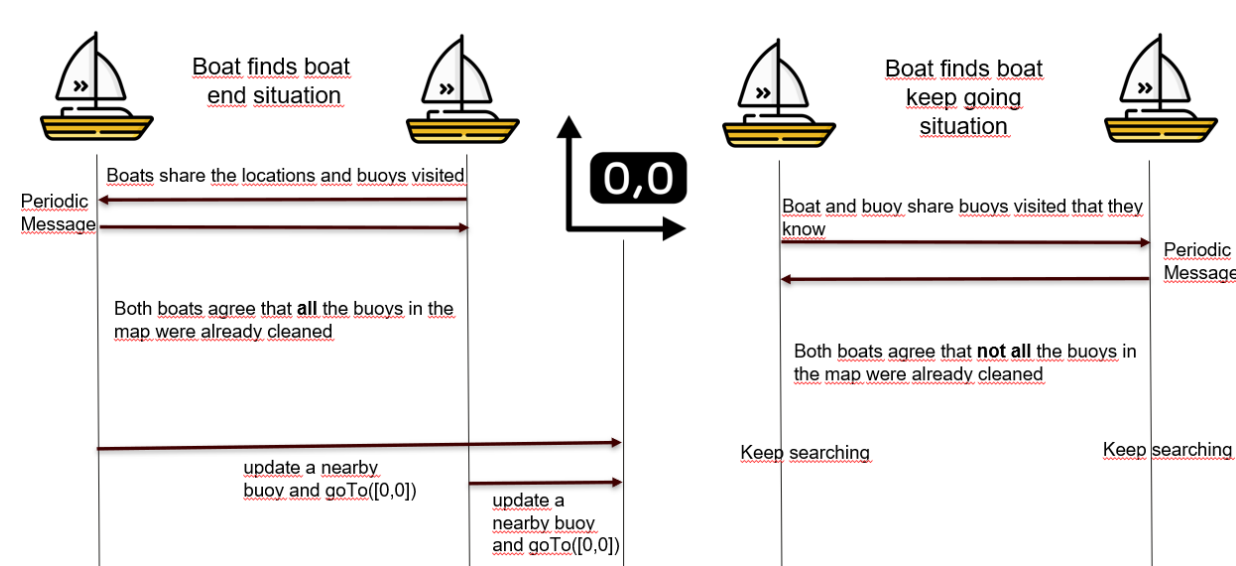

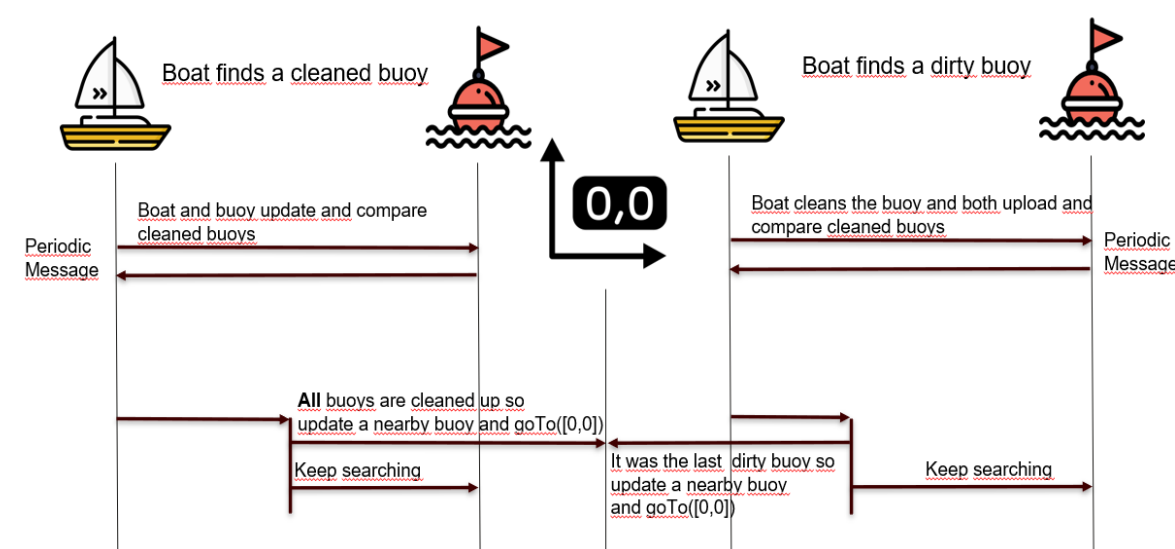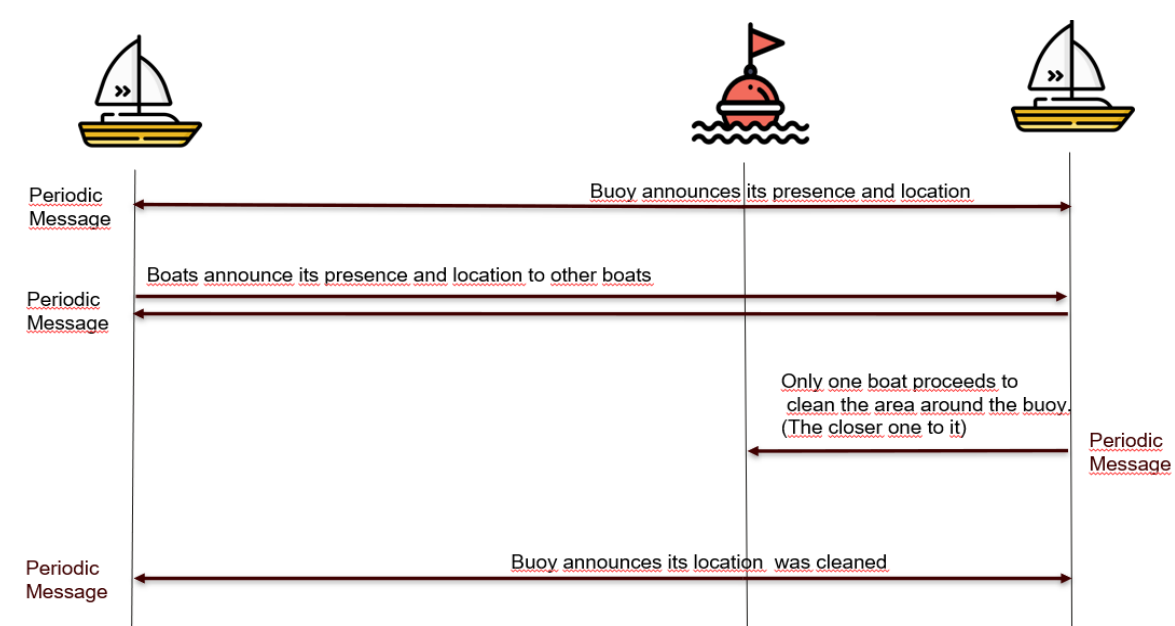Fig. 5 – Two or more boats finding the same buoy

Conclusion

The proposed system offers a new way of cleaning an aquatic space without the need of human intervention which helps ensuring environmental sustainability.

References

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