

Underwater communication is about sending and receiving information through water. However, underwater communication faces challenges due to water's properties. With its high density compared to air, underwater communication demands smart solutions. Enter acoustic communication, a reliable method of using sound waves to send and receive messages under water.

This project focuses on making a prototype of an adaptive communication mechanism to address the challenges in real-life scenarios. The optimization of the adaption of underwater modems consists of several key-aspects.

The ra-NRC optimization algorithm has been realized for real-world usage. This algorithm calculates incoming values based on the knowledge of multiple, distant, nodes. The constant talking between these distant nodes leads them to agree on the best values that fits for every node.

Evo_janusXsdm is a program for managing communication with EvoLogics modems. The program integrates with JANUS, the standard for underwater communication defined by NATO, enabling communication between various systems, including the Subnero modems.

Nodecomx, a program which aims to combine the algorithm and the communication programs, allowing a smooth transition of information coming in and out of each node.



These two underwater communication devices talk to each other using the JANUS protocol. This protocol can be thought of as a language they use to communicate.



This project is part of a larger project, which can be viewed through this QR code.



Our efforts have resulted in the implementation of a significant amount of useful software tools that can greatly benefit further development in the field of underwater communication.

Overall, this project has provided us with valuable insights and exposure to new learning topics. We are confident that it will serve as a stepping stone for the development of real-life underwater communication.

Distributed Optimization-Based Adaptive Underwater Communication Schemes