Comunicación Oral

Design, Deployment, and Testing a Device with Edge Computing Energy Efficiency Algorithm for Water Quality Monitoring

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Monitoring the coastal regions is necessary for adequate management and assessing the environmental impact of human activities. Nonetheless, the diversity of ambients and the harsh conditions characterise the sea stunt data sensing. Using energy-efficient algorithms based on edge detection, it is possible to increase the lifetime of the sensor nodes deployed at sea. In this paper, we propose designing, deploying, and testing a water quality monitoring device with an energy-efficient algorithm based on edge computing. The algorithm analyses the sensed data to determine if data must be sent or not according to the last sent value of each parameter. Every minute, the sensor node measures four parameters relative to water quality, such as hydrogen potential, oxidation and reduction potential, temperature, and conductivity. The data is sent using a LoRa connection to a database located onshore. We have evaluated the performance of the energy-efficiency algorithm in terms of error between the values in the sea and the values in the database and the energy saving compared with a control. As a control, no algorithm is applied, and the sensor node sends the data every minute. The algorithm has two options which can be configurated according to the variability of data. The results indicate that with the second option, it is possible to save 99.99% of the energy in the data sending/receiving with an average error below 5% in all the parameters.