

Creating a Cloud Service for Filtering Sonar Images

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Abstract: Currently, the Institute of Marine Technology, a whole series of autonomous unmanned underwater vehicles. With their help researchers receive sonar image of the seabed. Hydroacoustic channel feed is very specific and may lead not only to a strong distortion of the transmitted information, but also sometimes to its total loss. To improve the quality sonar images has been proposed method of double filtration. Unfortunately, the filter running on one processor spends a lot of time. In this regard, a software implementation of the method chosen double filter based on a computational algorithm, working in parallel on multiple processors with the use of technology MPI. To specialist was able to use the application on a cluster, it is necessary to have many additional skills. Training and follow-up spent a lot of time. To simplify and automate these processes is necessary to develop a cloud service with a user friendly web-interface. Also, this algorithm has been adapted to run on graphics cards using the technology NVIDIA CUDA.

Productive filter only works if the cluster with a minimum amount equal to 16 processors[3], and Internet connection with a minimum bandwidth of 1 Mbit / s. To work on a cluster of additional programs converters written in python, need to specify the language and interpreter additional package python-imaging, which allows working with images. On the server side must be installed in conjunction with apache php, as well as an additional module for libssh2 php, to connect to the cluster protocol ssh.

The system consists of three subsystems. When a user comes to the server creates a ssh connection. Then he loads the image to the server. Image from the server is sent to the cluster. On a cluster, it is filtered into the format needed for the filter. After image processing starts. Further, the reverse conversion occurs in image format. And sent to the server. On the server, the user can upload the processed image.

To date, the application is in the testing phase. After testing is planned to correct any errors and run the application to complete the work. In the future, the application will be improved and enhanced with new filters.

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