

## COMPUTATION OF POSITIONS OF SEA FLOOR IMAGES OBTAINED FROM AUV

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### ABSTRACT

Sea bottom photographic surveying is one of essential problems to be solved with the help of autonomous underwater robots. To present photo surveying results as photomosaic and to compile a photomap, positioning of all the images obtained is necessary. In addition, fast detection of appropriate photo images pair is performed.

In this study we introduce the method of positioning for large images sets using minimum navigational data. Additional information on each image coordinates allows to increase the number of images to be processed for a limited period of time. The analysis of time expenditures for total images processing reveals the algorithm based on successive conjugate images choice as the most efficient. Applying extra images results in the necessity of correction in processing so as to solve the problem of “stitching” the images.

The coordinates precisely determined with minimum time expenditure, we may apply the computation power to maintain the SP hybrid tree in actual state. Taking the approach we have introduced in this study you may reach reliable images positioning independently of the overlapping images quality, gaps and pure bottom zones. Besides, we are sure such approach will be productive for the purposes of navigation as standard approach cannot close the path due to errors accumulated.

**Key words:** underwater robots, sea bottom photo images, feature descriptor, space partitioning (SP) hybrid tree, photographic map

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