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**APPROACH FOR PERFORMING OF TECHNOLOGICAL MANIPULATION OPERATIONS WITH VARIOUS UNDERWATER OBJECTS BY AUV**

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**ABSTRACT**

A new approach to solving of research and technological manipulation tasks using autonomous uninhabited underwater vehicles (AUV) equipped with multilink manipulators (MM) has been described in the paper. The developed approach supposes the construction of mathematical models of manipulation objects using on-board multi-beam 3D sonars or computer vision systems. On the basis of the obtained models, target points and complex spatial trajectories of working tools of underwater MM are automatically formed. Herewith, it takes into account the requirements for performing of specific manipulation operations. Moreover, in order to determine the location and spatial orientaion of known underwater objects it is suggested to use their 3D models which are subjected to additional processing and transformations into a cloud of points. These clouds are superposed with point clouds of a real underwater object. On the basis of the developed approach, a software has been created that allows to construct models of underwater objects surface and calculate spatial trajectories of the movement of working tools of MM installed on the AUV.

**Keywords**: autonomous uninhabited underwater vehicle, underwater objects recognition, multi-beam 3D sonars, point cloud, multilink manipulator, trajectory, underwater operations, software.

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