

ABSTRACT
Method for simultaneously
locating and mapping via resilient non-linear filtering.

The method according to the invention consists in carrying out, by means of an underwater vehicle moving above a given zone of the sea bed, observations on the basis of which the positions of elements of relief and of objects present on the bed are estimated. These observations are associated
5 with fictitious objects, tied together by fictitious elastic links so as to constitute a fictitious elastic network. The network is in equilibrium as long as no action is exerted on one or the other of the fictitious objects constituting the network. The objects then occupy fixed positions, positions assigned to the corresponding observations. On the other hand, when two observations
10 assumed to correspond to one and the same object are fused into a single observation, the two corresponding fictitious objects are brought closer together. This bringing closer together induces the appearance of stresses in the fictitious elastic network. These stresses, transmitted by the fictitious elastic links, are resolved by the modification of the positions of the fictitious
15 objects of the network, the modified positions being assigned to the corresponding observations. In this way, when the estimated position of an object having formed the subject of two fused observations is corrected, the measurement of the estimated position of each of the objects that has given rise to an observation represented in the fictitious elastic network benefits
20 advantageously from this correction.

Figure 3



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