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DEVELOPMENT OF STOCHASTIC METHODS FOR SOLVING THE PROBLEMS OF FILTERING IN HIDDEN MARKOV MODELS ON THE BASIS OF GENETIC ALGORITHMS

Multiparticle filter algorithms have a vast application area. They can be used to solve probabilistic problems in most graphic models, the vertices of which display probabilistic characteristics. The ease of implementation and the great potential for scaling these filters make them a universal tool in the process of solving probabilistic problems. However, the algorithm has some drawbacks related to the fact that the accuracy of the algorithm is proportional to the volume of samples generated, the consistency of which is determined at the re-weighting stage in accordance with the evidence received at each step of the algorithm. To solve these problems, scientific research proposes optimizing the multiparticle filter algorithm by using genetic algorithms in the sampling process. This approach allows narrowing the area of sample dispersion, as well as increase samples consistency.

Keywords: particle filter, Monte Carlo method, Markov chain, hidden Markov model, genetic algorithm.

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