

Differential Evolution Based Multi-agent Formation Fault Reconstruction



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Abstract The fault reconstruction of second-order multi-agent formation systems under lost communication is studied. Aiming at the specific scenarios of dynamic tracking of multi-agent systems, a mixed-integer programming algorithm based on differential evolution (DE) is proposed according to the characteristics of both continuous kinematic variables and discrete topological variables in the kinematics of UAV formation to ensure the optimization and timeliness. Then, the simulation platform is built and tested in the scene of dynamically tracking. Eventually, the theoretical results are verified by simulation examples. The results show that the method proposed in this paper can ensure that the formation make appropriate adjustments to achieve dynamic target tracking in the process of dynamic target tracking under complex circumstance.

Keywords Multi-agent · Dynamic tracking · Differential evolution · Fault reconstruction

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