Advanced FNN control of mini underwater vehicles(PDF)

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摘要: Fuzzy neural networks (FNN) based on Gaussian membership functions can effectively control the motion of underwater vehicles. However, their operating processes and training algorithms are complicated, placing great demands on embedded hardware. This paper presents an advanced FNN with an S membership function matching the motion characteristics of mini underwater vehicles with wings. A learning algorithm was then developed. Simulation results showed that the modified FNN is a simpler algorithm with faster calculations and improves responsiveness, compared with a Gaussian membership function-based FNN. It is applicable for mini underwater vehicles that don't need accurate positioning but must have good maneuverability.

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