Expert S-surface control for autonomous underwater vehicles(PDF)

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Title: Expert S-surface control for autonomous underwater vehicles

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摘要: S-surface control has proven to be an effective means for motion control of underwater autonomous vehicles (AUV). However there are still problems maintaining steady precision of course due to the constant need to adjust parameters,especially where there are disturbing currents. Thus an intelligent integral was introduced to improve precision. An expert S-surface control was developed to tune the parameters on-line,based on the expert system,it provides S-surface control according to practical experience and control knowledge. To prevent control output over-compensation,a fuzzy neural network was included to adjust the production rules to the knowledge base. Experiments were conducted on an AUV simulation platform,and the results show that the expert S-surface controller performs better than an S-surface controller in environments with currents,producing good steady precision of course in a robust way.

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参考文献/REFERENCES

1.LIU X M.XU Y R S control of automatic underwater vehicles 2001(03)
2.LIU J C.YU H N.XU Y R Improved S plane control algorithm for underwater vehicles [期刊论文] -Journal of Harbin Engineering University2002(01)
3.LI Y.PANG Y J.WAN L Immune-genetic optimization of underwater vehicle S surface controller [期刊论文] -Journal of Harbin Engineering University2006(suppl)
4.VALENZUELA M A.BENTLEY J M.LORENZ R D Expert system for integrated control and supervision of dry-end sections of paper machines 2004(02)
5.De la SEN M.MINAMBRES J J.GARRIDO A J Basic theoretical results for expert systems-Application to the supervision of adaptation transients in planar robots 2004(02)
6.ACOSTA G.CURTI H.CALVO O A knowledge-based approach for an AUV oath planner development 2006(06)
7.YU H N.WAN L.XU Y R Fuzzy non-liner PD control of an open-frame underwater vehicle [期刊论文] -The Ocean Engineering2004(03)
8.LI R H Theories and approaches of intelligent control 1999

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