Robust Steering Control of Autonomous Underwater Vehicle: based on PID Tuning Evolutionary Optimization Technique

Abstract

This paper is devoted to a robust steering control of Autonomous Underwater Vehicle (AUV) based on tuning of PID controller using Genetic Algorithm (GA) and Harmonic Search Algorithm (HSA). Tuning of PID parameters is important because, these parameters have a great effect on the stability and performance of the control system. A harmonic Search Algorithm (HSA) technique uses to tune the PID parameters in AUV system. The HS algorithm mimics behaviors of music players in an improvisation process, in order to find a better state of harmony which can be translated into a solution vector in the optimization process. Numerical solutions based on the proposed PID control of an AUV system for nominal system parameters. In control strategies, like PID controller are succesfully designed to control the autonomous underwater vehicle. The elementary focus is to simulate the controller response.

References

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Index Terms

Computer Science
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Keywords

Autonomous Underwater Vehicle; Genetic Algorithm; PID controller; Simulation; System Identification.