

Passive fault-tolerant control method based on feedback linearization control technique of two tanks system

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Abstract: The aim of this paper is to develop a passive actuator fault-tolerant control law for a highly nonlinear hydraulic system with two reservoirs using the feedback linearization control (FLC). You start by modeling this system with state space and presenting the theory of this command. We presented the actuator fault (additive fault) by augmentation in the law control. The passive fault-tolerant control method based on feedback linearization control technique (PFTCFLC) are implemented to the two tanks system, their performance is compared with the PID control technique. The results of the study demonstrate the superior performance of the PFTCFLC technique in regulating the level of the hydraulic system, indicating its robustness and fault tolerance.

Keywords: Feedback linearization technique, Passive fault tolerant control, PID control, State space system, Two tanks system.

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$$\zeta(s) = 1 + 1/2^s + 1/3^s + 1/4^s + \dots = \sum_{n=1}^{\infty} \frac{1}{n^s} \quad \square \quad AB = \sqrt{AB_x^2 + AB_y^2} \quad \Pi \quad \sum AB = \sqrt{AB_x^2 + AB_y^2} \quad \Pi \quad \sum AB = \sqrt{AB_x^2 + AB_y^2} \quad \Pi \quad \int \frac{dx}{1+x^2} = \arctan x + C \quad \Pi \quad \int \frac{dx}{1+x^2} = \arctan x + C \quad \Pi \quad \int \frac{dx}{1+x^2} = \arctan x + C \quad \Pi$$

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