عنوان مقاله:

Investigation of flow mechanism of a robotic fish swimming withhydrodynamic force measurement

محل انتشار:

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خلاصه مقاله:

Biomimetic underooter vehicle design has attracted the attention of researchers for several reasons like ocean investigation and marine environmental protection. Fishes and other aquatic animals are efficient swimmers. They have good maneuverability, trajectory following capability and they efficiently stabilize themselves in currents and surges. They also leave a less noticeable wake than conventional underwater vehicles equipped with thrusters. Biomimetic underooter vehicle design has attracted the attention of researchers for several reasons like ocean investigation and marine environmental protection. Fishes and other aquatic animals are efficient swimmers. They have good maneuverability, trajectory following capability and they efficiently stabilize themselves in currents and surges, They also leave a less noticeable wake than conventional underwater vehicles equipped with thrusters. The aim of this study is to develop a fish mimetic underwater robot with good hydrodynamics performance and we try to design a robotic fish which has dynamics performance similar to fish. This biomimetic robot fish is fabricated at Advanced Dynamic and Control Systems Laboratory (ADCSL), University of Tehran. Principle of Fish s",imming is achieved /Tom Carangiform swimming mode. This is the swimming mode offish that use their tail and peduncle for propulsion. At first. we discussed about the investigation of the flow mechanism on the basis of a 3-D robotic fish model which has the typical geometry of body and tail with periodic flapping 2-fTeedom kinematical motion testing. Next, we measured swimming speed at straight propulsion and extracting good results. Alder that we measured force in X-direction. The data have been obtained through accurate force and motion measurements on a laboratory fish-like robotic mechanism, 0.6 m long, covered with a flexible skin and equipped with a tail fin, at Reynolds number .about 450000 with Laminar simulation

کلمات کلیدی:

Biomimetic underwater Robot Fish, Design and Fabrication, Hydrodynamic analysis, Reverse Karman Vortex Street, Propulsion, Force measurement

لینک ثابت مقاله در پایگاه سیویلیکا: