

Abstract

The present invention provides a pathfinding control system and method for an unmanned boat based on Digital Twin and a parallel controller, where the system includes: a physical unmanned boat system, an actual controller configured to generate a control input to control a physical unmanned boat system, an unmanned boat motion Digital Twin model configured to generate position information for a virtual unmanned boat, a kinematic controller configured to generate an unmanned boat guidance signal, a dynamic controller configured to generate a control input to control an artificial system composed of an unmanned boat motion Digital Twin model according to the guidance signal and speed information for the virtual unmanned boat at a current moment, a path parameter update law configured to provide a path parameter for the unmanned boat. The parallel controller designed by present invention integrates the virtual unmanned boat system in a constructed information space into the environment, and drives a virtual unmanned boat system and a physical unmanned boat system simultaneously, so as to exist as a mutual mapping and a virtual-physical interaction between both systems.

(To be published with Figure 1)