Study of Multiple-Control Interfaces for Remote Controller of Airplane Model

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ABSTRACT

In Taiwan, most remote controllers for model planes are double axles. When users control model planes, each of their hands needs to control two different movements. Sometimes two hands operate in different directions or in even opposite directions, which may contradict users ’ intuition and cause mistakes. This research aims to investigate how the input layouts of controllers influence the control operation. Four inputs of Futaba TV4F controller was re-arranged to generate three more new types. Four groups with ten subjects in each group were asked to test the four types of controller using flight simulation on computer. Missions of moving in close loops on ground, taking off from ground, and making free flight in close loops in the sky were carried out. Number of mistake in control mission and time for mission completion of four controllers were compared. The results show that it is better to have (1) elevator and aileron operated by right hand, and throttle as well as rudder operated by left hand; (2) most frequent task operated by right hand; (3) directional control operated by right hand; and (4) speed control operated by left hand.

Keywords : Interface ; Two-hand operation ; Multi-input ; Model plane

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