

Evaluation of Inceptor Design for Manned Multicopter

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Abstract : In aviation, a very narrow spectrum of control inceptors exists, namely centre sticks, side-sticks, pedals, and yokes. However, new types of aircraft are emerging, and with them, a need for new inceptors. A manned multicopter created at AGH University of Science and Technology is an aircraft in which the pilot takes a specific orientation in which classical inceptors may be impractical to use. In this paper, a unique kind of control inceptor is described, which aims to provide a handling quality not unlike standard solutions, and provide a firm grip point for the pilot without the risk of involuntary stick movement. Simulations of the pilot-inceptor model were performed in order to compare the dynamic amplification factors of the design described in this paper with the classical one. A functional prototype is built on which drone pilots carry out a comfort-of-use evaluation. This paper provides a general overview of the project, including a literature review, reasoning behind components selection, and mechanism design finalized by conclusions.

Keywords : mechanisms, mechatronics, embedded control, serious gaming for training rescue missions, rescue robotics

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