Design and Implementation of Virtual Simulation Teaching System for UAV Based on WEBGL

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二. 成果简介：

Based on WebGL, the research integrates virtual reality and panoramic, and adopts lightweight B/S architecture to develop an open platform for virtual simulation teaching that constructs unmanned aerial vehicle course explanation, field practice, internal processing and production practice integration. By logging in, you can enter the interface of theoretical study, equipment assembly, flight control operation, etc. strengthen students' understanding of theory, and realize digital measurement, unmanned aerial survey and 3D scanning integration. The simulation training has the advantages of repeated practice and no restrictions on time and space. It solves the problems of low interest, poor scalability and high cost of traditional UAV training. Promoting the development of online virtual teaching in today's big data era is of great significance and promotes the development of digital teaching.

三. 主要研究内容及创新点：

This research aims at the integration of traditional UAV teaching facilities and the lack of students' practical operation. Through online teaching, virtual simulation, and online assessment modules, the integration of theory and practice is realized. The system login interface is shown in Fig 1. Diversified online teaching are displayed in virtual online exhibition hall. (Fig 2, Fig 3); simulation training virtualization, independent of the environment, weather, time and space factors, based on an unlimited number of simulation training, master the UAV or unmanned ship assembly (Fig 4, Fig 5) and flight skills Online assessment test learning effectiveness, divided into test paper group test and simulation test, the test papers are scored according to the answer, and the simulation experiment is based on the correctness of the actual operation steps (Fig 6).

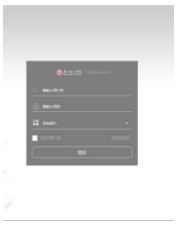


Fig 1 System login interface diagram



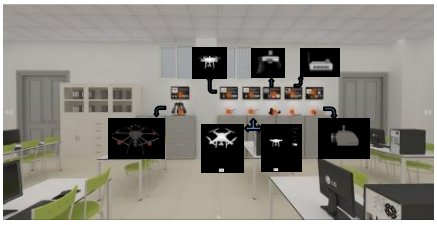


Fig 2 Virtual online exhibition hall



Fig 3 "720" panorama



Fig 4 UAV assembly training

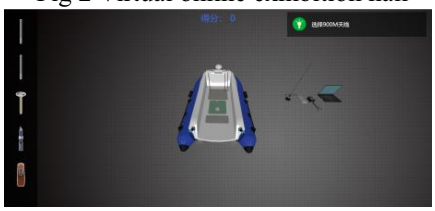


Fig 5 Unmanned ship assembly training



Fig 6 UAV flight simulation

四. 主要研究成果及应用情况

1. 申请获得《无人遥感系统测绘及规划应用虚拟仿真系统 V1.0》软件著作权 1 项。
2. 在“International Conference on Geomatics in the Big Data Era”EI 会议发表文章 1 篇。

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