Name(s)	Project Number
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Project Title

The Hiller Flying Platform: Simulating a Pilot's Dream

Abstract

Objectives/Goals

The overall objective of my project is to develop a realistic and fully functional flight simulator for the craft known as the Hiller Flying Platform. A fundamental goal is to create enough realism in the simulator to be considered for inclusion as an active museum exhibit. An additional objective is to accurately represent the flight dynamics of the craft.

Methods/Materials

The Flying Platform simulator is controlled by leaning motions, as was the original. I used two plywood discs connected with a universal joint: one as a base, and the other as a movable standing platform. I also used large bedsprings to center the platform. I constructed a handrail for pilots to use for grip and leverage.

Over a period of 18 months, I developed 7 versions of software that would simulate the unconventional flight characteristics. I modeled the dynamics of the Hiller Flying Platform with a strong centering force and stable characteristics. To counter the unrealistic attributes of a computer flight simulation, such as limited field of view, I used virtual reality techniques like shifting a handrail on the screen in the direction of leaning. I designed scenery for the simulation that was somewhat simple and colorful to appeal to younger pilots. All the objects in the simulation were slightly larger and closer for easier referencing.

Results

Once I completed both the software simulation and the actual pilot's platform, I interfaced the platform to the software using digital encoders to convert the tilting motions of the pilot to digital data. Next, I tested the system with numerous Beta subjects and modified the program based on user feedback. After trimming and scaling, the simulator was ready for use by patrons, and now is displayed as an opening exhibit at the Hiller Aviation Museum.

Conclusions/Discussion

I finished a realistic and educational simulation system by incorporating both my skills of computer simulations and those of mechanical engineering.

Summary Statement

I created a flight simulation system that applies virtual reality techniques in the software and the pilot's sense of balance to produce a greater sense of reality than standard flight simulators used on home computers.

Help Received