



UAV : Unmanned Arial Vehicle

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Nowadays the mobile robotic technology comes in various forms. The typical motions are obtained from wheels or legs. Both type of motions need floor to perform. The type of motion that do not need the floor is the flying motion. This project concerns the develop Unmanned Arial Vehicle (UAV) for exploring a place where the human could not go. The prototype vehicle that we use is the scaled model helicopter. It is controlled by a radio frequency. It can perform vertical take off and landing (VTOL) and hovering. These are advantages for surveying or exploring tasks.

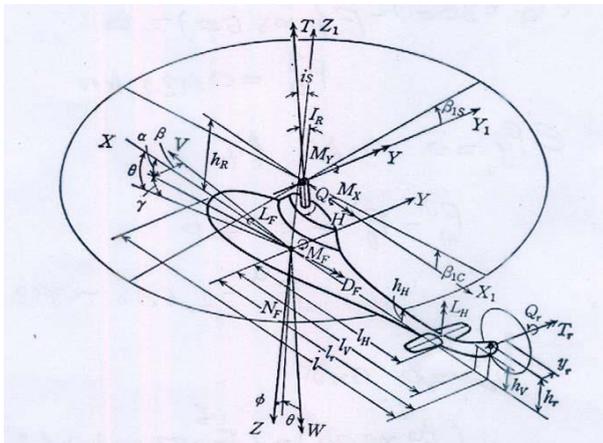


Fig.1 Show attitudes of helicopter.

The dynamics of the helicopter is non-linear and very complex. It is difficult to control. Thus, in beginning phase of the research, we attempt to use the artificial neural networks to controls the autonomous hovering motion of the helicopter in combination with the robust control. Both controllers will reduce maneuvering loads from the pilot and help enhancing the pilot controlling performance.

At the beginning of the experiment we acquire the angle data, from the joystick.

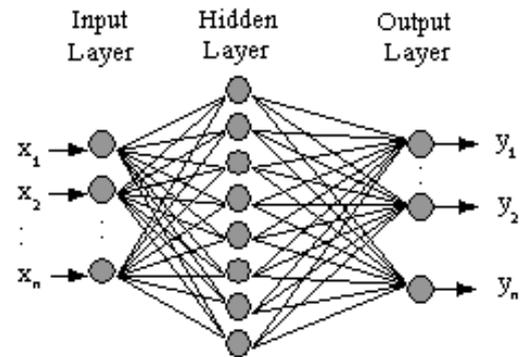


Fig. 2 The structure of artificial neural networks.

We used the angle information and the skill of the pilot to train an artificial neural networks controller. The simulated results are shown in Fig. 3) In the next stage we will accommodate the artificial neural networks controller into the real model. The helicopter should be able to hover autonomously.

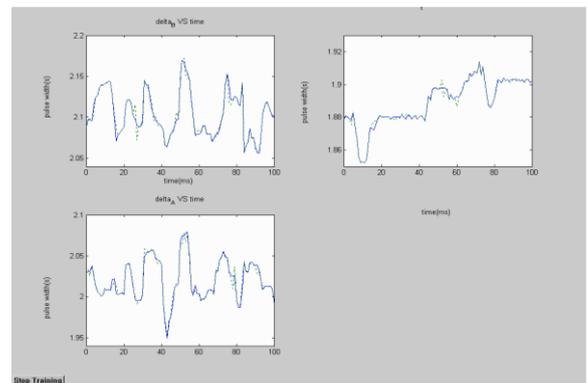


Fig.3 Show Outputs of ANN can track the target.

The dynamics information of the helicopter together with the artificial neural networks controller would help us develop a capable flight control system.