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Experiment No:- 02

Aircraft Autolander

1. Identifying the Problem:-

Autoland describes the system that fully automates the landing phase of an aircraft's flight, with the human crew supervising the process. Autoland is a system which performs aircraft landing automatically.
The autland needs when, if the visibility at or around the airport is very low, because of bad weather.
The autoland system makes use of different systems and components such as the autopilot, autothrust, radio altimeter, flight controls, auto-brakes, on the landing gear, and the nose wheel steering system.

2. PEAS Specification:-

1. Performance Measure:

i. Lack of damage to plane,
ii. Lack of injuries to passengers or ground crew or other innocent observers
iii. Cargo remains intact.
iv. Lands at correct airport on correct runways, doesn't take too long.

Date:

2. Environment:

Lower atmosphere (almost all weather occurs in this region ie. Troposphere. It begins at the Earth's surface and extends from 6 to 20 km high), and surface of planet earth.

3. Sensors:

i. Cameras.

ii. Altimeter - or altitude meter measures the altitude of an object above a fixed level. It works by measuring air pressure

iii. Speedometer - measure the speed, direction or position of the rotating engine shaft. Pressure differential, makes the pointer on the air speed indicator move.

iv. Tachometers - measures the working speed of an engine, typically in ~~rotations~~ per minute (RPM).

, other meters.

Date:_____

4. Actuators :-

i. Autopilot – guides the aircraft, to maintain the aircraft on the correct glide path. It also adjusts aircraft heading in order to match with the runway's centre line.

ii. Flight Controls – Autopilot keep the aircraft in correct descend path using different flight controls, such as horizontal stabalizers (fixed wing section, provide stability for the aircraft, to keep it flying straight), elevators (moving section at the rear of stabalizer, controls movements ie. pitch about the lateral axis of an aircraft), aileron, rudder.

iii. Throttle lever or thrust lever – control the amount of fuel provided to the engine, sets the desired power level.

iv. Flap – reduce the stalling speed (stopping speed) of an aircraft wing, reduce the takeoff distance and landing distance.

v. Autothrust – maintain the required thrust, by adjusting the fuel flow to the engines during descend and landing.

, and .....

Date:

3. Problem Formulation:-

1. Initial State: at lower atmosphere

2. Actions: Descends and landing.

3. Successor Function: adjusting fuel flow, control thrust, decending height of aircraft to earth's surface, smooth deceleration.

4. Goal Test: Taxi the aircraft off to the runway, and to the parking location, preventing skidding.

5. Path Cost: It depends on the altitude ie. at what height aircraft is from earth's surface, it is the distance between the height at which aircraft is and earth's surface.