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A plane that can take off and land vertically, without using a runway, is referred to as a VTOL (Vertical Take-Off and Landing) aircraft. More flexibility in aircraft operations is made possible by this capability, which is particularly beneficial for military and rescue operations as well as for air transportation in cities. VTOL aircraft come in a variety of designs, including as tiltrotor, tiltwing, and vectored thrust. In order to enable both vertical takeoff and landing and horizontal flying, tiltrotor aircraft have rotors that can tilt between the vertical and horizontal positions. Whereas vectored thrust aircraft utilise engines that can tilt to adjust the direction of thrust, tiltwing aircraft feature wings that can tilt between the vertical and horizontal positions.

When we think of an aircraft, we typically picture a pilot as the person in charge of flying it manually. Now that artificial intelligence (AI) and machine learning have made significant strides, it is conceivable to have an aircraft that is entirely operated by AI. Yet, there is a flight control mechanism to help the pilot even in a human-controlled aircraft. Although the flight control system does the most of the work, a pilot is still required to operate the aircraft to its maximum potential. This kind of flight aid system functions more like a flight control system. A real flight control system does not require any input from the pilot while the aircraft is in flight. This maintains the drone's balance while in flight. Even with this, a human pilot can only maintain control of the drone for a very short time; this is where the flight controller comes into play. While the pilot directs the drone in various directions—left, right, up, and down—the flight control system is constantly providing guidance to keep the drone from colliding. Assuming the drone is being turned left by the operator, the drone will not turn if the angle is exceeded. Military and defence applications have pushed the development of VTOL technology, with many nations investing considerably in research and development. But, the civilian sector is also seeing an increase in applications, particularly in the fields of logistics and transportation. Urban air mobility is being developed by businesses like Uber and Airbus, and it has the potential to revolutionise urban travel. Overall, VTOL technology has the ability to transform the aviation sector and present fresh opportunities for future logistics and transportation.

Signature – Name – Date

Naveen G Ganapa
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