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Autonomous Personal Air-Travel Vehicles (APAVs), also known as Vertical Take-Off and Landing (VTOL) aircraft, are vehicles that can depart, hover, and land vertically. They can be powered by electric motors or batteries instead of fuel, making them more cost-effective and flexible, as they can land almost anywhere.

To develop a model to control a flying vehicle for safe, efficient, and autonomous travel in urban environments, a well-posed machine learning problem should be defined. The task is to create an algorithm that allows the vehicle to fly autonomously based on its own sensors, environmental data, and previous learning experience. The performance of the model can be evaluated by measuring its ability to transport a passenger safely and efficiently while minimising travel time and energy consumption. The experience can be broken down into perception, planning trajectory, and managing. The algorithm should be trained using supervised and reinforcement learning methods, with training data including different flight scenarios.

Machine learning algorithms can be used to optimise eVTOL flight control systems, leading to increased safety, decreased energy use, and improved flying stability. Predictive maintenance can be achieved by analysing data acquired by eVTOL sensors to forecast component failures before they occur. Resource management, such as battery life, energy use, and cargo capacity, can also be improved with machine learning.

In conclusion, machine learning in eVTOLs can result in better performance, higher safety, and lower prices, increasing the viability of these aircraft as a transportation option in the future.

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