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(54) **AIRPLANE FLIGHT PATH PLANNING METHOD AND DEVICE BASED ON THE PIGEON-INSPIRED OPTIMIZATION**

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(57) **ABSTRACT**

A computer-based airplane flight path planning method based on the pigeon-inspired optimization (PIO) algorithm includes steps of establishing an uncertainty prediction model, determining the path to be optimized, and obtaining an optimal path using the PIO algorithm for a flight controller onboard to execute. The PIO algorithm treats a pigeon flock as a scale-free network, applies map and compass operators to the scale-free network, and performs landmark operations to obtain the optimal path. The device that performs the path planning includes an access module for obtaining the regional environment information and a flight controller onboard the airplane. The flight controller includes a building module for setting up the trajectory prediction model including uncertainties; a determining module to determine the trajectories which need optimization; an optimization module, which uses the PIO algorithm to optimize the flight path; and a computer memory module.

