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(31) Priority Document No	:NA	(72) Name of Inventor :
(32) Priority Date	:NA	1)Sandip Bhattacharya
(33) Name of priority country	:NA	2)Subhajit Das
(86) International Application No	:	3)Abir J Mondal
Filing Date	:01/01/1900	4)Syed Musthak Ahmed
(87) International Publication No	: NA	5)Kalyan Sundar Kola
(61) Patent of Addition to Application Number	:NA	6)Abir Chattopadhyay
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(57) Abstract :

An edge AI-based onboard aircraft safety system for real-time hazard detection and prevention, comprising of a plurality of sensors 201 to detect anomalies, an artificial intelligence (AI) processing unit to detect anomalies including fire, smoke, overheating, short circuits, a plurality of automated response assemblies arranged on interior and exterior of the aircraft, including a fire- containment assembly 101 integrated into vertically divided overhead cabin cabinets to deploy cascading fire resistant sheets downward, a fire-suppression unit to activate post-isolation for targeted extinguishing agent dispersal, a plurality of smoke filtration units 104 for real-time air purification and recirculation into the cabin, a bird strike prevention unit 202 to assess strike probability from the sensors 201, an alert unit for providing real-time monitoring, color-coded status indicators.

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