



Title:

On-Board Physical Battery Replacement System and Procedure for Drones During Flight

Abstract:

Drones are limited by short flight times, which often disrupt their missions. My research addresses this challenge by developing the Flying Hot-Swap Battery (FHSB) system, an on-board mechanism that replaces batteries mid-flight, similar to aerial refueling. The FHSB allows drones to remain airborne indefinitely by using an additional UAV array to deliver fresh batteries. The FHSB system employs a FIFO process and gravity to replace batteries, enabling a seamless hot-swap while discarding depleted batteries. This solution presents a breakthrough in drone technology, eliminating the need for logistical interruptions and enabling drones to maintain continuous flight without altering their mission and execution. It offers a significant advancement in drone technology.

Bio:

Yoad Guetta is a Ph.D. candidate in the Department of Mechanical Engineering at Ben-Gurion University of the Negev under the supervision of Prof. Amir Shapiro. He holds a B.Sc. and M.Sc. in Mechanical Engineering from Ben-Gurion University, where he was part of the excellence program, advancing to a direct-track Ph.D. His research addresses the challenge of limited drone flight time by developing a groundbreaking mid-air battery exchange system. This patented innovation enables drones to exchange batteries with auxiliary drones, allowing unlimited flight durations.

