Paper ID: 98324
oral
student

IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Interactive Presentations - IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (IP)

Author: Mr. Amal Mirzayev
National Aviation Academy - Azerbaijan, Azerbaijan

AI POWERED CUBESATS FOR IOT COMMUNICATION

Abstract

In several secluded places, the level of access to the internet is quite low, making it difficult for IoT devices to be used in farming, managing disasters, or monitoring the environment. To aleviate this problem, I propose the development of a network of IoT devices which make use of CubeSats as it permits direct satellite communication with the IoT devices, eliminating the requirement for ground stations. What differentiates this method from the rest is its dynamic AI-supplied routing system. CubeSats will be able to self monitor the quality of the signals being sent, the state of the network during transmission, and the energy that is available. This would allow them to determine transmission ranges which would make communication faster and more effective. Part of the reason the communication is faster is due to changes in the CubeSat relay model and the data routing algorithms. Simulations performed in NS-3 and Matlab show that this technology is more effective than traditional CubeSat systems because it diminishes the time needed to relay information by 35 percent while increasing the relayed information by 20 percent. The potential of reducing power consumption is an additional noteworthy advantage. Edge computing will make it possible for CubeSats to filter the most crucial information onboard rather than relaying all the data back to Earth. This would ensure that only significant information is transmitted, which results in a 40 percent reduction in the power consumed by the CubeSat and elongates its lifespan. I would like to invite the reader to consider the other side of this decision: the protection of the systems.