

31st IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)  
25th Workshop on Small Satellite Programmes at the Service of Developing Countries (1)

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CATALYZING SPACE TECHNOLOGY DEVELOPMENT IN BANGLADESH: A SPACE SYSTEM  
ENGINEERING TRAINING INITIATIVE

**Abstract**

The escalating advent of small satellite technologies has unlocked new vistas for developing nations to leapfrog into space exploration and utilization, particularly through CubeSat missions. In response to the growing need for indigenous space capabilities and the strategic advantages of small satellite technology, Bangladesh has embarked on an initiative to build capacity in space system engineering. This initiative, spearheaded by a team from academia comprising of faculty and students, focuses on the design, development, and deployment of a 3U CubeSat equipped with an AI-based high-resolution multispectral camera. The mission's primary objective is to capture detailed multispectral images of Bangladesh, facilitating various applications from agricultural monitoring to disaster management. This endeavor represents a significant step towards establishing a self-reliant space program in Bangladesh, with the dual goals of advancing technological proficiency and promoting the practical applications of satellite technology for societal benefit. Central to this initiative is the comprehensive training program in space system engineering, encompassing satellite design, operation, and data analysis. Through meticulous design and the utilization of commercial off-the-shelf components, the mission emphasizes the feasibility and scalability of CubeSat projects in resource-constrained settings. This initiative aims to significantly contribute to Bangladesh's space maturity by fostering international cooperation and leveraging the latest advancements in space technology. It serves as a model of how targeted training and development projects can empower developing nations to harness the potential of space technology for national development and global collaboration. This paper outlines the scope, objectives, and preliminary results of this pioneering project, illustrating its impact on capacity building in space technology within the context of developing countries.