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APPLYING THE INTERSECTIONAL ANTIRACISM TECHNOLOGY FRAMEWORK TO AN
EDUCATION OUTREACH PROGRAM IN AEROSPACE

Abstract

Historical and ongoing discrimination of certain identity groups by racial, gender and other identity differences leads to persistent inequalities in socioeconomics, health system, culture and political powers. Technology often entrenches or sustains hierarchies and unconsciously strengthens these social inequalities in our society. This dynamic is evident in the demographics of who participates in space education and research. The Intersectional Antiracist Technology Framework, developed by Prof Wood and Dr. Turner of the Space Enabled Research Group at MIT, is a tool to help analyze how technology across different scales can promote antiracist outcomes. It is a novel framework that uses Systems Architecture to explain, evaluate and design approaches to incorporate Intersectional Antiracism within the Definition, Design and Distribution Lifecycle Phases of Technology. The framework considers how design approaches may vary across four Levels of Technology Scales including Concept, Artifact, Complex Product System and Complex Sociotechnical System. Zero Robotics, an international space robotics competition operating since 2009, is being used as a case study to analyze and improve the access and inclusion in Aerospace Engineering by applying the Intersectional Antiracist Technology Framework. The long term vision is a study of Zero Robotics' Systems Architecture includes methods to describe, explain and evaluate this education outreach program's current state and enable it to improve future designs that can foster antiracist program outcomes. Antiracist program outcomes are evident when groups representing different identities experience an increase in self-assessed confidence and knowledge about space robotics. Data are collected by conducting interviews to key personnels of the Zero Robotics program, reviewing literature and program documents, writing autoethnography (the author being one of the program organizers), and analyzing student and educator surveys. This work is the first attempt to apply the theoretical framework to an existing technology system that is currently being managed by the authors . The outcomes of the work will not only provide insights to the design of education outreach programs in Aerospace but also set the foundation for applying the Intersectional Antiracism Technology Framework in real world cases. This is the first in a series of publications sharing the initial application of the framework to Zero Robotics; the present work focuses on the description and explanation steps.