Fiscal Year:	FY 2020	**Task Last Updated:**	FY 07/30/2020
PI Name:	Dias, Roger M.D., Ph.D.		
Project Title:	Mixed Reality (MR) Care-Delivery Guidance System to Support Medical Event Management on Long Duration Exploration Missions		
Division Name:	Human Research		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:	TRISH--TRISH		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	None		
Human Research Program Risks:	None		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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City:	Boston	**State:**	MA
Zip Code:	02115	**Congressional District:**	7
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2020 TRISH BRASH1901: Translational Research Institute for Space Health (TRISH) Biomedical Research Advances for Space Health
Start Date:	04/01/2020	**End Date:**	03/31/2022
No. of Post Docs:		**No. of PhD Degrees:**	
No. of PhD Candidates:		**No. of Master' Degrees:**	
No. of Master's Candidates:		**No. of Bachelor's Degrees:**	
No. of Bachelor's Candidates:		**Monitoring Center:**	TRISH
Contact Monitor:		**Contact Phone:**	
Contact Email:			
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:	Principal Investigator (PI) Roger Dias, MD, PhD, became the main PI when the project started; original PI in the proposal was Steven Yule, PhD, who relocated to the University of Edinburgh in Scotland while retaining a faculty position at Brigham & Women's Hospital/ Harvard Medical School and is now CoInvestigator on the project.		
COI Name (Institution):	Yule, Steven Ph.D. (Brigham and Women's Hospital, Inc.) Doyle, Thomas Ph.D. (McMaster University, Canada) Gupta, Avni M.P.H. (Brigham and Women's Hospital, Inc.) Lipsitz, Stuart Sc.D. (Brigham and Women's Hospital, Inc.) Pozner, Charles M.D. (Brigham and Women's Hospital, Inc.) Robertson, Jamie Ph.D. (Brigham and Women's Hospital, Inc.) Smink, Douglas M.D. (Brigham and Women's Hospital, Inc.) Musson, David M.D., Ph.D. (McMaster University, Canada)		
Grant/Contract No.:	NNX16AO69A-T0506		
Performance Goal No.:			

Performance Goal Text:	
Task Description:	Unanticipated medical events may potentially affect crew health, impact in-flight capacity, and compromise success of long-duration exploration missions. Like technical problem solving, medical events require crew members to rapidly coordinate in order to diagnose and manage situations that may be outside their primary technical expertise. Missions, such as those to Mars, will take upwards of three years and lack real-time communications with experts on the ground. As a result, we need to provide crew with tools and technology that can help them provide medical care autonomously. Effective spaceflight medical training must be combined with in-flight support tools to ensure crew competence in management of medical events and caring for sick astronauts. Collectively called Augmented Clinical Tools (ACT), these include technologies and applications to assist medical decision-making and action. Mixed Reality (MR) -- the ability to place virtual and photo-realistic items into the field of view using holograms -- provides an immersive, realistic user experience that has also proven feasible for training and guidance during technical non-routine tasks. We propose to utilize existing technology to develop MR software that provides realistic training scenarios for astronauts, and combine medical education with real-time clinical support for some probable medical events in deep space. This includes a “SMART checklist” which guides astronauts through managing medical events in real-time. MR allows us to create lifelike space environments for astronauts to practice their skills. We will involve a wide range of stakeholders in software development and testing for usability, engagement, and performance. The project will take two years to complete and we will provide innovative products and guidance that can be incorporated into astronaut training to ensure that they have the knowledge, skills, and support to manage the expected and unexpected challenges on successful deep space missions.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2020.
Bibliography Type:	Description: (Last Updated:)