

<b>Fiscal Year:</b>	FY 2019	<b>Task Last Updated:</b>	FY 02/05/2020
<b>PI Name:</b>	Marquez, Jessica Ph.D.		
<b>Project Title:</b>	HCAAM VNSCOR: Crew Autonomy through Self-Scheduling: Guidelines for Crew Scheduling Performance Envelope and Mitigation Strategies		
<b>Division Name:</b>	Human Research		
<b>Program/Discipline:</b>			
<b>Program/Discipline--Element/Subdiscipline:</b>			
<b>Joint Agency Name:</b>		<b>TechPort:</b>	No
<b>Human Research Program Elements:</b>	(1) <b>HFBP</b> :Human Factors & Behavioral Performance (IRP Rev H)		
<b>Human Research Program Risks:</b>	(1) <b>HFBP HARI</b> :Risk of Inadequate Design of Human and Automation/Robotic Integration (IRP Rev J) (2) <b>HFBP HCI</b> :Risk of Inadequate Human-Computer Interaction (IRP Rev J) (3) <b>HFBP Team</b> :Risk of Performance and Behavioral Health Decrements Due to Inadequate Cooperation, Coordination, Communication, and Psychosocial Adaptation within a Team (IRP Rev J) (4) <b>MPTASK</b> :Risk of Inadequate Mission, Process and Task Design (IRP Rev H)		
<b>Space Biology Element:</b>	None		
<b>Space Biology Cross-Element Discipline:</b>	None		
<b>Space Biology Special Category:</b>	None		
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<b>Zip Code:</b>	94035	<b>Congressional District:</b>	18
<b>Comments:</b>			
<b>Project Type:</b>	GROUND	<b>Solicitation:</b>	2017 HERO 80JSC017N0001-BPBA Topics in Biological, Physiological, and Behavioral Adaptations to Spaceflight. Appendix C
<b>Start Date:</b>	04/15/2019	<b>End Date:</b>	04/14/2023
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<b>No. of PhD Candidates:</b>		<b>No. of Master' Degrees:</b>	
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<b>Flight Program:</b>			
<b>Flight Assignment:</b>			
<b>Key Personnel Changes/Previous PI:</b>			
<b>COI Name (Institution):</b>	Bresina, John Ph.D. ( NASA Ames Research Center ) Gregory, Kevin M.S. ( San Jose State University Research Foundation ) Hillenius, Steven M.S. ( NASA Ames Research Center ) Zheng, Jimin M.S. ( San Jose State University Research Foundation )		
<b>Grant/Contract No.:</b>	Internal Project		
<b>Performance Goal No.:</b>			

<b>Performance Goal Text:</b>	
<b>Task Description:</b>	<p>This task is part of the Human Capabilities Assessments for Autonomous Missions (HCAAM) Virtual NASA Specialized Center of Research (VNSCOR).</p> <p>As NASA considers long-duration exploration missions (LDEMs), it is envisioned that crew will behave more autonomously as compared to low-Earth orbit missions. In this space environment, crew will have better and more timely insight as to how best to manage their own schedule, minimizing idle time as they wait for Mission Control Center (MCC) to respond or react to a delay in activity execution. Moreover, crew must be able to self-schedule: reschedule their own timeline without creating violations. NASA currently has not characterized crew performance for self-scheduling; specifically, non-expert human performance for the task of planning and scheduling has not been characterized experimentally. The focus of this proposal is to quantify crew performance envelope for the task of planning and scheduling as a function of plan complexity, and develop mitigations that are aimed at improving performance in the face of complex planning requirements. With regards to crew performance, we will study the relationship between planning efficiency, effectiveness, crew situation awareness, trust in planning software, and plan complexity. Once a performance envelope has been identified, we will shift our research emphasis to develop and evaluate countermeasures that mitigate adverse effects on performance. These mitigations will be evaluated in analogs and recommended countermeasures will be put forward if crew performance improves as compared to the baseline. Finally, based on research results, we will recommend corresponding standards and guidelines appropriate for autonomous crew in LDEMs.</p>
<b>Rationale for HRP Directed Research:</b>	
<b>Research Impact/Earth Benefits:</b>	
<b>Task Progress:</b>	<p>New project for FY2019. [Note added to Task Book in February 2020 when received period of performance information]</p>
<b>Bibliography Type:</b>	<p>Description: (Last Updated: 03/09/2020)</p>