2023 IEEE Space Computing Conference (SCC 2023)

Pasadena, California, USA 18-21 July 2023



IEEE Catalog Number: ISBN:

CFP23U24-POD 979-8-3503-4144-7

Copyright © 2023 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP23U24-POD
ISBN (Print-On-Demand):	979-8-3503-4144-7
ISBN (Online):	979-8-3503-4143-0

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400 Fax: (845) 758-2633 E-mail: curran@proceedings.com Web: www.proceedings.com



2023 IEEE Space Computing Conference (SCC) SCC 2023

Table of Contents

Preface	viii
Conference Organization	x
Reviewers	xi

2023 IEEE Space Computing Conference (SCC)

SEFI Mitigation Middleware Radiation Test Results for NASA and Other GPU Applications
Performance modeling of a heterogeneous computing system based on the UCIe Interconnect Architecture
Tom Jose (ELC Labs, India) and Deepak Shankar (Mirabilis Design, USA)
AI and Data-Driven In-situ Sensing for Space Digital Twin
Sequential Deep Learning for Mars Autonomous Navigation
Lot-to-Lot Variability and TID Degradation of Bipolar Transistors Analyzed with ESA and PRECEDER Databases
Benchmark Computer Performance for Wavefront Sensing and Control on Next Generation Space Telescopes
Cahoy (Massachusetts Institute of Technology, USA)

Performance Evaluation of the Radiation-Tolerant NVIDIA Tegra K1 System-on-Chip
ScOSA on the Way to Orbit: Reconfigurable High-Performance Computing for Spacecraft
Challenges in FPGA Design for Complex, High Performance Space Applications
A System to Provide Deterministic Flight Software Operation and Maximize Multicore Processing Performance: The Safe and Precise Landing – Integrated Capabilities Evolution (SPLICE) Datapath
Trustworthy Autonomy for Gateway Vehicle System Manager
A Low Power And High Performance Software Approach to Artificial Intelligence On-Board
Establishing Trust in NASA's Artemis Campaign Computer-Human Interface (CHI) Implementation
The ring-buffer ROS2 executor: a novel approach for real-time ROS2 Space applications
System model evaluation of RISC-V cores for improved performance and fault tolerance
Battery Management System for On-Board Data-Driven State of Health Estimation for Aviation and Space Applications
HPC in a Vacuum: Evaluating Future Space Microprocessors

Author Index	 	