We are closely monitoring the details of the COVID-19 pandemic and will adjust our plans accordingly per CDC and IEEE recommendations. Keeping all participants and planners safe is our top priority.

CALL FOR PAPERS

SMC-IT 2021
8th International Conference on Space Mission Challenges for Information Technology
Pasadena, California, USA
July, 2021
Venue: Caltech
Sponsored by: IEEE Computer Society and the Technical Committee on Software Engineering

Every two years, the International Conference on Space Mission Challenges for Information Technology (SMC-IT) gathers system designers, engineers, scientists, practitioners, and space explorers with the objective of advancing information technology for space missions. The forum will provide an excellent opportunity for fostering technical interchange on all hardware and software aspects of IT applications in space missions.

The conference will focus on current information systems practice and challenges as well as emerging information technologies with applicability for future space missions. Information systems in all aspects of the space mission will be explored, including flight systems, ground systems, science data processing, engineering and development tools, operations, and telecommunications. The entire information systems lifecycle of the mission development will also be covered, such as conceptual design, engineering tools development, integration and test, operations, science analysis, and quality control.

The conference will be held July 27-29 at California Institute of Technology, located in Pasadena, California. **If restrictions on travel or people congregating are in effect, we are planning to conduct the event virtually.**

TECHNICAL TOPICS

Topics of interest include, but are not limited to, the following:

* **Data Analytics and Big Data:** knowledge extraction and management; data mining and analysis; data science life cycle; cloud computing in space; quantum computing; neuromorphic computing
* **Advanced Computing for Novel Instruments and Improved Operations:** novel exploitation techniques, algorithms, and data analytics; machine learning and artificial intelligence; sensor networks

* **Intelligent and Autonomous Spacecraft:** intelligent systems; computational intelligence; artificial intelligence; explainable AI; autonomy and autonomous systems; UAV/UAS in space; cooperative systems / swarming
* **Robotics for Exotic Mission Destinations:** novel space exploration concepts enabled by robotic advancements; humans working with robots in space
* **Robotic Manufacturing and Assembly of Large Space Structures:** 3D printing in space; in-space manufacturing; robotics cooperation and interaction; tele-robotics; construction of structures on other planets/moons using *in situ* materials; CAD tools for in-space assembly
* **Space Networking:** resilient communications; space-terrestrial internetworking and interoperability; standardization
* **Cybersecurity:** securing federal networks; protecting critical infrastructure; cyber policies; international law; multi-level security; defensive cyber operations
* **Fault Tolerant Space Processing, Memory, and Storage:** innovative resilient architectures; fault and power management approaches; architectures for embedded artificial intelligence, big data, robotic vision, intelligent systems applications, and resource constrained environments
* **Software Reliability for Mission-Critical Applications and Safety of Life:** verification and validation approaches; design for test; re-usable software architectures; verification of complex systems; DevSecOps
* **Advanced Ground Control:** mission planning and scheduling; distributed and collaborative mission planning; human-machine interactions; design for change; impact of agile development and continuous integration / continuous deployment; increasing velocity of ground system development
* **Augmented Reality/Virtual Reality Applications:** AR/VR applications to tele-robotics, data processing, mission operations, space science analysis; video game technology advancing space capabilities; training astronauts

The SMC-IT 2021 Technical Committee is seeking three kinds of submissions at this time: full papers, posters, and mini-workshop proposals.

FULL PAPER & POSTER SUBMISSIONS

SMC-IT 2021 solicits novel papers from all sectors of the space and aerospace community, including: earth orbiting systems, deep space missions, ground support systems, instruments, scientific data exploitation, landers, rovers, and probes. The conference will address civil, military, and commercial application areas for human and robotic missions.

SMC-IT 2021 will again use a single-pass, full-paper review process. Full papers can be up to 8 pages in length and require a verbal presentation. Authors of full papers must submit a final version of their paper of up to 8 pages at the outset. Proposals for posters can be up to 2 pages in length. Poster authors or teams will be given multiple opportunities to discuss their work with interested attendees in poster sessions. Successful poster proposals will receive further guidance on the exact size and format for their posters.

All papers accepted for SMC-IT 2021 will be published in the IEEE conference proceedings, indexed in the IEEE Xplore data base. Note that IEEE has a “Podium and Publish” policy for

conferences, which means that no manuscript will be published in IEEE Xplore without first being presented at the conference. Some selected papers may be invited to appear in a special issue of a reputable journal in the field.

MINI-WORKSHOP SUBMISSIONS

SMC-IT 2021 will continue the highly successful mini-workshop session format to explore specific emerging technology themes in greater depth. Each mini-workshop typically runs as one track for one day or one half day and may incorporate invited and/or contributed papers.

To propose a mini-workshop topic, please submit a 1-2 page abstract including the theme, scope, and goals of your workshop idea, as well as any potential speakers already identified. Please also indicate whether you prefer a full-day or half-day time-slot.
Manuscripts (up to 8 pages) for full papers as well as posters and mini-workshop proposals (1-2 pages) must be received by December 18, 2020. Acceptance notification will be emailed by January 29, 2021. The template for each can be found at the SMC-IT 2021 web site: http://smc-it.org

SCHEDULE

July 23th, 2020	Call for Full Papers, Posters, and Mini-Workshop Proposals
October 5th, 2020	Author Submission Website Open
December 18th, 2020	Final Submission Date for Papers, Posters, and Mini-Workshop Proposals
January 29th, 2021	Authors Acceptance Notification
April 23rd, 2021	Final Manuscripts Due (incorporating reviewer comments)
May 3rd, 2021	Early-bird Registration opens
July 27-29, 2021	Conference

The California Institute of Technology (Caltech) campus is located in Pasadena, California. Caltech is located 12 miles northeast of Downtown Los Angeles and about 25 miles from the Los Angeles International Airport.

To be placed on the SMC-IT mailing list, please send a blank email to smc-it-info-join@baylor.edu
To be removed from the list, please send a blank email to smc-it-info-leave@baylor.edu

We look forward to seeing you in Pasadena in July 2021!

CONFERENCE CHAIRS:

General Chair:	Yogita Shah (yogita.shah“at-sign”jpl.nasa.gov)
Co-General Chair:	Michelle Carter (michelle.carter“at-sign”aero.org)
Finance Chair:	James Oyama (James.Y.Oyama“at-sign”jpl.nasa.gov)
Advisors to the General Chair:	Larry Bergman (Larry.Bergman“at-sign”ieee.org)
	Amalaye Oyake (Amalaye.Oyake“at-sign”jpl.nasa.gov))
	Michael Campbell (michael.l.campbell“at-sign”aero.org)
For general inquiries:	smc-it-chairs“at-sign”baylor.edu

ORGANIZING COMMITTEE:

Richard Doyle (Richard.J.Doyle“at-sign”jpl.nasa.gov)
María Dolores Rodríguez Moreno (malola.rmoreno“at-sign”uah.es)
Keith Schubert (Keith_Schubert“at-sign”baylor.edu)
Michela Munoz Fernandez (Michela“at-sign”alumni.caltech.edu)
Brian Duncan (Brian.Duncan“at-sign”jhuapl.edu)
Luke Lucas (Luke.Lucas“at-sign” lsespace.com)
Ivan Perez (ivan.perezdominguez“at-sign”nasa.gov)
Wai L Troyer (Wai.l.troyer“at-sign”aero.org)