

CALL FOR PAPERS
IEEE Internet of Things Journal Special Issue on
IoT Systems for Extreme Environments

IoT systems are being deployed in a huge variety of applications, each with its unique requirements. Many environments where IoT systems are particularly valuable face stresses due to poor/aging physical infrastructure, high demand, and increasingly extreme operating conditions, largely driven by climate change. Depending on the geographical location, the extreme events may include extreme temperature, winds, flooding, snow squalls, etc. that may adversely affect the functioning of portions of the infrastructure and the IoT systems hosted by them on a routine basis. This is particularly true for the poor/aging physical infrastructure all around the world. The robustness/resilience scenarios of interest in this environment are ones that are usually neither catastrophic nor random but may suffer from varying degrees of area damage relatively frequently. Thus, the key challenge is to assess damage effectively and with minimal manual involvement and accordingly configure or augment the system before, during and after the event to minimize service degradation, maximize coverage, and optimize the services offered. Furthermore, all these aspects must account for many real-world aspects such as extreme heterogeneity in population and wealth distribution and associated demographic, socio-economic and business considerations. Topics of interest for this special issue include, but are not limited to

- Damage assessment
- Fault diagnosis and localization
- Operational visibility and interoperability of multivendor subsystems
- Collaborative diagnosis/resilience across multivendor systems.
- Privacy/security vs. operational visibility tradeoff
- Role of video monitoring in damage assessment and work scheduling
- Situational understanding of an extreme event.
- Managing conflicting operation of degraded IoT subsystems
- Robustness/resilience techniques and their modelling.
- Applications of sensor and actuator networks in extreme conditions.
- Energy and resource management.
- Fault tolerance and diagnostics.
- Metrics for evaluating degraded operational states.
- Cost tradeoffs and Econometric models of resilience
- Societal and human aspects in IoT system operation in extreme environments.
- Demographic considerations in deploying IoT resilience.
- Hardening designs to cope with extreme conditions.

Important Dates:

Submission Deadline: June 1, 2023
First Review Due: September 1, 2023
Revision Due: October 15, 2023

Sec. Review Due/Notification: November 15, 2023
Final Manuscript Due: December 1, 2023
Publication Date: 2023

SUBMISSION

All original manuscripts or revisions to the IEEE IoT Journal must be submitted electronically through IEEE Manuscript Central, <http://mc.manuscriptcentral.com/iot>. Solicited original submissions must not be currently under consideration for publication in other venues. Author guidelines and submission information can be found at <http://iot.ieee.org/journal>.

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