Call for Papers
Journal of Universal Computer Science (J.UCS) Special Issue
Challenges for Smart Environments – Human-Centered Computing, Data Science, and Ambient Intelligence

Guest Editors

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Rationale & Call for Manuscripts

Technologies, sciences and society undergo a rapid and revolutionary transformation towards Ambient Intelligence (AmI) and Smart Environment (SmE). Ambient intelligence (AmI) research is based on advances in sensors and sensor networks, pervasive computing, embedding computational capability into everyday objects, and uses artificial intelligence to bring cognitive capabilities to smart environments growing in their capabilities and easing collaboration among people. SmE builds upon embedded systems, smart integration, and an increasing fusion of real and virtual objects in the Internet of Things (IoT). Important system functionalities in Smart City Applications (SCA) are delivered with the help of AmI and SmE.

However, a number of requirements must be fulfilled and complexities resolved before such systems generate reliable, accurate and timely information which is really trusted and appreciated by users. As digitization has become an integral part of everyday life, the next main challenge we face is to effectively and efficiently extract knowledge from huge amounts of data from heterogeneous sources to make the systems self-contained and autonomous. AmI technologies and objects must learn from actively interacting with their environment, autonomously or under human supervision. To ensure data quality, information theoretic approaches, uncertainty modeling and reliable (visual) analysis support in human-centered artificial intelligence applications, additional collaboration issues, privacy and security requirements should be addressed within a throughout Verification and Validation Assessment (VVA).

Major industrial domains are on the way to perform this tectonic shift based on Big Data, Ambient Intelligence, Collaborative Technologies, and Smart Environments (SmE) supporting Virtual and Mixed Reality Applications, Multimodal Interaction and Reliable Visual Analytics. In health services, the use of AmI and SmE to make decisions for the benefits of individuals is very challenging.

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

Edge-Cutting Technologies with Applications in Smart Cities
- Mobile Information Systems
- Collaborative Mobile Virtual Environments for Learning or Knowledge Management
- Location-based Mobile Services: Technologies and Standards
- Computational Linguistics: Natural Language Processing
- Visual Analytics

Smart Human Centered Computing
- Social Computing
- Recommender Systems
- Virtual Museums and Laboratories
- Metrics for Business Analytics
- E-Health
- GIS Applications

Data Science and Information Theoretic Approaches for Smart Systems
- Formalizing Security & Privacy Related to Information Theoretic Perspectives
- Formalizing Security & Privacy Related to Problems from Data Science Perspectives
- Smart System Optimization from both Points of View

Technical Challenges for Smart Environments
- Internet of Things in Smart Environments
- Design of Recommender Systems for AmI and SmE Systems
- SmE Middleware: Security and Privacy Issues
- Reconfigurable Hardware
- Automated Error Recovery
- Reliable Visual Analytics in AmI and SmE Systems

Artificial Intelligence, Neural Networks and Deep Learning
- Neural Networks–Various Types and Architectures
- Embedded Deep Learning
- Deep Learning for Cloud Applications
- AI and Machine Learning
- Applications in Language and Image Processing
- Applications on Classification, Regression, and Recommender Systems.

Open questions in VVA: Wide error bounds, missing or inadequate mathematical model, metrics or risk estimation, ill-conditioned or too complex problems, inefficient algorithms, unknown, insensitive or parameters with uncertainty; probabilistic models with outliers, wrong sensor readings or result evaluation; anomaly detection in (geo-referenced) big data or (sensor) networks patterns, looking at people's behavior, cheating in all stages of a running process or system.
Use cases which realize relevant parts of reliable cloud computing technologies, its "self-driving" capabilities employing data analytics, a data quality assessment, privacy/security requirements, collaborative, reliable visual analytics, recommender systems, verification & validation assessment.

Important Deadlines

Invitation to submit papers to the special issue:	November	02, 2020
Deadline for submitting papers:	February	02, 2021
First round of reviewing, received by:	April	16, 2021
Decisions concerning reviews by:	May	15, 2021
Second round of reviewing, received by:	July	15, 2021
Final decisions by:	July	30, 2021
Final papers (including preface) submitted to journal by:	August	30, 2021

Program Committee

Program Committee Chair: Tomoo Inoue (Japan), José A. Pino (Chile), Wolfram Luther (Germany)
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Submission and Evaluation Procedure

The Journal of Universal Computer Science is a high-quality electronic publication that deals with all aspects of computer science. J.UCS has been appearing monthly since 1995 and is thus one of the oldest electronic journals with uninterrupted publication since its foundation. J.UCS is a peer-reviewed open access journal. There are no submission or publication charges.

The accepted articles are published under the CC BY-ND 4.0 license which must be signed by the authors prior to publication. A number of special issues as well as the printed archive editions of the volumes are also available in print and can be ordered directly from J.UCS office. The impact factor of J.UCS is 0.910, the 5-year impact factor 0.885 (2019). For further information, please refer to

http://www.jucs.org/jucs_info/aims/unique_features.html

Manuscripts must be submitted in PDF format, written in English and should not exceed 20 pages. Papers only prepared according to the JUCS's guidelines for authors and submitted online (see procedure described below) will be included in the review process. Illustrations and tables must be provided as integrated parts of the manuscript. The guidelines for authors are available at

http://www.jucs.org/ujs/jucs/info/submissions/style_guide.html

For all potential authors who have received an invitation for an extended version of their CODASSCA 2020 paper, please bear in mind that we can only consider submissions which are significantly extended (at least 50 percent new material and the title of the extended version must clearly and unmistakably differ from the title of the article presented at the conference). Only novel research papers which are currently not under review at another event or a journal are accepted for the review process. For more details, please also refer to

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Please submit your original and proof-read papers not later than February 02, 2021 using the submission system at (https://easychair.org/conferences/?conf=jucsscdc2020). Each paper will be blind reviewed by at least 3 reviewers. According to the covered main subjects in the content, a selected set of reviewers with the appropriate expertise will be assigned.