

Special Issue on

Automation & Analytics for Greener Software Engineering

Elsevier's Information and Software Technology Journal

(<http://www.journals.elsevier.com/information-and-software-technology/>)

Overview:

During the last decade, green software development has become a hot topic and energy consumption has moved into the focus of software engineering especially when taking physical devices in modern Internet of Things applications into account. Traditionally, energy optimization research has focused at the hardware and the system level. Recent work indicates that there is ample opportunity to improve energy consumption at the software level. Engineering green software-intensive systems is critical in our drive towards a sustainable, smarter planet. The goal of green software engineering is to apply green principles to the design and operation of software-intensive systems. Validating, monitoring and measuring the greenness of software and providing respective automation support is critical towards the notion of sustainable and green software.

The focus of this special issue is to attract contributions from researchers aiming at exploiting software repositories and other data sources to facilitate the development of green software-intensive systems. Of particular interest are also contributions that describe how to automate aspects of the development, testing and maintenance of green software-intensive systems, for instance in the context of the Internet of Things.

Topics:

Automation and analytics to enhance one or more of the following:

- Requirements and design methods for greener software
- Best practices to increase energy efficiency and sustainability (including software and process improvement)
- Instrument and monitor software systems to key green indicators (KGIs) and green improvement
- Energy-aware adaptation of software-intensive systems
- Energy challenges and solutions in cyber-physical systems
- Energy efficient IoT and sensor networks
- Self-adaptive and self-managing systems for green computing
- Green architectural knowledge, green design patterns
- Sustainable data management
- Monitoring, verification and validation of greener software
- Analytics tools for green decision making
- Quality & risk assessments, tradeoff analyses between energy efficiency, sustainability and traditional quality requirements
- Business models for green software (e.g., SaaS, IaaS, PaaS, and cloud computing)
- Return on investments and economic aspects of green software development
- Incentives to invest in greener software

Submission:

We solicit high quality, original papers that advance the state-of-the-art, and open new research directions in the area of Automation & Analytics for Greener Software Engineering. The submissions, which are anticipated to be of scientific writing, may focus on research-theoretical work, evidence-based empirical studies including industrial experience, case studies and action-research, systematic literature reviews, and the like. Strong sections on motivation, related work, claims of originality, methodology, analysis, discussion, interpretation, validation, implication, conclusion, and future work are expected as applicable to the type of paper submitted.

Tentative Timeline:

- Submission deadline: 15-March-2017
- Notification: 15-May-2017
- Major revisions due: 15-June-2017
- Re-reviews completed: 15-August-2017
- Minor revision due: 15-September-2017
- Final recommendations: 01-October-2017

Authors will need to submit their manuscripts through the online submission and editorial system for Information and Software Technology Journal accessible at <http://<link>>. When submitting the manuscript for this special issue, please select “SI: Automation & Analytics for Greener Software Engineering” as the article type.

Guest Editors:

Dietmar Pfahl, University of Tartu, Estonia (dietmar.pfahl@ut.ee)

Michael Felderer, University of Innsbruck, Austria (michael.felderer@uibk.ac.at)