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EDITORIAL

Editorial

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1 The REFSQ 2021 conference

The International Working Conference on Requirement Engineering: Foundation for Software Quality (REFSQ) is an established international forum. Its goal is to foster the establishment and maintenance of a strong Requirements Engineering (RE) community across industry and academia through contributions that report on novel ideas and techniques to enhance the quality of RE's products and processes.

According to the tradition of this forum, REFSQ 2021 reported novel ideas and techniques that enhance the quality of RE products and processes, reflections on current research and industrial RE practices, and new perspectives on RE. The special theme of REFSQ 2021 was *Ethics as a cornerstone of Requirements Engineering*, which emphasized the importance of human values, such as privacy and fairness when designing software-intensive systems as well as the challenges that intelligent and autonomous systems pose due to the tight interplay with humans.

REFSQ 2021 was originally planned to take place in Essen, Germany, on April 12–15, 2021. Because of COVID-19, however, it was organized as a virtual event on the same days.

The program included three keynote addresses: (1) *Practicing (whose?) values: requirements engineering as a catalyst for technology justice* by Katie Shilton from the University of Maryland, College Park, who reasoned about two aspects related to the adoption of ethical frameworks in RE: *whose* values should be considered, and how to adopt them in software engineering communities; (2) *What makes intelligent visual analytics tools really intelligent?* by Vidya Setlur, a principal research scientist at Tableau, who reasoned on the potential of applying user behavior as a set of engineering requirements to developing smarter tools; (3) *The Challenge(s) of Teaching Requirements Engineering* by Martin Glinz from the University of Zurich, who provided a retrospective stance on teaching RE in the past 50 years, touching on challenges including the problems of motivation, context, principles vs. methods and tools, thereby offering implications on what and how to teach RE.

The research track of REFSQ 2021 included 15 accepted papers in 4 different categories: technical design, scientific evaluation, research preview, and vision papers, selected through a careful review process by a program committee composed of experienced members of the research community. Five papers with the most positive reviews and with high potential for extension were invited to submit extended versions to this Special Issue. Four of those papers completed the process successfully. For the first time at REFSQ, research previews have also been invited to the special issue.

These papers, included in this special issue, include at least 30% additional material with respect to the original paper presented at REFSQ 2021.

2 In this special issue

A negotiation support system for defining utility functions for multi-stakeholder self-adaptive systems by Rebekka Wohlrab and David Garlan—This paper describes a method and tool to support multiple stakeholders in eliciting constraints, prioritizing quality attributes, negotiating priorities, and expressing inputs to define utility functions for self-adaptive systems. The method's understandability and user satisfaction were assessed through a think-aloud study with human participants.

Causality in requirements artifacts: prevalence, detection, and impact by Julian Frattini, Jannik Fischbach, Daniel Mendez, Michael Unterkalmsteiner, Andreas Vogelsang, and Krzysztof Wnuk—This work presents a case study that aims to obtain a better understanding of the notion of causality

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and to support the automatic extraction of causal relations in natural language requirements, a tool-supported approach, called CiRA, for causality detection, and an additional study that assesses the applicability of CiRA and investigates the impact of causality on natural language requirements.

On the relationship between similar requirements and similar software by Muhammad Abbas, Alessio Ferrari, Anas Shatnawi, Eduard Enoiu, Mehrdad Saadatmand, and Daniel Sundmark—This study compares different NLP approaches for computing similarity between requirements, and it correlates the computed requirements similarity with the similarity of their associated software. The evaluation is conducted on real-world requirements from two industrial projects from a railway company. The results show a moderately positive correlation between requirements similarity and software similarity, but while practitioners confirm that requirements similarity is generally regarded as a proxy for software similarity, they also highlight that additional aspects come into play when making decisions concerning software reuse.

Specifying requirements for collection and analysis of online user feedback by Maurizio Astegher, Paolo Busetta, Artem Gabbasov, Matteo Pedrotti, Anna Perini, and Angelo Susi—This paper presents an action research study, conducted with a company that developed a platform for online training, that investigates the role of online feedback in RE tasks, such as requirements validation, and on how to determine what online feedback to collect and analyze. This study provides evidence of the need for practitioners to follow simple but systematic approaches to specifying requirements for data collection and analysis, at design time. It also suggests a method to tackle this task by leveraging goal-oriented requirements modeling combined with the Goal-Question-Metric approach. The applicability of this method has been explored in two industrial evaluations.

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