General Message from the IWCT Workshop Chairs

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We would like to welcome you to the 9th International Workshop on Combinatorial Testing (IWCT 2020), which is organized in conjunction with the IEEE International Conference on Software Testing, Verification and Validation (ICST 2020). After the successful editions in Montreal (2012), Luxembourg (2013), Cleveland (2014), Graz (2015), Chicago (2016), Tokyo (2017), Vasteras (2018) and Xi'an (2019), the ninth edition is held in Porto, on March 23th 2020.

Combinatorial Testing (CT) is a widely applicable generic methodology and technology for software verification and validation, considered a testing best practice. In a combinatorial test plan, all interactions between parameters up to a certain level are covered. For example, in pairwise testing, for every pair of parameters, every pair of values will appear at least once. Studies show that CT is more efficient and effective than random testing.

CT has gained significant interest in recent years, both in research and in practice. However, many issues still remain unresolved, and much research is still needed in the field. For example, while pairwise testing is a well recognized and popular test planning method, investigations of actual failures in a number of software and systems convincingly show that pairwise testing is usually not sufficient so high strength CT (i.e., t-way for $t > 2$) may be needed.

In addition, the combinatorial test suites need to exclude invalid combinations of test values that cannot be executed, which limits the degrees of freedom the algorithms have, thus complicating the problem. Moreover, modeling languages and tools for easily capturing the input test space are also required for real-life applicability of CT. Other obstacles for wide acceptance of CT in industry are the gap between the generated test plans and executable tests, and the difficulty in determining expected results for the generated tests. Finally, empirical studies on CT, as well as thorough comparison with other methods are also required.

IWCT focuses on many aspects of combinatorial testing, with emphasis on the less explored ones. Advancing CT and increasing its deployment in industry requires research on the one hand and validation of usefulness and applicability of research results in the field on the other hand. To this aim, IWCT brings together practitioners and researchers that propose novel models, methods, and algorithms for combinatorial interaction testing. Figure 1 presents a word cloud taken from the titles of the accepted papers, and gives a rapid overview of the subjects presented in the workshop.

Fig. 1. Word cloud of the IWCT 2020 paper titles

This year we received 12 high quality submissions, from which 8 papers were accepted for publication – 5 full papers, 2 short ones, and 1 extended abstract. The program contains research papers on various aspects of CT, as well as on applications and use cases of CT.

We are looking forward to an interesting IWCT and hope you enjoy both IWCT and ICST!