Preface to the CLEI 2023 Special Issue

Volume II

The present issue of CLEIej is devoted to extended and revised papers of selected works presented at the XLVIX Latin American Computing Conference (CLEI 2023), held at the Universidad Mayor de San Andrés - La Paz, Bolivia, from the 16th to the 21st of October, 2023. This is the second volume of selected papers from the conference.

The CLEI 2023 conference featured four tracks covering various areas of computer science and informatics, six associated events, the second edition of the Latin-American School in Informatics (ELI), three local events, and the Journal First track.

The CLEI 2023 tracks explored the latest advancements in different fields, focusing on: Computer Technology, Intelligent Systems, Software Systems, and Systems in Practice.

The associated events held as part of CLEI 2023 are as follows:

- XIII Latin American Congress of Women in Computing (LAWCC).
- XII Latin-American Symposium on Dependable and Secure Computing (LADC).
- XXX Latin American Contest of Master's Thesis (CLTM).
- IX Latin American Contest of Doctoral Thesis (CLTD).
- I Workshop on Cybersecurity in Latin America and the Caribbean
- Bolivian Computer Science Congress (CCBOL)

CLEI 2023 received a total of 166 submissions across its main research tracks, including 123 full papers and 43 short work-in-progress papers. Out of these, 55 papers were accepted for publication, leading to an acceptance rate of 33%. Additionally, one journal-first paper was submitted and accepted for presentation at the conference only. LAWCC accepted 21 submissions, and six finalist postgraduate theses were presented at CLTM and CLTD. Each submission was reviewed by at least three Program Committee members from the respective tracks, amounting to 645 reviews conducted by 247 reviewers.

The authors of the top 17 papers from the four research tracks, as determined by the evaluations of the Track Chairs, were invited to extend their work and submit it to a special issue of CLEIej. Of these, 11 papers were extended and submitted, undergoing another rigorous review process with invited reviewers from CLEI 2023 and the broader academic community. This process resulted in 5 papers being accepted and already published in the first volume, and 3 papers accepted for publication in this second volume.

In the following paragraphs, the articles of this second volume are presented in alphabetical order:

"*A Methodological Approach for the Security Analysis of FIWARE Technology*": This contribution presents a security assessment of FIWARE technology, focusing on identifying vulnerabilities in its components through an offensive approach. The authors implemented a threat model based on the OWASP methodology, which allowed them to experiment with and validate various attack strategies in a controlled environment. Key objectives included mapping potential attack vectors and assessing the security of critical assets like the Orion Context Broker and IoT Agent. The results highlighted specific security issues, such as unauthorized access and data leakage, and culminated in a set of recommendations aimed at enhancing the security of FIWARE deployments, including improvements in architecture and access control mechanisms.

"*An Agile Deployment of a Virtual Learning Environment: Insights from a Cybersecurity Interactive Course for Spanish-Speaking Children*": This work focuses on developing and assessing a virtual learning environment (VLE) aimed at teaching cybersecurity to Spanish-speaking children, particularly in light of challenges related to sensitive issues like cyberbullying and sexting during the COVID-19 pandemic. By employing a 5-phase Scrum-based methodology that integrates UDL, ADDIE, and DPIPE models, the research creates engaging interactive content featuring 3D characters. The findings reveal that the VLE successfully enhances awareness of online threats and equips users with strategies to address cyberattacks, resulting in a positive educational experience for children, parents, and teachers.

"*Multi-objective Evolutionary Algorithms based Operation Sequence Design for Image Segmentation*": The paper aims to enhance image segmentation through the use of Multi-Objective Evolutionary Algorithms (MOEAs), specifically by maximizing sensitivity and specificity. It evaluates the proposed method on three types of images: cellular images, melanoma images, and retinal images. The results indicate high segmentation accuracy, achieving perfect sensitivity and specificity in certain cases, particularly in the segmentation of melanoma and retinal veins. This demonstrates the method's effectiveness and versatility across different image types, highlighting its potential for critical applications in medical diagnostics.

We would like to express our deep appreciation to all the CLEI 2023 Track Chairs for their collaboration throughout the paper review process and their vital role in evaluating and selecting the 17 outstanding papers invited to expand their work for this special issue.

We also extend our sincere thanks to the reviewers who selflessly dedicated their time and expertise to assess the content and quality of the papers featured in this issue.

Finally, we are grateful to the authors for accepting our invitation to revise and enhance their conference submissions, incorporating the reviewers' feedback to create these high-quality extended versions.

We hope you find this special issue as insightful and enjoyable as we do, as it helps to disseminate significant research from our Latin American community.

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CLEIej Guest Editors for CLEI 2023 Special Issue - Volume II