

Preface to the CLEI 2021 Special Issue

The present issue of CLEIej is devoted to extended and revised papers of selected works presented at the XLVII Latin American Computing Conference (CLEI 2021), held at the Costa Rica Institute of Technology (TEC) in Cartago, Costa Rica, as a virtual event from October 25-29th, 2021.

The CLEI 2021 conference included 9 symposia on different computer science and informatics areas, 4 associated events and 2 associated conferences. In particular, the following symposia were organized within CLEI 2021:

- Latin American Symposium on Computer Graphics, Virtual Reality and Image Processing (SLCGRVPI).
- Latin American Symposium on Informatics and Society (SLIS).
- Latin American Symposium on Infrastructure, Hardware and Software (SLIHS).
- Latin American Symposium on Software Engineering (SLISW).
- Latin American Symposium on Operations Research and Artificial Intelligence (SLIOIA).
- Latin American Symposium on Business Processes, Architectures and Organizational Systems (SLPNASO).
- Latin American Symposium on Data and Information Management (SLMDI).
- Latin American Symposium on Computational Theory (SLTC).
- XXIX Ibero-american Symposium on Higher Education in Computing (SIESC).

In total, 221 submissions were received for these symposia. The contributions were subjected to a rigorous review process resulting in 72 papers accepted for symposia, with an acceptance rate of 32,58%. Each paper was reviewed by at least 3 members of the Program Committee of the corresponding symposium.

The authors of the 16 best papers of all symposia, considering their review evaluations by the symposia Chairs, were invited to extend their works and submit them to a special issue of CLEIej. Of these, 12 papers were extended and submitted, and went through another detailed review process with invited reviewers from CLEI 2021, which resulted in 10 papers being accepted for final publication. In the following paragraphs, the papers are presented and organized in 4 groups according to their general research areas.

The first group encompasses 3 papers related to areas of artificial intelligence including neural networks and optimization algorithms:

- The paper titled “Short-time DNS queries forecasting from the users’ and servers’ points of view, using deep learning and a pre-trained word embedding”, presents the use of pre-trained vector embeddings of domains to predict the next domain to be queried in the Internet Domain Names System (DNS) using anonymized DNS queries from a large Internet Service Provider.
- The contribution “Domain Adaptation for Unconstrained Ear Recognition with Convolutional Neural Networks”, introduces a new large-scale database as an extension of a face database that collects images from the web of thousands of subjects, for the purpose of unconstrained ear recognition using deep learning.
- The work titled “3D structural prediction, analysis and validation of Sars-Cov-2 protein molecules”, describes a methodology based on a Branch-and-Prune optimization algorithm that has proven to be effective in reconstructing proteins of a variant of the SARS-CoV-2 virus detected in Brazil.

The second group includes 3 papers addressing different aspects of the application of informatics in our Latin American societies:

- The paper “Designing Diagnosis Instruments to Determine e-Commerce Readiness for Micro and Small Enterprises in Rural Areas”, focuses on the design of instruments for assessing the technological acceptance of companies and potential customers in relation to electronic commerce in rural regions of Costa Rica.
- The work “Analysis of the Big-Five personality traits in the Chatbot “UC - Paraguay””, explores possible relationships between main personality traits (i.e. extraversion, agreeableness, conscientiousness, emotional stability and openness to experience) and the experience of social interaction mediated by a Chatbot for a community of university students.
- In the paper “Contact tracing solutions for COVID-19: applications, data privacy and security”, the authors describe digital proximity technologies being used world-wide and discuss the security and personal data

protection requirements that these technologies must satisfy considering existing regulations such as the European General Data Protection Regulation..

The third group covers 2 works regarding business process management and data analysis:

- The paper “Evaluation of Compliance Requirements for collaborative business process with process mining and a model of generic compliance controls”, presents a revised and extended version of a business process compliance requirements model including generic compliance controls as well as an example application in the context of e-Government business process of the uruguayan digital agency and further evaluation results.
- The contribution “Feature-based Trajectory Anomaly Detection”, provides a comparative analysis of route or trajectory descriptors using morphology as the main feature to detect potential abnormal activities. The authors present case studies focusing on detecting anomalous trajectories generated by people in surveillance videos and monitoring the public transport bus routes of a Latin American city.

Finally, the fourth group includes 2 papers focusing on computer networks and image processing techniques:

- The paper “An Open Source Multi-Slice Cell Capacity Framework”, describes a new version of Py5cheSim, a flexible and specific simulator of cell capacity in 5G networks including features such as the seamless implementation of data scheduling algorithms applied to different use cases.
- The work “U-Net based Network Applied to Skin Lesion Segmentation: An Ablation Study”, proposes a model based on a convolutional neural network architecture to segment dermoscopic images used for skin lesion diagnosis. An ablation study was carried out to verify the effectiveness of the model using international dermoscopic image databases.

We would like to deeply thank all CLEI 2021 Symposia chairs, who worked with us through the paper review process for the conference, and in the evaluation and selection of the 16 best papers to be invited to extend their work for this special issue.

We would also like to thank and acknowledge the hard work of the reviewers who volunteered to evaluate the contents and quality of the papers published in this special issue.

Last but not least, we would like to thank all the authors for accepting our invitation to extend and revise their conference submissions, improving their papers with feedback from reviewers to finally present these high quality extended versions of their work.

We hope you enjoy this special issue, which contributes to the dissemination of key research work of our Latin American community, as much as we do!

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CLEIej Invited Editors for CLEI 2021 Special Issue