Introduction to the special section on
Computing for Disaster Management
(VSI-cdm)

Background

Large-scale crises, such as natural disasters and pandemics, or armed attacks, have major impacts on individual lives and infrastructure. Disaster management is challenging for these crises because they are usually unforeseen. To carry out good management and make the right decisions, rescue teams require accurate information-gathering and processing techniques. Various schemes for acquiring information such as crowdsourcing and social media platforms, enable all citizens to provide text, images, and videos. The collected data is often massive, heterogeneous, and unreliable and requires processing methods and technologies, such as cloud computing, natural language processing, data mining, and spatial database, to understand the impact of the disaster in a timely fashion.

This special section is intended to share the latest research developments on the utilization of computing for disaster management.

Papers in this special section

Nine papers were submitted to this special section. Three or more experts reviewed each paper during the assessment process. After evaluating the overall scores, three papers were selected for inclusion in this special section. The selected papers present in-depth studies of practical issues and challenging problems in utilizing computing for disaster management.

Following is a brief description of the accepted papers.
In the paper by Shaorong Xie et al. [1], the authors present a supervised contrastive learning-based multi-label classification framework for data processing and model training. It especially learns features of disaster data and identifies different disaster-type information. The evaluation results on three disaster text classification datasets have improved the model's accuracy and semantic information representation ability.

In the paper by Mohammed Kakooei et al. [2], the authors propose an Intra-Cluster-Classification method by analyzing the features of the pre-disaster neighborhood building in order to detect damaged and undamaged areas within each cluster of buildings. The experimental results have shown the usefulness of the proposed method.

The paper by Jun Kawahara et al. [3] describes a mechanism that delays judging a road segment as impassable until gathering the corresponding impassable estimation from M devices. The simulation results show that $M=2$ achieves a balance between speediness and safety in evacuation guiding.

Final thoughts

We hope that this special section provides researchers with new experiences, new ideas, and the latest research results on all aspects of data processing techniques for disaster management. The guest editors take this opportunity to express their sincere appreciation to the authors who trusted the special section with their works as well as reviewers with enthusiasm and hard work. We also would like to thank the Editor-in-Chief for his support and the staff of the Computer and Electrical Engineering Journal for their cooperation and efforts.

References

1. Shaorong Xie, Chunning Hou, Hang Yu, Zhenyu Zhang, Xiangfeng Luo and Nengjun Zhu, "Multi-label disaster text classification via supervised contrastive learning for social media data".
2. Mohammad Kakooei and Yasser Baleghi, "Fusion of Vertical and Oblique Images using Intra-Cluster-Classification (ICC) for Building Damage Assessment".

3. Jun Kawahara, Takanori Hara and Masahiro Sasabe, "On robustness against evacuees' unexpected movement in automatic evacuation guiding".

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Hamed Vahdat-Nejad is currently an associate professor at the computer engineering department of the University of Birjand. He was a visiting professor at the Superior University in Lahore in the Summer of 2018 and the Daffodil International University in Dhaka in the Summer of 2017. He was a research scholar with the Middleware laboratory at the Sapienza University of Rome in 2011&2012. He has (co)authored more than 80 papers in conferences and journals and led the Pervasive & Cloud computing Lab at the University of Birjand. He has served as the chairman of the 1st national conference on healthcare computing systems and technologies, IEEE senior member, and TPC member for many conferences.

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