



An editorial perspective: recent updates of EWCO and submission guidelines

Jessica Zhang¹ · John Evans² · Hector Gomez³ · Kris van der Zee⁴

Published online: 8 February 2023

© The Author(s), under exclusive licence to Springer-Verlag London Ltd., part of Springer Nature 2023

EWCO accumulated a long list of online first articles over the years. To accommodate these backlogs, EWCO published six regular issues and five supplementary issues in Volume 38 during 2022, with about 50 articles in each issue. According to the Web of Science Journal Citation Reports, the impact factor of EWCO has increased to 8.083 (2021) and the number of downloads reached 222,369 (2021).

Two special issues have been published in Volume 38, including Image-Based Methods in Computational Medicine by Adrian Buganza Tepole, Rafael Grytz, Maria Holland, and Johannes Weickenmeier (Issue 5); and Numerical Simulation for Additive Manufacturing Processes and Products by Alessandro Reali, Ferdinando Auricchio, Michele Chiumenti, and Ernst Rank (Issue 6). In addition, the special issue of Computational Modeling Based on Nonlocal Theory by Timon Rabczuk, Erkan Oterkus, and Xiaoying Zhuang is ready and will be published in 2023. The special issue of UKACM 2022: Advances in Computational Mechanics by Jelena Ninic, Kristoffer van der Zee, Matteo Icardi, and Fangying Wang is on-going and will be completed in 2023.

We approved two new special issue proposals which will start in 2023: Isogeometric Analysis by John Evans, Artem Korobenko, and Ming-Chen Hsu; and MeshTrends 2023: Symposium on Trends in Unstructured Mesh Generation by Frank Ledoux, Steve Owen, and Matthew Staten.

To promote the journal, EWCO continued to sponsor activities supporting young researchers in simulation-based engineering, including the Student Travel Award for the UKACM Computational Mechanics Conference held in The University of Nottingham on April 20–22, 2022; and the

Rising Stars Workshop in Computational & Data Sciences in Albuquerque, NM on April 20–21, 2022.

We have been receiving large number of submissions on artificial intelligence/machine learning (AI/ML) and optimization in recent years. While we welcome contributions on both AI/ML and optimization, these contributions must align with the journal's focus on simulation-based engineering. Here we provide some more guidelines on AI/ML and optimization submissions.

- **AI/ML:** We only welcome contributions on AI/ML that demonstrate broad and significant impact on simulation-based engineering. Simulation-based engineering refers to the design, analysis, and optimization of engineering systems using physics-based simulation, so contributions focused on improving mesh generation, adaptivity, and solvers with AI/ML are certainly in scope. Moreover, we welcome contributions on scientific ML approaches for solving partial differential equations such as physics-informed neural networks, deep Ritz methods, and deep Galerkin methods. However, we discourage contributions that focus on training a model for a particular application of interest using experimental or simulation data, especially contributions that employ existing AI/ML methods.
- **Optimization:** We only welcome contributions on optimization that demonstrate broad and significant impact on simulation-based optimization. A simulation-based optimization problem is one in which physics-based simulation is used to evaluate the objective functional and/or constraints. Consequently, simulation-based optimization problems are significantly more computationally expensive to tackle than other types of optimization problems, and they often have hundreds of thousands or even millions of design variables (such as in three-dimensional topology optimization). To overcome these difficulties, specialized approaches such as adjoint-based and surrogate-based procedures are typically employed

✉ Jessica Zhang
jessicaz@andrew.cmu.edu

¹ Carnegie Mellon University, Pittsburgh, USA

² University of Colorado Boulder, Boulder, USA

³ Purdue University, West Lafayette, USA

⁴ The University of Nottingham, Nottingham, UK

in simulation-based optimization. Contributions that propose new optimization algorithms should not only demonstrate their effectiveness for simulation-based optimization but also conduct a comparison with the state-of-the-art on the basis of accuracy, robustness, and computational cost.

Note the aim of EWCO is to publish new computing methods, and manuscripts focusing on application of established methods are not encouraged. We especially discourage manuscripts reporting results of running commercial software packages. We encourage authors to publish their source code and data as supplementary documents.

We appreciate all the endless contributions from the authors, reviewers, editorial team and Springer supporting

team (Patrick Keefe, Shanthakumar Kulasekar, Kaaviya Haribabu, Karthikeyan Balaji, and Sathishkumar Chinnasamy). We look forward to continuing to work with you in 2023!

Jessica Zhang

Editor-in-Chief

John Evans, Hector Gomez and Kris van der Zee

Associate Editor

January 1, 2023

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.