Lecture Notes in Mechanical Engineering

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Advances in Design Engineering II

Proceedings of the XXX International Congress INGEGRAF 24–25 June, 2021, Valencia, Spain

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Preface and Acknowledgements

The INGEGRAF 2021 Conference originates as the 30th International Conference on GRAPHICS ENGINEERING "Digital Engineering, its application in Research, Development and Innovation. Engineering and digital transformation in education".

INGEGRAF 2021 has been organized by the Department of Graphical Expression and Graphics Technologies Research Center of the Universitat Politècnica de València. Cutting-edge topics in Product Design and Manufacturing, Innovative Design; and Computer-Aided Design were especially encouraged.

The list of topics (and subtopics) covered in the present edition is the following:

- Product design & development: Green engineering & Eco-design; User-centred design; Product lifecycle-based design; Robust design, reliability & maintenance; Modelling and simulation-based design; Ergonomics & human factors; Global product development.
- Computer-aided design and interactive design: Virtual Approaches for Interactive Design; Virtual prototyping-based design; CAD, CAE, IFC and BIM; Image processing and analysis; Geometric modelling and analysis; Reverse Engineering; Virtual and Augmented Reality.
- Manufacturing and industrial process design: Integrated/Advanced Manufacturing; Manufacturing Process and Production Management; Rapid Prototyping; Additive Manufacturing; Flexible assemblies; Remanufacturing; Industry 4.0.
- Graphical bioengineering: Biomechanics; 3D Modelling of biological structures; Computer-aided methods for pathologic diagnosis; Emotional engineering; Biomimicry for product design; Simulation and visualization of biological systems.
- Innovation in Design: Creativity & innovation methods; Collaborative engineering; Intellectual and Industrial Property Management; Design & Research Methods.
- Teaching – learning in Graphic Engineering: Teaching on Graphic Expression; Theoretical & applied geometry; Graphic Design; New approaches in teaching/learning process; Project-based Learning; Interactive 3D Modelling.

- Engineering and Construction: Sustainable Building. Sustainable Construction; Building Information Modelling; Photogrammetry and Remote Sensing; Geo-information. Data Capture; Virtual environments. Augmented Reality in AEC; Urban regeneration; Heritage and territory. Industrial Heritage Conservation.

We would like to thank our main organizer/institutions and the rest of the sponsoring/collaborating companies and institutions for their support and grants.

We would also like to express our gratitude to the members of the different committees for their support, collaboration and good work. Thanks to all reviewers for their selfless effort reviewing contributions, which positively influenced the quality of the final papers presented at the conference.

Last but not least, thanks to all the participants of INGEGRAF 2021.

October 2021

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