

Editorial

Editorial for Special Issue “Perspectives and Challenges in Doctoral Research—Selected Papers from the 9th Edition of the Scientific Conference of the Doctoral Schools from the “Dunărea de Jos”

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This Editorial is dedicated to the 9th edition of the Scientific Conference organized by the Doctoral Schools of “Dunărea de Jos” University of Galați (SCDS-UDJG), which was organized in June 2021 in Galați (Romania). This Special Issue consists of papers from different research fields, reflecting the sectional talks presented at the SCDS-UDJG. This Conference and Special Issue aim to bring together new perspectives and challenges and to share state-of-the-art developments in doctoral research.

In total, 16 papers presented at the SCDS-UDJG conference were included in the Special Issue, in fields such as mechanical and industrial engineering, food science and bio-resources engineering, electrical/electronic engineering, systems engineering and information technologies, chemistry, electrochemistry, and economic models and strategies.

Most papers published in the Special Issue were devoted to studies in the mechanical and industrial engineering field, specifically six articles. Articles [1–3] focus on wind power resources and technologies as the main subject of research. Diaconita et al. (2021) [1] analyzed the behavior of circular and conical towers under the action of the same environmental conditions, both located in the Black Sea. The authors pursued the forces and moments resulting from the interaction of the wind with the towers’ wind turbine. Girleanu et al. (2021) [2] used in situ measurements and the reanalysis of wind data to assess the wind energy potential that characterizes the Romanian coastal environment. Nedelcu and Rusu (2022) [3] also treated the Black Sea as an area of interest, the northwestern coast specifically, to assess an overview of the wind climate, using data from 2015 until 2020 on wind direction, speed, air temperature, and air pressure, provided by the National Institute of Marine Geology and Geoecology.

In Marcu et al. (2021) [4], the authors measured the impact of administrative burdens identified by ship-owners on technical measures implemented by the European Commission to optimize the flow of goods on the Danube using the Quality Function Deployment method.

Articles [5,6] studied the process of profiling in mechanical engineering. Baroiu et al. (2021) [5] present an algorithm for modifying rollers in order to generate the helical surface of the pump rotor with progressive cavities, utilized in different industries for the circulation of high-viscosity fluids. Moroșanu et al. (2021) [6] present an overview of the profiling methods for various tools, using the kinematic and decomposing helical movement methods.

Last but not least, Mihai and Rusu (2021) [7] present an overview of the actual practice of heating ventilation and air conditioning systems used on large ships, in the COVID-19 pandemic context.



Citation: Rusu, E.; Rapeanu, G.

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“Perspectives and Challenges in Doctoral Research—Selected Papers from the 9th Edition of the Scientific Conference of the Doctoral Schools from the “Dunărea de Jos”. *Inventions* **2022**, *7*, 33. <https://doi.org/10.3390/inventions7020033>

Received: 7 March 2022

Accepted: 21 March 2022

Published: 28 March 2022

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Solcanu et al. (2021) [8] discuss a critical aspect of maritime safety, namely radio communications. This study focuses on the effectiveness of analog systems with a low signal-to-noise ratio in high-noise conditions, characteristic of the marine environment, using analytical and numerical methods. Also in the domain of system, engineering, and information technologies was the work of Minzu et al. (2021) [9]. This paper addresses the subject of using a metaheuristic algorithm to solve specific optimal control problems. Thus, a general harmonization between the controller of the closed loop and the evolutionary algorithm is needed.

Three articles of this Special Issue are devoted to different biologically active compounds from plants. The extraction optimization of betalain pigments from beetroot is discussed in Lazăr et al. (2021) [10], while Condurache et al. (2021) [11] and Roman et al. (2021) [12] consider the problem of the microencapsulation of biologically active compounds from eggplant peels and sea buckthorn fruits. All three studies are based on the need to replace chemical synthesis additives with natural ones in food and, at the same time, to close the economic value chain from the food industry by the valorization of different valuable by-products.

Two articles published in the Special Issue focused on the pharmaceutical field. In the work of Gunache et al. (2021) [13], using cyclic voltammetry, the electrochemical behavior of two screen-printed sensors was evaluated, in order to qualitatively and quantitatively determine the atorvastatin in pharmaceutical products. The study is considered by the authors to be a first step towards the development of a device for the detection of atorvastatin in biological samples. The work of Dinu et al. (2021) [14] also addresses the issue of developing a biosensor using cyclic voltammetry, but this time in order to determine and quantify the essential amino acid L-tryptophan from pharmaceutical products.

In the field of economic models and strategies, Anton et al. (2021) [15] analyzed the impact of mass tourism on the local community in Constanta, Romania. The economic, social, and environmental conditions were taken into account. The research continues with the work of Anton et al. (2022) [16], which aims to introduce an innovative concept that combines research, governance, and citizenship, using “Living labs” technology and knowledge to build a bridge between decision makers and stakeholders, promoting a shared vision of growth and innovation at a community level.

The articles presented above reflect the present state of the art in the research fields of mechanical and industrial engineering, food science and bio-resources engineering, electrical/electronic engineering, systems engineering and information technologies, chemistry, electrochemistry, and economic models and strategies. The Guest Editors of this Special Issue believe it to be a starting point for further studies, with the potential to open new research directions.

Author Contributions: Conceptualization, E.R. and G.R., validation, E.R. and G.R., resources, E.R., writing—original draft preparation, G.R., supervision, E.R.; project administration, E.R. and G.R.; funding acquisition, E.R. All authors have read and agreed to the published version of the manuscript.

Funding: All APC for papers published in this special issue were supported by Dunarea de Jos University of Galati.

Acknowledgments: This scientific event was supported by a grant from the Romanian Ministry of National Education.

Conflicts of Interest: The authors declare no conflict of interest.

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