

A letter from the Editor

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Dear Readers,

As we present this latest issue of the Journal of Print and Media Technology Research, we continue to witness the rapid evolution of print and media technologies, driven by both cutting-edge research and practical innovations. This issue showcases three research papers that delve into advanced applications of neural networks, organizational resilience, and the mechanics of ink transfer – topics that highlight the diverse directions of research in our field.

The article by Sven Ritzmann and Peter Urban from the University of Wuppertal explores the use of neural networks to predict the spectral reflectance of prints. This research addresses the need within the printing industry and beyond: accurate color reproduction on a pixel level using RGB cameras. By training a neural network with a dataset of over 10 000 color patches, they demonstrate how different numbers of light source and the number of color patches influence the network's performance. Their findings emphasize the potential of multispectral color measurement using relatively cheap RGB-cameras.

Turning to the business side of the print and media industry, the work by Nalinda Nuwan and colleagues investigates how dynamic capability and strategic orientation can foster organizational resilience, particularly in Sri Lanka's print and media enterprises. This study's insights into how older enterprises must adapt to evolving market conditions, while maintaining resilience through strategic alignment, are especially relevant in today's volatile global business environment.

Another technical exploration comes from Svitlana Havenko and her team, who present a mathematical model of ink transfer in gravure printing. Their research reveals the complex interactions between substrate, ink, and printing mechanics, emphasizing how variables such as pressure and speed impact print quality. This study contributes to the growing body of work focused on improving the precision and efficiency of printing processes.

In our Topicalities section, curated by Markéta Držková, we provide an overview of news, publications and events. Among recent trends and innovations shaping the future of print and media technology, notable mentions include the European Union's Horizon-funded projects, such as GrapheneCore3, which builds on previous efforts in graphene technologies, and RealNano, which advances in-line digital nano-characterization technologies for flexible electronics. Moreover, we feature impressions from drupa 2024, the premier event in the print industry, which showcased a positive outlook with new partnerships, technological advancements, and a strong emphasis on automation and sustainability.

This issue also highlights a range of recently published books and dissertations relevant to our field. New books include 'Transfer Printing Technologies and Applications', edited by Changhong Cao and Yu Sun, which explores the fun-

damentals and applications of transfer printing for micro- and nanofabrication. Additionally, 'Robotics, Vision and Control' by Peter Corke, provides an in-depth discussion on robotics and machine vision using Python.

Several academic dissertations are also featured, including Hossein Golzar's dissertation titled 'Development of 3D Printable, Hydrophilic, and Rapidly Curing Silicone-Based Ink Formulations for Various Biomedical Applications'. This work facilitated progress in the 3D printing of elastic biomimetic structures, addressing challenges such as slow curing, low viscosity, and hydrophobicity by developing UV-curable, hydrophilic ink formulations with tunable mechanical and rheological features. Golzar's research also enabled the creation of biocompatible human articular cartilage substitutes with controlled stiffness, and demonstrated in-situ surgical applications as well as efficient fabrication of flexible microfluidic devices.

Another dissertation from David Tilve Martínez is titled '3D Printing and Electromagnetic Properties of Conductive Nanocarbon Based Composites'. This research focused on electrically conductive carbon nanocomposites with low mass fractions of conductive components, exploring their production using digital light processing and their potential as electromagnetic wave absorbing materials. Martínez's work involved developing novel transparent conductive acrylic resins based on graphene oxide and carbon nanotubes, optimizing the formulations and 3D printing processes, and presenting key findings on electrical anisotropy and dielectric properties.

Finally, Pauline Rothmann-Brumm's dissertation, which focuses on the visualization, analysis, and modeling of fluid dynamic pattern formation phenomena in the cylinder gap using machine learning, is an important contribution to the understanding of fluid dynamics in gravure printing. The work offers an exploration of how fluid dynamic patterns form during the printing process, and it is framed around improving process control for industrial applications. Her research bridges the gap between laboratory settings and industrial-scale printing, shedding light on key elements such as fluid splitting modes, pattern formation, and machine learning in predicting these phenomena.

As always, we express our deepest gratitude to the authors, reviewers, and editorial team for their dedication and invaluable contributions of great value. We also extend our thanks to our readers and the broader community for their continued engagement and support. Together, we advance the boundaries of print and media technology, fostering innovation and excellence.

Daniel Bohn

Editor-in-Chief

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