# FOREWORD

## Special Section on Enriched Multimedia — Media technologies opening up the future —

Media technologies have recently achieved remarkable development by data-driven approaches, like many other science and engineering research areas. Federated learning is a machine learning method that updates a model using distributed data. While it is considered practically effective, it may pose a potential danger to information leakage. The invited paper of this special section overviews this problem, referring many relevant research articles, and shows frameworks for preserving privacy in the federated learning. The topics of other selected papers are diverse but relate in some way to multimedia: projection-camera compensation, photographically visual information hiding, perceptual quality of textured 3D mesh, noisy labeling in machine learning, cover song identification. They are covering from fundamental research on assessing the quality of multimedia to advanced research on enhancing the quality of multimedia. Some of them resort more or less to artificial intelligence to achieve their performance. I hope that readers working in this research area will enjoy reading them. Those who are unfamiliar to this area would also be able to find a piece of useful knowledge from them.

This special section will provide valuable papers of high-quality researches in the field of protection, creation, enrichment and measurement of multimedia contents. The subject includes technologies for watermarking, information hiding, security, forensics and more. The editorial committee of this special section was based on the Enriched Multimedia (EMM) Technical Group of IEICE, founded in 2011, aiming to promote the research works related to the topics stated above. The editorial committee received a total of nine submissions including one invited paper. After a thorough and careful review process, the editorial committee has finally selected six papers: one invited paper, two regular papers and three letters. I would especially like to thank Prof. Masaaki Fujiyoshi of Tokyo Metropolitan University and Prof. Kotaro Sonoda of Nagasaki University for their excellent organization of the entire editing process of this special section as Guest Editors. I would also like to express great appreciation to the Editorial Committee Members. Their names and affiliations are listed below. Finally, I would like to take this opportunity to thank all the contributors and reviewers for their efforts dedicated to this research field.



Ryouichi Nishimura, Guest Editor-in-Chief

***Ryouichi Nishimura*** *(Senior Member)* was conferred a B.S. degree in 1993 and M.Sc. and Ph.D. degrees in 1995 and 1998, respectively, all from Tohoku University, Sendai Japan. During 1998–2000, he was a Visiting Researcher at ATR, Media Information and Communications Research Laboratories, Kyoto, Japan. He was a Research Associate at Tohoku University during 2000–2004, and then an Associate Professor until November 2006. He is currently a Research Manager at the National Institute of Information and Communications Technology (NICT), Sendai Japan, where he has been working mostly on acoustic signal processing and its applications to remote sensing of natural environment for disaster management.