Foreword

Special Issue on Recent Technologies and Applications
of Artificial Intelligence

This special issue on Recent Technologies and Applications of Artificial Intelligence addresses the new techniques and innovative applications of artificial intelligence (AI). The special issue includes the extended version of selected papers accepted to the 25th International Conference on Technologies and Applications of Artificial Intelligence (TAAI2020). TAAI2020 was sponsored mainly by the Taiwanese Association for Artificial Intelligence (TAAI) and hosted by the National Central University, Taoyuan City, Taiwan. All papers in this special issue went through additional reviews from at least three reviewers. Seven papers were accepted for publication in this special issue among all submissions. Here includes a brief introduction of these papers.

The paper "Monaural Instrument Sound Segregation by Stacked Recurrent Neural Network" presents a deep learning approach for extracting sounds of a target musical instrument from a mixture of instrumental sounds. The proposed approach uses the gated recurrent units in multiple recurrent neural networks to capture the temporal dynamics of instrumental sounds. The experiments show excellent results from a musical dataset collected from real instrumental music.

The paper "VAE+NN: Interpolation Composition by Direct Estimation of Encoded Vectors Against Linear Sampling of Latent Space" proposes a machine learning method to interpolate music segments using their previous and future soundtracks. The proposed method adds a fully connected network to a classic VAE encoder to learn a hidden encoding of the interpolation from VAE latten space. This fully connected network helps generate interpolation between two soundtracks with smooth changes of sound pitches and dynamics. The paper also presents the Hsinchu Interpolation MIDI Datasets, the first open dataset for music interpolation.

The paper "Exploring the Effect of Social Networking Service on Homestay Intention in Vietnam by GM(1, N) and Multiple Regression Analysis" presents an approach to investigate the influence of social network applications on homestay travel intentions in Vietnam. The proposed approach uses grey modeling and multiple regression analysis to study survey data from 220 individuals. The findings show interesting results about how various social network

functions (e.g., photo and video sharing) rank towards people's home- stay travel intention.

The paper "Hybrid Embedding of Multi-Behavior Network and Product-Content Knowledge Graph for Tourism Product Recommendation" presents a two-stage framework of a hybrid recommendation system for tourism product recommendation. The proposed framework simultaneously extracts knowledge from a user's browsing and ordering behaviors and generates knowledge graphs containing product information from metadata and text. The experiment shows that the proposed approach outperformed several state-of-the-art recommendation systems.

The paper "Question Generation for Reading Comprehension Test Complying with Types of Question" presents a method to generate reading comprehension questions, similar to the question types in language tests. The proposed approach can differentiate two unique types of questions used in language tests and uses separate models, based on the Transformer and seq2seq, to generate questions for each type. The experiment shows that the proposed method can effectively generate reading comprehension questions.

The paper "Improving Mini-Shogi Engine Using Self-play and Possibility of White's Advantage" proposes an approach of learning evaluation via self-play applied to Mini-Shogi. The proposed method and the resulting system won many competitions in 2020.

The paper "Lyrics Retrieval for Tourist Attractions Based on Shared Word-Embedding Vectors" presents a lyrics retrieval method for music recommendation at tourist attractions. The proposed method uses word embedding and information retrieval technologies to process lyrics corpus and tourist attraction reviews for making the recommendation. The experiment shows that participants show positive reactions to the recommended songs' lyrics.

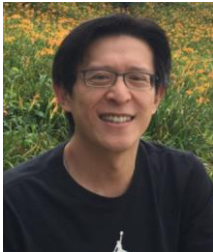## • Introduction to Guest Editors •

Yao-Yi Chiang, Ph.D., is an Associate Professor in Computer Science & Engineering at the University of Minnesota. Dr. Chiang received his Ph.D. degree in Computer Science from the University of Southern California, his bachelor's degree in Information Management from the National Taiwan University. His current research area is spatial artifi-

cial intelligence. He develops spatially enabled machine learning and data mining methods to discover useful insights from heterogeneous spatial data, including satellite imagery, scanned maps, natural language data, and time-series data. He was recently a visiting researcher at Google AI (NYC) and a machine learning consultant at the Spatial Computing Group at Facebook. Before USC, Dr. Chiang worked as a research scientist for Geosemble Technologies and Fetch Technologies in California. Geosemble Technologies was founded on a patent on geospatial data fusion techniques, and he was a co-inventor.

Po-Chyi Su was born in Taipei, Taiwan in 1973. He received the B.S. degree from the National Taiwan University, Taipei, Taiwan, in 1995 and the M.S. and Ph.D. degrees from the University of Southern California, Los Angeles, in 1998 and 2003, respectively, all in Electrical Engineering. He then joined Industrial Technology Research Institute, Hsinchu, Taiwan, as an engineer. Since August 2004, he has been with the Department of Computer Science and Information Engineering, National Central University, Taiwan. He is now a Professor and serving as the Dept. Chair. His research interests include multimedia security, compression and digital image/video processing.

Yasufumi Takama received the Dr. Eng. degree from the University of Tokyo in 1999. He was a JSPS (Japan Society for the Promotion of Science) Research Fellow from 1997 to 1999. From 1999 to 2002 he was a Research Associate at Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology in Japan. From 2002 to 2005, he was an Associate Professor at the Department of Electronic Systems and Engineering, Tokyo Metropolitan Institute of Technology, Tokyo, Japan. From 2005 to 2013, he was an Associate Professor at the Faculty of System Design, Tokyo Metropolitan University, Tokyo, Japan. Since 2014, he has been a Professor at the Faculty of System Design, Tokyo Metropolitan University, Tokyo, Japan. He also participated in PREST (Precursory Research for Embryonic Science and Technology), JST (Japan Science and Technology Corporation) from 2000 to 2003. His current research interests

include information visualization, data mining, and Web intelligence. He is a member of IEEE, ACM, IEICE (Institute of Electronics, Information and Communication Engineers), JSAI (Japanese Society of Artificial Intelligence), and IPSJ (Information Processing Society of Japan).

Chia-Hui Chang is a Full Professor at National Central University, Taiwan. She obtained her Ph.D. in Computer Science and Information Engineering from National Taiwan University, Taiwan in 1999. Her research interests focus on Information Extraction, Web Intelligence, Data Mining, Machine Learning and Computational Linguistics. Dr. Chang has published more than 80 papers at refereed conferences and journals including WWW, PAKDD, TKDE, IEEE Intelligent Systems, etc. In addition to serving as the president of Taiwan Association for Artificial Intelligence (2019-2020) and the president of the Association for Computational Linguistics and Chinese Language Processing (2019-2020). She is actively involved in many key events as conference organizers (e.g. AACL 2022, TAAI 2020, ROCLING 2014, ACML 2011, AI Forum 2010) or program committee (e.g. ACL, NAACL, ICDE, CIKM, PAKDD, AAAI, ICTIR, etc.).

Chang-Tie Lu received his Ph.D. in Computer Science from the University of Minnesota at Twin Cities. He joined Virginia Tech in 2002 and honored as a Distinguished Member by the Association for Computing Machinery in 2015. He has published more than 150 articles in top rated journals and conference proceedings.
He also edits a number of journals including ACM Transactions on Spatial Algorithms and Systems, where he serves as associate editor; GeoInformatica; Journal of Information Science and Engineering; and Data and Knowledge Engineering. Lu has served as general chair for many professional conferences including the IEEE International Conference on Tools with Artificial Intelligence; ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems; and the International Symposium on Spatial and Temporal Databases. He also served as secretary (2008-2011) and vice chair (2011-2014) of the ACM Special Interest Group on Spatial Information (ACM SIGSPATIAL).