PROCEEDINGS OF SPIE

Tenth International Conference on Signal Processing Systems

Kezhi Mao Xudong Jiang Editors

16–18 November 2018 Singapore, Singapore

Organized by Nanyang Technological University (Singapore)

Sponsored by International Association of Computer Science and Information Technology (Singapore)

Published by SPIE

Volume 11071

Proceedings of SPIE 0277-786X, V. 11071

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:

Author(s), 'Title of Paper," in Tenth International Conference on Signal Processing Systems, edited by Kezhi Mao, Xudong Jiang, Proceedings of SPIE Vol. 11071 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

ISSN: 0277-786X ISSN: 1996-756X (electronic)

ISBN: 9781510628359 ISBN: 9781510628366 (electronic)

Published by **SPIE** P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445 SPIE.org Copyright © 2019, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/19/\$18.00.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.



Paper Numbering: Proceedings of SPIE follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

• The first five digits correspond to the SPIE volume number.

• The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

- vii Authors
- ix Conference Committee
- xi Introduction

BIOSIGNAL DETECTION AND RECOGNITION

- 11071 02 Improved method of detecting bowel sounds for automatic long analysis under noisy environments [11071-11]
- 11071 03 Elapsed time analysis of vascular stenosis by shunt sound using dynamic time warping and self-organizing map [11071-14]
- 11071 04 Identification of heroin addict pulse signals based on multiwavelet packet transform and support vector machine [11071-38]
- 11071 05 Design of ultra-low sidelobe pulse compression filter for LFM signal [11071-4]
- 11071 06 Comparing nonlinear features extracted in EEMD for discriminating focal and non-focal EEG signals [11071-43]

DIGITAL SIGNAL ANALYSIS AND PROCESSING

- 11071 07Interception of LFM signal based on analog-to-information conversion [11071-12]
- 11071 08Is combining efficiency a proper performance evaluation criterion for antenna arraying?
[11071-19]
- 11071 09 A novel adaptive active noise control algorithm based on Tikhonov regularisation [11071-22]
- 11071 0A Bayesian parameter estimation of Euler-Bernoulli beams [11071-23]
- 11071 OB Principal polynomial features based broad learning system [11071-24]
- 11071 OC Frequency-doubling microwave signal generation with tunable phase shift based on DP-QPSK modulator [11071-26]
- 11071 0D Combination of GMM-UBM and DTW for voice command authentication system [11071-21]

11071 OE Joint code acquisition and Doppler shift estimation method for DSSS-MSK signal [11071-5]

11071 OF Deception jamming against Bi-ISAR imaging with VFM waveform via sub-Nyquist sampling [11071-41]

COMPUTER VISION AND IMAGE PROCESSING

11071 0G	Development of tracking system of moving specific person: Following welfare assist robot production [11071-18]
11071 OH	Digitizing physical documents using optical character recognition [11071-15]
11071 0	A comprehensive study in assembling deep convolutional neural networks for image classification [11071-2]
11071 OJ	An improvement approach for pixel-based illumination estimation algorithms [11071-27]
11071 OK	Applications of the human-computer interaction interface to MOBA mobile games [11071-6]
11071 OL	Pixel-level image fusion technique for multi-camera car-body painting defect images [11071-7]
11071 OM	Rate allocation with near-optimal rate-distortion performance for JPEG-LS [11071-32]
11071 ON	Generation method of 3D terrain object with VWorld data [11071-34]
11071 00	Identifying individual snow leopards from camera trap images [11071-36]
11071 OP	Local binary pattern based on image gradient for bark image classification [11071-39]
11071 0Q	What and where you have seen? Bag of Words-based local feature pooling for visual event detection [11071-42]
	MEDICAL IMAGE PROCESSING TECHNOLOGY AND METHOD
11071 OR	Tumor state evaluation method using texture analysis based on the information theory for PET images [11071-13]

- 11071 0S Quantitative assessment of cerebella ataxia through automated upper limb functional tests [11071-25]
- 11071 0T Extraction of numerical data from ophthalomological images and building a glaucoma prediction model [11071-28]

11071 OU	Evaluation of swallowing capacity based on esophageal and bolus movements by ultrasound video processing [11071-3]
11071 OV	Quantifying peristaltic activity of a small intestine based on tracking of digests in an abdominal B-mode movie [11071-8]
11071 OW	Prediction of autism spectrum disorder based on imbalanced resting-state fMRI data using clustering oversampling [11071-30]
11071 OX	Investigation of the effects of game difficulty on the engagement level of patient with brain injury during rehabilitation exercise [11071-35]

11071 OY Convolutional neural network based medical images integrity verification [11071-40]

COMMUNICATION AND INFORMATION SYSTEM

- 11071 0Z Radio individual identification based on semi-supervised rectangular network [11071-16]
- 1107110 Effect of channel mismatch on the performance of the space-time-polarization array processing for GNSS [11071-17]
- 1107111 Design of flexible and wearable antenna for wireless and satellite based IoT applications [11071-33]
- 1107112 Improving performance of secret key generation from wireless channel using filtering techniques [11071-37]