

DR. JINCHANG REN

BEng, MEng, DEng, PhD, SrM IEEE, FHEA

Senior Lecturer (Associate Professor), Deputy Director, Hyperspectral Imaging Centre,

Dept. of Electronic and Electrical Engineering, University of Strathclyde, Glasgow, G1 1XW, U.K.

Tel. +44(0)141 548 2384 Email: jinchang.ren@strath.ac.uk <http://personal.strath.ac.uk/jinchang.ren/>

<https://scholar.google.co.uk/citations?user=Vs9P-gAAAAJ>

Jinchang Ren received the PhD degree in Electronic Imaging and Media Communication from the University of Bradford, United Kingdom in 2009. Before that, he obtained M.Eng. in Image Processing and Pattern Recognition and B. Eng. in Computer Software from Northwestern Polytechnical University (NWPU), China, in 1997 and 1992, respectively. Before he joined Strathclyde in Dec. 2010, he had worked in several universities in U.K. as a research staff, including University of Bradford, University of Surrey, Kingston University and University of Abertay, Dundee. He is a Fellow of the Higher Education Academy, U.K.

Dr. Ren has published over 160 peer-reviewed research papers (90+ in journals, and 70+ cited by SCI with 20+ in IEEE journals/transactions) in prestigious international journals and conferences, including *IEEE Trans. Image Processing*, *IEEE Trans. Geoscience and Remote Sensing*, *IEEE Trans. Circuits & Systems for Video Technology*, *IEEE Trans. Multimedia*, *IEEE Trans. System Man and Cybernetics*, *IEEE Trans. Broadcasting*, etc. His research interests include: image processing and analysis (including medical image and remote sensing), multimodal data fusion and big data analytics, machine learning (include deep learning), saliency detection; hyperspectral imaging; computer vision; human-computer interaction; visual surveillance; archive restoration; motion estimation et al. Currently, he sits in the editorial board of five international journals, including Journal of the Franklin Institute, IET Image Processing, Multidimensional Signal Processing and Systems with Springer, International Journal of Pattern Recognition and Artificial Intelligence, and Big Data Analytics. He is also the chair/co-chair for a number of international conferences/workshops, including EUSIPCO (2015/2017), IEEE Big Data (2015), HSI conference (2012, 2014, 2016), IEEE Smart Data (2017) and ICIP (2017).

Major Projects Involved

1. FiberEUSe: EU H2020, 8 million Euros, June 2017-June 2021
2. Hyperspectral imaging for inspection of packed nuclear waste, funded by NNL, £187k (Phase 1), 09/18-11/19
3. Precision Agriculture of livestock farming via multimodal fusion and big data mining, two Innovate UK funded KTP projects, £450k, May 2014-July 2020
4. Advanced image processing for sea ice image analysis in Arctic, NERC funded, £180k, 02/14-10/15
5. Hyperspectral imaging for food and drink as well as pharmaceutical and remote sensing applications, several projects funded by Quality Meat of Scotland, Johnson and Johnson, Innovent Technology Ltd, ARGANS, GSK, Fraunhofer, et al, over £450k, Oct. 2011-Feb 2017.
6. MICIE: EU FP7 Project, 2m Euros, Oct. 2008-Sept 2011
7. HERMES: Cognitive care and guidance for active aging, EU FP7 Project, 3m Euros, 01/08-12/10
8. LIVE: Live Staging of Media Events, EU FP6 Project, 7m Euros, Jan. 2006-June 2009

PhD Supervision as 1st Supervisor

1. Jaime Zabalza (10/12-07/15), "Advanced techniques for hyperspectral imaging analysis and classifications," published 10+ journal papers, and awarded best PhD thesis by IET Image and Vision Section in Dec. 2016 (only one in UK)

2. Tong Qiao (10/12-01/16), "Hyperspectral imaging data analysis and dimensionality reduction," published 5 journal papers and was awarded one best paper and one best poster award
3. Yijun Yan (12/13-present), writing up, "Saliency detection for object detection, tracking and retrieval," published 4 journal papers, to complete by Sept 2018
4. Julius Tschannerl (03/16-), "Band selection in hyperspectral imaging," published 3 conference papers and 2 journal papers
5. Xiaoquan Li (10/16-), "Music signal analysis and understanding," published one conference paper with one journal paper under preparation
6. He Sun (03/17-), "Multimodal data fusion for image segmentation and object detection," with two conference papers published and one journal paper under preparation
7. Yukang Han (10/17-present), "Cloud-enabled big data for precision agriculture"
8. Ha Viet Khanh, (10/17-present), "Deep learning for image super-resolution".

PhD/EngD Supervision as 2nd supervisor

1. Alan William Boyd (10/10-09/14), PhD "Biomedical signal processing"
2. Timothy Kelman (10/10-01/16) PhD, "Hyperspectral Imaging"
3. Rui Gongzhang (12/11-04/16) PhD, "Adaptive Frequency and Spatial Diversity Processing for Ultrasonic Non-Destructive Evaluation (NDE) of Difficult Materials"
4. Siti Salwa Binti Md Noor (03/15-present), PhD, "Image processing for eye disease," published several conference/journal papers.
5. Gabriel Reines March (10/15-present), "Multi-modality imagery for PET scans", EngD
6. Dina Ahmed Ragab (01/16-present), "Multimodal image processing and deep learning for breast cancer detection", PhD
7. Zhenyu Fang (10/16-present), PhD, "Advanced video analytics for asset management using deep learning"

Selected Journal Publications (* for corresponding authorship, those highlighted in green are deep learning related papers)

- 1)Y. Yan, **J. Ren***, et al, "Unsupervised Image Saliency Detection with Gestalt-laws Guided Optimization and Visual Attention Based Refinement", **Pattern Recognition**, In press, 2018
- 2)T. Qiao, Z. Yang, **J. Ren***, et al, "Joint bilateral filtering and spectral similarity-based sparse representation: A generic framework for effective feature extraction and data classification in hyperspectral imaging", [10.1016/j.patcog.2017.10.008](https://doi.org/10.1016/j.patcog.2017.10.008), **Pattern Recognition**, In press, 2018
- 3) M. Sun, **J. Ren**, et al, "A Deep-Learning Based Feature Hybrid Framework for Spatiotemporal Saliency Detection inside Videos," **Neurocomputing**, 2018
- 4)T. Qiao, **J. Ren***, et al, "Effective denoising and classification of hyperspectral images using curvelet transform and singular spectrum analysis", [10.1109/TGRS.2016.2598065](https://doi.org/10.1109/TGRS.2016.2598065), **IEEE Trans. Geoscience and Remote Sensing**, 55(1): 119-133, 2017
- 5)G. Sun, P. Ma, **J. Ren***, et al, "A stability constrained adaptive alpha for gravitational search algorithm," **Knowledge-Based Systems**, In Press, 2018
- 6)A. Zhang, G. Sun, **J. Ren**, et al, "A dynamic neighbourhood learning-based gravitational search algorithm", [10.1109/TCYB.2016.2641986](https://doi.org/10.1109/TCYB.2016.2641986), **IEEE Trans. Cybernetics**, 48(1): 436-447, 2018
- 7)Y. Yan, **J. Ren***, et al, "Cognitive Fusion of Thermal and Visible Imagery for Effective Detection and Tracking of Pedestrians in Videos", **Cognitive Computation**, 10(1), 2018

- 8) SSM Noor, K Michael, S Marshall, J Ren, "Hyperspectral Image Enhancement and Mixture Deep-Learning Classification of Corneal Epithelium Injuries," **Sensors**, 17(11), 2017 (medical imaging)
- 9) J. Zabalza, **J. Ren***, et al, "Novel segmented stacked autoencoder for effective dimensionality reduction and feature extraction in hyperspectral imaging", [10.1016/j.neucom.2015.11.044](https://doi.org/10.1016/j.neucom.2015.11.044), **Neurocomputing**, 185: 1-10, 2016
- 10) B. Rafert, J. Zabalza, S. Marshall, **J. Ren**, "Singular spectrum analysis: A note on data processing for Fourier transform hyperspectral imagers," **Applied Spectroscopy (OSA)**, [10.1177/0003702816641420](https://doi.org/10.1177/0003702816641420), 70(10): 1-7, 2016
- 11) R. Bao, J. Xia, M. Dalla Mura, P. Du, J. Chanussot, **J. Ren**, "Combining morphological attributes profiles via an ensemble method for hyperspectral image classification," **IEEE Geoscience and Remote Sensing Letters**, 13(3), 2016
- 12) L. Fang, S. Li, W. Duan, **J. Ren**, etc, "Classification of hyperspectral images by exploiting spectral-spatial information of superpixel via multiple kernels", [10.1109/TGRS.2015.2445767](https://doi.org/10.1109/TGRS.2015.2445767), **IEEE Trans. Geoscience and Remote Sensing**, 53(12):6663-74, Dec 2015
- 13) J. Zabalza, **J. Ren***, etc., "Novel 2D singular spectrum analysis for effective feature extraction and data classification in hyperspectral imaging", [10.1109/TGRS.2015.2398468](https://doi.org/10.1109/TGRS.2015.2398468), **IEEE Trans. Geoscience and Remote Sensing**, 53(8): 4418-33, 2015
- 14) J. Zabalza, **J. Ren***, etc, "Fast implementation of singular spectrum analysis for effective feature extraction in hyperspectral imaging", [10.1109/JSTARS.2014.2375932](https://doi.org/10.1109/JSTARS.2014.2375932), **IEEE Journal of Selected Topics in Earth Observation and Remote Sensing**, 2015
- 15) G. Cheng, J. Han, L. Guo, Z. Liu, S. Bu and **J. Ren**, "Effective and efficient object-oriented land-use classification using VHR remote sensing images," [10.1109/TGRS.2015.2393857](https://doi.org/10.1109/TGRS.2015.2393857), **IEEE Trans. Geoscience and Remote Sensing**, 53(8): 4238-49, 2015
- 16) J. Han, D. Zhang, G. Cheng, L. Guo, **J. Ren**, "Object detection in optical remote sensing images based on weakly supervised learning and high-level feature learning", [10.1109/TGRS.2014.2374218](https://doi.org/10.1109/TGRS.2014.2374218), **IEEE Trans. Geoscience and Remote Sensing**, 2015
- 17) J. Han, D. Zhang, X. Hu, L. Guo, **J. Ren**, etc, "Background Prior-Based Salient Object Detection via Deep Reconstruction Residual," [10.1109/TCSVT.2014.2381471](https://doi.org/10.1109/TCSVT.2014.2381471), **IEEE Trans. Circuits Systems for Video Tech.**, 25(8):1309-1321, 2015
- 18) M. Sun, D. Zhang, Z. Wang, **J. Ren**, et al, "What's Wrong with Murals at Mogao Grottoes: a Near-Infrared Hyperspectral Image Method," **Scientific Reports (Nature)**, [10.1038/srep1437](https://doi.org/10.1038/srep1437), 2015
- 19) **J. Ren***, et al, "Effective Feature Extraction and Data Reduction in Remote Sensing Using Hyperspectral Imaging", [10.1109/MSP.2014.2312071](https://doi.org/10.1109/MSP.2014.2312071), **IEEE Signal Processing Magazine**, 31(4): 149-154, 2014
- 20) J. Zabalza, C. Clements, G. Di Caterina, **J. Ren**, etc, "Robust PCA micro-doppler classification using SVM on embedded systems," [10.1109/TAES.2014.130082](https://doi.org/10.1109/TAES.2014.130082), **IEEE Trans. Aerospace & Electronic Systems**, 50(3): 2304-10, 2014
- 21) J. Zabalza, **J. Ren***, etc, "Novel Folded-PCA for Improved Feature Extraction and Data Reduction with Hyperspectral Imaging and SAR in Remote Sensing", [10.1016/j.isprsjprs.2014.04.006](https://doi.org/10.1016/j.isprsjprs.2014.04.006), **ISPRS J. Photogrammetry and Remote Sensing**, 93(7):112-122, 2014.
- 22) X. Li, **J. Ren***, et al, "Novel multivariate vector quantization for effective compression of hyperspectral imagery," **Optics Communication**, 332: 192-200, [10.1016/j.optcom.2014.07.011](https://doi.org/10.1016/j.optcom.2014.07.011), Dec 2014
- 23) J. Zabalza, **J. Ren***, et al, *Structured Covariance PCA for Real-time Onsite Feature Extraction and Dimensionality Reduction in Hyperspectral Imaging*, **Applied Optics**, 53(20), [10.1364/AO.53.004440](https://doi.org/10.1364/AO.53.004440), 2014
- 24) T. Qiao, **J. Ren***, et al, *Effective compression of hyperspectral imagery for land cover analysis in remote sensing applications*, **Int. Journal of Remote Sensing**, 35(20): 7316-7337, [10.1080/01431161.2014.968682](https://doi.org/10.1080/01431161.2014.968682), 2014
- 25) J. Zabalza, **J. Ren***, et al, *Singular Spectrum Analysis for Effective Feature Extraction in Hyperspectral Imaging*, **IEEE Geoscience and Remote Sensing Letters**, 11(11):1886–1890, [10.1109/LGRS.2014.2312754](https://doi.org/10.1109/LGRS.2014.2312754), 2014

- 26) X. Zeng, **J. Ren***, et al, *Copulas for Statistical Signal Processing (Part I): Extensions and Generalization*, **Signal Processing**, [10.1016/j.sigpro.2013.07.009](https://doi.org/10.1016/j.sigpro.2013.07.009), 94: 691-702, 2014
- 27) C. Zhao, X. Li, **J. Ren**, and S. Marshall, "Improved sparse representation using adaptive spatial support for effective target detection in hyperspectral imagery", [10.1080/01431161.2013.845924](https://doi.org/10.1080/01431161.2013.845924), **Int. J. Remote Sensing**, 34(24), 2013
- 28) **J. Ren***, "ANN vs. SVM: Which one performs better in classification of MCCs in mammogram imaging", [10.1016/j.knosys.2011.07.016](https://doi.org/10.1016/j.knosys.2011.07.016), **Knowledge-Based Systems**, 2012. (medical imaging)
- 29) J. Jiang, ..., **J. Ren**, etc, "LIVE: An Integrated Production and Feedback System for Intelligent and Interactive TV Broadcasting", [10.1109/TBC.2011.2158252](https://doi.org/10.1109/TBC.2011.2158252), **IEEE Trans. Broadcasting**, 57(3): 646-661, Sept. 2011
- 30) Y. Feng, **J. Ren***, and J. Jiang, "Object-Based 2D-to-3D Video Conversion for Effective Stereoscopic Content Generation in 3D-TV Applications", [10.1109/TBC.2011.2131030](https://doi.org/10.1109/TBC.2011.2131030), **IEEE Trans. Broadcasting**, 57(2): 500-509, 2011
- 31) **J. Ren***, D Wang and J. Jiang, "Effective recognition of MCCs in mammograms using an improved neural classifier", **Engineering Applications of Artificial Intelligence**, 24 (4), 638-645, 2011. (medical imaging)
- 32) J. H. AlKhateeb, O. Pauplin, **J. Ren**, J. Jiang, "Performance of hidden Markov model and dynamic Bayesian network classifiers on handwritten Arabic word recognition", [10.1016/j.knosys.2011.02.008](https://doi.org/10.1016/j.knosys.2011.02.008), **Knowledge-Based Systems**, 2011.
- 33) **J. Ren***, J. Jiang and T. Vlachos, "High-Accuracy Sub-Pixel Motion Estimation From Noisy Images in Fourier Domain", [10.1109/TIP.2009.2039056](https://doi.org/10.1109/TIP.2009.2039056), **IEEE Trans. Image Processing**, 19(5): 1379-1384, 2010.
- 34) **J. Ren*** and J. Jiang, "Hierarchical Modeling and Adaptive Clustering for Real-Time Summarization of Rush Videos", [10.1109/TMM.2009.2021782](https://doi.org/10.1109/TMM.2009.2021782), **IEEE Trans. Multimedia**, 11(5): 906-917, Aug. 2009.
- 35) **J. Ren***, J. Orwell, G. Jones, and M. Xu, "Tracking the soccer ball using multiple fixed cameras", [10.1016/j.cviu.2008.01.007](https://doi.org/10.1016/j.cviu.2008.01.007), **Computer Vision and Image Understanding**, 113(5): 633-42, 2009.
- 36) **J. Ren***, J. Jiang and J. Chen, "Shot Boundary Detection in MPEG Videos Using Local and Global Indicators", [10.1109/TCSVT.2009.2022707](https://doi.org/10.1109/TCSVT.2009.2022707), **IEEE Trans. Circuits and Systems for Video Technology**, pp. 1234-1238, Aug. 2009.
- 37) **J. Ren***, J. Orwell, G. Jones, and M. Xu, "Real-Time Modeling of 3-D Soccer Ball Trajectories From Multiple Fixed Cameras" [10.1109/TCSVT.2008.918276](https://doi.org/10.1109/TCSVT.2008.918276), **IEEE Trans Circuits and Systems for Video Technology**, 350-362, 2008.
- 38) **J. Ren*** and T. Vlachos, "Segmentation-Assisted Detection of Dirt Impairments in Archived Film Sequences", [10.1109/TSMCB.2006.886169](https://doi.org/10.1109/TSMCB.2006.886169), **IEEE Trans. System, Man and Cybernetics (Part B)**, 37(2): 463-470, 2007.

PhD Examination

1. Dyah Retno Panuju, University of New South Wales, Australia, 2019
2. Yi Zhou, University of East Anglia, March 20, 2018
3. Bo Xiao, University of Strathclyde, May 10, 2016
4. Ahmad Faisal Amri Bin Abidin, University of Stirling, April 29, 2016
5. Mark Jenkins, Glasgow Caledonian University, Jan 29, 2016

Honours/Awards

1. Former PhD student, Jaime Zabalza was awarded the Best PhD thesis in Dec 2016 from IET (only one in UK each year).
2. In SIPRA workshop in June 2015 in Stirling, UK, PhD student T. Qiao was awarded the best Poster.
3. In SensorNet 2015, the paper "*Effective SAR image segmentation and sea-ice floe distribution analysis via kernel graph cuts based feature extraction and fusion*" was awarded the best paper.
4. In UCMMT 2013 in Rome, the paper from his PhD student T Qiao, "Effective Compression of Hyperspectral Imagery Using Three Dimensional Discrete Cosine Transform" was awarded the best student paper.