

Curriculum Vitae



Zhihui Wang

(1982.10.17-)

CONTACT INFORMATION	Software School, Dalian University of Technology, Dalian 116620, China	Phone: +86-15942638012 Email: wangzhihui1017@gmail.com
EDUCATION	Ph. D., Software School, Dalian University of Technology, Dalian, China <ul style="list-style-type: none">Research: <i>Information security, Image data hiding, Image processing</i> M. S., Software School, Dalian University of Technology, Dalian, China <ul style="list-style-type: none">Research: <i>Information security, Grid computing, Certificate authentication</i> B. S., Software School, Northeastern University, Shenyang, China	Mar. 2007 – Jun. 2010 Sep. 2004 – Jan. 2007 Sep. 2000 – Jul. 2004
EMPLOYMENT HISTORY	Digital Multimedia Technology Department, Software School, Dalian University of Technology, Dalian, China Associate Professor Research: <i>Information security, Steganography, Image processing</i> School of Computing, University of Singapore, Singapore Visiting Scholar, <ul style="list-style-type: none">Host Professor: Prof. Ling Tok Wang Research: <i>Information security, Database information security</i> Digital Multimedia Technology Department, Software School, Dalian University of Technology, Dalian, China Lecturer Research: <i>Information security, Steganography, Image processing</i> School of Mathematical Sciences, Dalian University of Technology, Dalian, China Post Doc. <ul style="list-style-type: none">Research: <i>Information security, Steganography, Image processing</i> Electrical Engineering, University of Washington, Seattle, WA, USA Visiting Scholar, <ul style="list-style-type: none">Host Professor: Prof. Ming-Ting Sun Research: <i>Information security, Reversible data hiding, Gesture recognition</i> Department of Information Engineering and Computer Science, Fengchia University, Taichung, Taiwan Research Assistant,<ul style="list-style-type: none">Supervisor: Prof. Chin-Chen Chang.Research: In research of reversible and removable information hiding techniques for digital images. (Program of National Science Council of Taiwan, NO. NSC 97-2221-E-035-084-MY3)	Dec. 2013 – Now Sep. 2013 – Nov. 2013 Oct. 2012 – Dec. 2013 Aug. 2010 – Oct. 2012 Nov. 2010 – Nov. 2011 Oct. 2008 – Jan. 2010
INTERNS AND	Dalian University of Technology, Dalian, China	Sep. 2006 – Oct. 2008

RESEARCH
EXPERIENCE

Research/Teaching Assistant

- Supervisor: Prof. Ming-Chu Li.
- TA for network security and computer network classes.
- Research: In research of secure authentication mechanism of multi-user collaboration in grid (Major Program of National Natural Science Foundation of China, NO. 90412007), Nov. 2004 – Dec. 2006
- Research: In research and implementation of intrusion detection systems in large scale networks (Science and Technology Program of Dalian City), Oct. 2005 – Jun. 2008
- Research: In research of connected factors and its application in public key cryptography (Program of National Natural Science Foundation of China, NO. 60673046) Mar. 2007.3 – Jun. 2008

HOST
PROJECTS

- Title: Verifiable and restorable secret image sharing.
- Supported by the National Science Foundation of China (No. 61201385) Jan. 2012 – Dec. 2015
- Title: A study on information hiding techniques for various types of digital images. Supported by the Postdoctoral Science Foundation of China (No. 20110491529) May. 2011 – May. 2012
- Title: Information hiding techniques for digital image compression mechanisms. Supported by the Fundamental Research Funds for the Central Universities (No. 1600-852013) Oct. 2010 – Jun. 2012

SERVICES

- Reviewer for IEEE Transactions on Information Forensics and Security
- Reviewer for Information Sciences
- Reviewer for KSII Transactions on Internet and Information Systems
- Reviewer for International Journal of Image Processing
- Reviewer for Imaging Science Journal
- Editorial board member for International Journal of Network Security (May 2012- Dec. 2016)
- Guest editor for Journal of Electrical and Computer Engineering (Special issue: Medical security and privacy)
- Program committee member for The International Conference on Asian Language Processing (IALP 2012), Nov. 13-15, 2012 - Hanoi, Vietnam
- Program committee member for The Fourth International Conference on Emerging Network Intelligence (EMERGING 2012), Sep. 23-28, 2012 - Barcelona, Spain
- Program committee member for The 14th International Conference on Information and Communication Security (ICICS 2012), Oct. 29-31, 2012 - Hong Kong

PUBLICATIONS
JOURNAL/BOOK
CHAPTERS

Wang, Z. H., Chen, K. N., Chang, C. C. and Qin, C., Sharing a Large Secret Image Using Meaningful Shadows Based on VQ and Inpainting, *KSII Transactions on Internet and Information Systems*, Dec.2015, Vol. 9 Issue 12, pp. 5170

Wang, Z. H., Zhuang, X., Chang, C. C.*, Qin, C. and Yan, Z., "Reversible Data Hiding Based on Geometric Structure of Pixel Groups," *International Journal of Network Security*, Vol. 18, No. 1, pp. 52-59, 2016-01.

Wang, Z. H., Chang, C. C.*, Huang, Y. H., Yang, H. R. and Horng, G., "Embedding Information in Chinese Calligraphy Images," *Journal of Computers-Special Issue on Mobile Computing in Digital Forensics, Security and Privacy*, Vol. 26, No. 2, pp. 11-18, 2015-07.

Wang, Z. H., Wu, Q., Chang, C. C.* and Luo, Z. C., "A Novel Information Hiding Scheme Based on Line Segments," *J. of Information Hiding and Multimedia Signal Processing*, Vol. 6, No. 4, pp. 674-685, 2015-07.

Wang, Z. H., Huang, Y. H., Chang, C. C.*, Yang, H. R., "Reversible Data Hiding for High Quality Using Secret Data Transformation Strategy," *J. of Information Hiding and Multimedia Signal Processing*, Vol. 6, No. 4, pp. 629-638, 2015-07.

Wang, Z. H., Lee, C. F. and Chang, C. Y., "Histogram-shifting-imitated Reversible Data Hiding," *Journal of Systems and Software*, 2013, Vol. 86, No. 2, pp. 315-323

Wang, Z. H., Yang, H. R., Cheng, T. F. and Chang, C. C.*, "A High- performance Reversible Data-hiding Scheme for LZW Codes," *Journal of Systems and Software*

Wang, Z. H., Pizzolatti, M. S. and Chang, C. C., "Reversible Visual Secret Sharing Based on Random Grids for Two-image Encryption," *International Journal of Innovative Computing, Information and Control (IJICIC)*, 2013, Vol. 9, No. 4, pp. 1691-1701

Wang, Z. H., Chang, C. C., Lin, C. C. and Li, M. C., "A Reversible Information Hiding Scheme Using Left-Right and Up-Down Chinese Character Representation," *Journal of Systems and Software*, 2009, 82(8): 1362-1369.

Wang, Z. H., Chang, C. C., Tu, H. N. and Li, M. C., "Reversible Data Hiding for VQ Indices Using Prediction Errors," *International Journal of Innovative Computing, Information and Control (IJICIC)*, 2011, 7(3): 1375-1385.

Wang, Z. H., Chang, C. C. and Li, M. C., "Optimizing Least-significant-bit Substitution Using Cat Swarm Optimization Strategy," *Information Sciences*, 2012, 192(9): 98-108.

Wang, Z. H., Chang, C. C., Chen, K. N. and Li, M. C., "An Encoding Method for Both Image Compression and Data Lossless Information Hiding," *Journal of Systems and Software*, 2010, 83(11): 2073-2082.

Wang, Z. H., Pizzolatti, M. S. and Chang, C. C.*, "Reversible Visual Secret Sharing Based on Random Grids for Two-Image Encryption," to appear in *International Journal of Innovative Computing, Information and Control (IJICIC)*.

Wang, Z. H., Lee, C. F.* and Chang, C. Y., "Histogram-Shifting-Imitated Reversible Data Hiding," to appear in *Journal of Systems and Software*.

Lee, C. Y., **Wang, Z. H.**, Harn, L. and Chang, C. C., "Secure Key Transfer Protocol Based on Secret Sharing for Group Communications," *IEICE Transactions on Information and Systems*, Vol. E94-D, No.11, Nov. 2011, pp. 2069-2076.

Qin, C., **Wang, Z. H.**, Chang, C. C. and Chen, K. N., "Reversible Data Hiding Scheme Based on Image Inpainting," *Fundamenta Informaticae*, Vol. 120, No.1, 2011, pp. 2069-2076.

Feng, B., **Wang, Z. H.** *, Wang, D., Chang, C. Y. and Li, M. C., "A Novel, Reversible, Chinese Text Information Hiding Scheme Based on Lookalike Traditional and Simplified Chinese Characters," to appear in *KSII Transactions on Internet and Information Systems*.

Guo, C., Chang, C. C. and **Wang, Z. H.***, "A New Data Hiding Scheme Based on DNA Sequence," to appear in *International Journal of Innovative Computing, Information and Control (IJICIC)*.

Rao, Y. B., Hou, L., **Wang, Z. H.** and Chen, L. T., "Illumination-based Nighttime Video Contrast Enhancement Using Genetic Algorithm," to appear in *Multimedia Tools and Applications*.

Wang, Z. H., Chang, C. C., Chen, K. N. and Li, M. C., "A Modification of VQ Index Table for Data Embedding and Lossless Indices Recovery," *Journal of Computers*, Vol. 20, No. 4, Jan. 2010. pp. 42-52.

Wang, Z. H., Chang, C. C., Li, M. C. and Lu, T. C., "A Simple Image Encoding Method with Data Lossless Information Hiding," *Journal of Networks*, Vol. 6, No. 3, Mar. 2011, pp. 400-407.

Wang, Z. H., Chang, C. C. and Pizzolatti, M. S., "Block Mining Vector Quantization," to appear in *Advances in Information Sciences and Service Sciences*.

Wang, Z. H., Chang, C. C.* and Lin, T. Y., "An Efficient Information Hiding Scheme Based on Tree Structure Vector Quantization," to appear in *Journal of Electronic Science and Technology*.

Wang, Z. H., Guo, C. and Chang, C. C., "A Novel (n, n) Secret Image Sharing Scheme Based on Sudoku," to appear in *Journal of Electronic Science and Technology*.

Guo, C., **Wang, Z. H.**, Chang, C. C. and Qin, C., "A Secret Image Sharing Scheme with High Quality Shadows Based on Exploiting Modification Direction," *Journal of Multimedia*, Vol. 6, No. 4, Aug. 2011, pp. 341-348.

Cui, S. Y., **Wang, Z. H.**, Chang, C. C. and Li, M. C., "A Data Hiding Scheme Based on Voronoi Diagram," *Journal of Computers*, Vol. 22, No. 4, Jan. 2012, pp. 47-58.

Chang, C. C., Lin, P. Y., **Wang, Z. H.** and Li, M. C., (2010): "A Sudoku-based Secret Image Sharing Scheme with Reversibility," *Journal of Communications*, Vol. 5, No. 1, Jan. 2010, pp. 5-12.

Chang, C. C., Chen, K. N., **Wang, Z. H.** and Li, M. C., "A Technique of Embedding Digital Data in an Image Compression Code Reversibly," to appear in *Journal of Software*.

Chang, C. C., Chen, K. N. and **Wang, Z. H.**, "Hiding Secret Information in Modified Locally Adaptive Data Compression Code," *ICIC Express Letters*, Vol. 4, No. 5(B), Oct. 2010, pp. 1887-1892.

Wang, Z. H., Kieu, T. D., Chang, C. C. and Li, M. C., "A Novel Information Concealing Method Based on Exploiting Modification Direction," *Journal of Information Hiding and Multimedia Signal Processin*, Vol. 1, No. 1, Jan. 2010, pp. 1-9.

Wang, Z. H., Chang, C. C., Tu, H. N. and Li, M. C., "Sharing a Secret Image in Binary Images with Verification," *Journal of Information Hiding and Multimedia Signal Processing*, Vol. 2, No. 1, Jan. 2011, pp. 78-90.

Wang, Z. H., Chang, C. C. and Tsai, P. Y., "Hiding Secret Data in an Image Using Codeword Imitation," *Journal of Information Processing Systems*, Vol. 6, No. 4, Dec. 2010, pp. 435-452.

Wang, Z. H., Chang, C. C. and Segalla Pizzolatti, M., "Efficient and Meaningful Multi-secret Image Sharing Based on Block Imitation," to appear in *International Journal of Engineering and Industries (IJEI)*.

Kieu, T. D., **Wang, Z. H.**, Chang, C. C. and Li, M. C., "A Sudoku Based Wet Paper Hiding Scheme," *The International Journal of Smart Home*, Vol. 3, No. 2, Apr. 2009, pp. 1-12.

Cheng, T. F., Chang, C. C. and **Wang, Z. H.**, "A Secure Protocol for Three-Party Authenticated Key Exchange with Provable Belief," *International Journal of Information Sciences and Computer Engineering (IJISCE)*, Vol. 1, No. 1, Feb. 2010, pp. 77-87.

Chang, C. C., Lee, C. Y., Chen, C. C. and **Wang, Z. H.**, "A Data-hiding Scheme Based on One-way Hash Function," *International Journal of Multimedia Intelligence and Security (IJMIS)*, Vol. 1, No. 3, 2010, pp. 285-297.

PUBLICATIONS
CONFERENCE
PAPERS

Wang, Z. H., Ai Chen, Jianjun Li, Ye Yao: 1D Barcode Region Detection Based on Hough Transform and Support Vector Machine, *THE 22ND INTERNATIONAL CONFERENCE ON MULTIMEDIA MODELLING*, MMM 2016, Miami, USA.

Li, J., Wu, N. **Wang, Z. H.***, Du, J., Fu, X. and Chang, C. C., "Enhancement of the Quality of Images Based on Multiple Threshold Segmentation and Adaptive Gamma Correction," *The Eleventh International Conference on Intelligent Information Hiding and Multimedia Signal Processing (IIHMSP 2015)*, pp. 93-96, 2015-09. Adelaide, Australia.

Li, J., Meng, L. **Wang, Z. H.***, Du, J., Fu, X. and Chang, C. C., "A Modified IMM-CSRF Algorithm for Passive Tracking of Maneuvering Targets," *The Eleventh International Conference on Intelligent Information Hiding and Multimedia Signal Processing (IIHMSP 2015)*, pp. 89-92, 2015-09. Adelaide, Australia.

Wang, Z. H., Li, M. C., Chen, M. H. and Chang, C. C., "A New Intelligent Authorization Agent Model in Grid," *Proceedings of the Ninth International Conference on Hybrid Intelligent System (HIS 2009)*, Shenyang, China, 2009, 1: 394-398.

Wang, Z. H., Li, M. C. and Chang, C. C., "An Improvement of Proxy Certificate Chain Authentication Scheme Based on Proxy Certificate Trust List," *Proceedings of the Workshop of Consumer Electronics*, Taichung, Taiwan, 2009, 191-197.

Wang, Z. H., Chang, C. C., Chen, Y. H. and Li, M. C., "High Payload Reversible Data Embedding Scheme Suitable for VQ Compressed Smooth Images Using Index Lookup," *Proceedings of the Second International Workshop on Multimedia, Information Privacy and Intelligent Computing Systems (MPIS 2009)*, Jeju island, Korea, 2009, 430-433.

Wang, Z. H., Kieu, T. D., Chang, C. C. and Li, M. C., "Emoticon-based Text Steganography in Chat," *Proceedings of the Asia-Pacific Conference on Computational Intelligence and Industrial Applications (PACIIA 2009)*, Wuhan, China, 2009, II: 457-460.

Wang, Z. H., Chang, C. Y. and Tsai, P. W., "A Reversible Data Embedding Scheme Based on Hash Functions for VQ Index Tables," *Proceedings of the Fourth International Conference on Genetic and Evolutionary Computing (ICGEC2010)*, Shenzhen, China, 2010, 646-649.

Wang, Z. H., Chang, C. C., Li, M. C. and Lu, T. C., "A Simple Image Encoding Method with Data Lossless Information Hiding," *Proceedings of the 4th International Conference on Ubiquitous Information Management and Communication (ICUIMC 2010)*, SKKU, Suwon, Korea, Jan. 2010. pp. 305-310.

Wang, Z. H., Chang, C. C. and Segalla Pizzolatti, M., "A New Reversible Secret Image Sharing Scheme Based on Multi-Level Encoding," *Proceedings of International Conference on Internet Computing and Information Services (ICICIS 2011)*, Hong Kong, China, Sep. 2011. pp. 607-612.

Wang, Z. H., Lin, T. Y., Chang, C. C.* and Lin, C. C., "A Novel Distortion-free Data Hiding Scheme for High Dynamic Range Images," To appear in Proceedings of The 4th International Conference on Digital Home(ICDH2012).

Wang, Z. H., Chang, C. C.*, Li, M. L. and Cui, S.Y., "Multi-Dimensional and Multi-Level Histogram-Shifting-Imitated Reversible Data Hiding Scheme," To appear in International Continnence Society (ICS2012).

Kieu, T. D., **Wang, Z. H.**, Chang, C. C. and Li, M. C., "Sharing Secrets and Reversibly Reconstructing the Cover Image Using Two Meaningful Shadows," *Proceedings of The Fifth International Conference on Intelligent Information Hiding and Multimedia Signal Processing (IIHMSP 2009)*, Kyoto, Japan, 2009, 324-327.

Chang, C. C., **Wang, Z. H.**, Chen, Y. H. and Li, M. C., "A Novel Reversible Data Embedding Scheme Using Dissimilar Pairing for Palette-based Images," *Proceedings of Intelligent Ubiquitous Computing and Education (IUCE 2009)*, Chengdu, China, 2009, 569-572.

Chang, C. C., **Wang, Z. H.** and Yin, Z. X., "A Simple and Efficient Edge Detection Method," *Proceedings of 2009 Third Symposium on Intelligent Information Technology Application (IITA 2009)*, Nanchang, China, 2009, III: 545-548.

Chang, C.C., **Wang, Z. H.** and Yin, Z. X., "An Ingenious Data Hiding Scheme for Color Retinal Images," *Proceedings of the 2nd International Symposium Computer Science and Computational Technology (ISCST 2009)*, Huangshan, China, 2009, 1-6.

Chang, C. C., **Wang, Z. H.**, Chen, Y.H. and Li, M. C., "A Wet Image Data Hiding Scheme Based on Coordinate Modifications," *Proceedings of 2009 Third Symposium on Intelligent Information Technology Application (IITA 2009)*, Nanchang, China, Nov. 2009, Vol. III, pp. 541-544.

Yue, S., **Wang, Z. H.**, Chang, C. Y., Chang, C. C. and Li, M. C., "Image Data Hiding Schemes Based on Graph Coloring," *Lecture Notes in Computer Science*, Banff, Canada, 2011, 6905/2011: 476-489.

- Ren, Y. Z., Li, M. C. and **Wang, Z. H.**, Xie, J. and Yao, H. Y., "A New Modified Bridge Certification Authority PKI Trust Model," *Proceedings of the First International Symposium on Pervasive Computing and Applications (SPCA 2006)*, Xinjiang, China, Aug. 2006, pp. 23-27.
- Chang, C. C., Chan, C. S., **Wang, Z. H.** and Li, M. C., "Reversible Steganography for VQ Indices Using the Modified State Codebook," *Proceedings of The Fifth International Conference on Intelligent Information Hiding and Multimedia Signal Processing (IHMSP 2009)*, Kyoto, Japan, Sep. 2009, pp. 320-323.
- Chang, C. C., Chen, Y. H., **Wang, Z. H.** and Li, M. C., "A Data Embedding Scheme Based on a Magic Matrix and Wet Paper Codes," *Proceedings of 2009 International Conference on Computational Intelligence and Natural Computing (CINC 2009)*, Wuhan, China, June 2009, Vol. II, pp. 303-306.
- Chang, C. C., Kieu, T. D., **Wang, Z. H.** and Li, M. C., "A Steganographic Scheme for Reversible Information Hiding with Good Visual Quality Suitable for Small Embedded Data," *Proceedings of 2009 Second ISECS International Colloquium on Computing, Communication, Control, and Management (CCCM 2009)*, Sanya, China, Aug. 2009, Vol. I, pp. 507-511.
- Chang, C. C., Chen, Y. H., **Wang, Z. H.** and Li, M. C., "A Reversible Data Embedding Scheme Based on Chinese Remainder Theorem for VQ Index Tables," *Proceedings of 2009 Second ISECS International Colloquium on Computing, Communication, Control, and Management (CCCM 2009)*, Sanya, China, Aug. 2009, Vol. I, pp. 516-518.
- Chang, C. C., Kieu, T. D., **Wang, Z. H.** and Li, M. C., "An Image Authentication Scheme Using Magic Square," *Proceedings of the 2nd IEEE International Conference on Computer Science and Information Technology 2009 (ICCSIT 2009)*, Beijing, China, Aug. 2009, Vol. II, pp. 1-4.
- Chang, C. C., Chen, K. N., **Wang, Z. H.** and Li, M. C., "A Quadratic-residue-based Fragile Watermarking Scheme," *Proceedings of 2009 Second ISECS International Colloquium on Computing, Communication, Control, and Management (CCCM 2009)*, Sanya, China, Aug. 2009, Vol. I, pp. 512-515.
- Chan, C. W., Chang, C. C. and **Wang, Z. H.**, "Cheating Resistance for Secret Sharing," *Proceedings of the International Conference on Networks Security, Wireless Communications and Trusted Computing (NSWCTC 2009)*, Wuhan, China, 2009, 2: 840-846.
- Chang, C. C., Chen, K. N., **Wang, Z. H.** and Li, M. C., "Hiding Information in VQ Index Tables with Reversibility," *Proceedings of the Second International Workshop on Computer Science and Engineering (WCSE 2009)*, Qingdao, China, Oct. 2009, pp. 1-6.
- Chang, C. C., Chen, K. N., **Wang, Z. H.** and Li, M. C., "A Technique of Embedding Digital Data in an Image Compression Code Reversibly," *Proceedings of the 4th International Conference on Ubiquitous Information Management and Communication (ICUIMC 2010)*, SKKU, Suwon, Korea, Jan. 2010, pp. 79-84.
- Chen, Y. H., Lan, C. W. and **Wang, Z. H.**, "A Two-Layer Steganography Scheme Using Sudoku for Digital Images," *Lecture Notes in Computer Science*, Banff, Canada, Sep. 2-4, 2011, Vol. 6905/2011, pp. 529-535.
- Chang, C. C., Chen, K. N., Lee, C. F. and **Wang, Z. H.**, "Hiding Information in Region-based Wet Images," *Proceedings of International Symposium on Electronic Commerce and Security (ISECS 2009)*, Nanchang, China, May 2009, Vol. 1, pp. 189-194.
- Li, M. C., Ren, Y. Z., Sakurai, K., Cui, Y. R. and **Wang, Z. H.**, "Granularity Considering in Trust Model for P2P Networks," *Proceedings of the 22nd International Conference on Advanced Information Networking and Applications - AINA Workshops*, Okinawa, Japan, Mar. 2008, pp.307-312.
- Lu, T. C., Liao, S. R., Chen, P. L., Chang, C. C. and **Wang, Z. H.**, "Information Hiding Technology Based on Block-Segmentation Strategy," *Proceedings of 2009 Second ISECS International Colloquium on Computing, Communication, Control, and*

Management(CCCM 2009), Sanya, China, Aug. 2009, Vol. I, pp. 500-506.

TALKS

- Zihui Wang, "A New Intelligent Authorization Agent Model in Grid," conference talk, HIS 2009, Shenyang, China
- Zihui Wang, "A Simple Image Encoding Method with Data Lossless Information Hiding," conference talk, ICUIMC 2010, Suwon, Korea
- Zihui Wang, "Image Data Hiding Schemes Based on Graph Coloring," conference talk, UIC 2011, Banff, Canada
- Zihui Wang, "A Modified IMM-CSRF Algorithm for Passive Tracking of Maneuvering Targets," conference talk, IIMSP 2015, Adelaide, Australia.

HONORS AND AWARDS

- Best paper award, ICGEC 2010