

## Wentai Liu – Publication List

### Books and Monographs

1. R. Cavin and W. Liu, *Emerging Technologies: Designing Low Power Digital Systems*, ISBN-0-7803-3328-4, IEEE Press, 1996.
2. C. Gray, W. Liu, and R. Cavin, *Wave Pipelining: Theory and CMOS Implementation*, ISBN-0-7923-9398-8, Kluwer Academic Publishers, 1994.

### Chapters in Books

1. K. Chen, L. Zumhagen, K. Cockerham, W. Liu, "Eyelid reanimation prototype for facial nerve paralysis," *Neural Computation, Neural Devices and Prosthesis* (Ed. Z. Ynag), Springer, 2014
2. Kejie Huang, Yin Zhou, Xiaobo Wu, Wentai Liu and Zhi Yang, Design and Optimization of Inductive Power Link for Applications, *Applied Biomedical Engineering*, Dr. Gaetano Gargiulo (Ed.), ISBN: 978-953-307-256-2, 2011
3. W. Liu and Z. Yang, "Neural prosthetic devices and nanotechnology," *Nanotechnology II: Global Prospects* (edited by David Reisner), CRC Press, 2011.
4. Z. Yang, Y. Han, Y. Lo, L. Wu, K. Chen, J. Lao, and W. Liu, "Wireless Power and Data Telemetry System for Implantable and Wearable Electronics," Invited book chapter in *Wireless Body Area Networks: Technology, Implementation and Applications*, *Pan Stanford Publishing*, ISBN 978-981-431-6712, 2011
5. E. Basham, Z. Yang, N. Tchemodanov, W. Liu, "Magnetic stimulation of neural tissue: techniques and system design," in *Implantable Neural Prosthesis-I*, pp. 293-351, Springer. 2009, ISBN:978-0-387-77260-8. (Invited)
6. W. Liu, M. Chae, and Z. Yang, "Microelectronics for recording, stimulation and wireless telemetry," Book Chapter in *Implantable Neural Prostheses: Part II. Techniques and Engineering Approaches*, Springer New York, ISBN: 978-0-387-98119-2, pages 253-330, 2010. (Invited)
7. W. Liu, M. Sivaprakasam, G. Wang, and M. Zhou, "Semiconductor based Implantable Prosthetic Devices," *Wiley Handbook of Biomedical Engineering*, John Wiley and Sons. (Invited)
8. W. Liu, M. Sivaprakasam, G. Wang, M. Zhou, J. D. Weiland, and M. S. Humayun, "Challenges in realizing a Chronic High Resolution Artificial Sight Device," *Artificial Sight*, M. S. Humayun, J. D. Weiland, E. Greenbaum, Eds. Biological and Medical Physics/Biomedical Engineering Series, New York: Springer. (Invited)
9. W. Liu, M. Sivaprakasam, G. Wang, M. Zhou, J. D. Weiland, and M. S. Humayun, "Development of an Intraocular Prosthesis to Benefit the Visually Impaired," *Visual Prosthetics and Ophthalmic Devices: New Hope in Sight*, New Jersey: Humana Press, Inc. (Invited)
10. W. Liu, P. Singh, C. DeMarco, R. Bashirullah, M. Humayun, and J. Weiland, "Semiconductor-based Implantable Microsystems," Chapter 6, in *Handbook of Neuroprosthetic Methods* (edited by W. Finn, and P. LoPresti), CRC Publishing Company (invited chapter), ISBN-0-8493-1100-4, December 2002
11. J. Weiland, M. Humayun, W. Liu, and R. Greenberg, "Stimulated Neural Activity," Chapter 4, in *Handbook of Neuroprosthetic Methods* (edited by W. Finn, and P. LoPresti), CRC Publishing Company (invited chapter), ISBN-0-8493-1100-4, December 2002
12. W. Liu, M. Humayun, E. McGucken, E. de Juan, J. Weiland, C. DeMarco, "Multiple Unit Artificial Retinal Chipset System to Benefit the Visual Impaired," Chapter 2, in *Intelligent Systems for the Disabled* (edited by N. Theodorescu), CRC Publishing Company (invited chapter), ISBN-0-8493-0140-8, December 2000
13. H. Hsieh, W. Liu, P. Franzon, and R. Cavin, "Clocking Optimization and Distribution in Digital Systems with Scheduled Skews," *Clock Generation and Distribution Network*, (edited by E. Friedman), Kluwer Academic Publishers, 1998
14. C. Gray, W. Liu, and R. Cavin, "Timing Constraints for Wave Pipelined Systems," in *Clock Distribution Networks in VLSI Circuits and Systems*, (edited by E. Friedman), pp. 170-187, IEEE Press, ISBN-0-7803-1058-6, May 1995
15. W. Liu, R. Cavin, T. Schaffer, G. Moyer, S. Clements, J. Kang, J. Medero, and H. Hsieh, "Matched Delay Technique for High Speed Digital Design," in *Low-Power HF Microelectronics: Integrating process, device and design for manufacturability*, (edited by G. Machado), *IEE Circuits and Systems Series*, chapter 16, ISBN-0-85296-874-4, April. 1996.
16. W. Liu, T. Hughes and T. Krakow "A Rasterization of Two-Dimensional Fast Fourier Transform," chapter 26, in *Signal Processing II*, IEEE Press, 1986, (Editors: S. Kung and R. Owen)

17. G. Mei, W. Liu, and R. Cavin, "Synthesizing Irregular Iterative Algorithms with Array Architectures," chapter 41, in *Signal Processing III*, IEEE Press, 1988, (Editors: R. Brodersen and H. Moscovitz)
18. W. Liu, W. Batchelor, R. Cavin, and S. Chen, "A Bit Level Systolic Array for Real Time Two-Dimensional Moment Generation," pp. 449-458, *Systolic Array Processors*, Prentice-Hall, 1989, (Editors: J. McCanny, J. McWhirter, and E. Swartzlander)

### Refereed Journal Publications

1. Andrew Hudson, Ma Li, Wentai Liu, "Propofol anesthesia increases long-range corticocortical interaction within the oculomotor system in macaque monkeys," *Anesthesiology*, 2018 (in review)
2. Reggie Edgerton, Giuliano Taccola, Parag Gad, Stanislav Culaclii, Ronaldo Ichiyama, and Wentai Liu, "Dynamic electrical spinal stimulation: a novel tool to neuromodulate spinal locomotor network," *IEEE Transaction on Biomedical Engineering*, 2018 (in review)
3. Yi Qiang, Pietro Artoni, Kyung Jin Seo, Stanislav Culaclii, Victoria Hogan, Xuanyi Zhao, Yiding Zhong, Xun Han, Zeping Li, Po-Min Wang, Yi-Kai Lo, Yueming Li, Henil A. Patel, Yifu Huan<sup>d</sup>, Wentai Liu, Michela Fagiolini and Hui Fang, "Transparent Arrays of Bilayer Nanomesh Microelectrodes for Simultaneous Electrophysiology and 2-photon Imaging in the Brain," *Science Advances*, 2018 (accepted for publication)
4. Yi-Kai Lo, Pomin Wang, G. Dubrovsky, Mark Wu, M. Chan, James CY Dunn, Wentai Liu, "A Wireless Implant for Gastrointestinal Motility Disorders," *Micromachines*, vol. 9, no. 1, 2018, <https://doi.org/10.3390/mi9010017>, (Invited and Cover Page Article)
5. Stanislav Culaclii, Brian Kim, Yi-Kai Lo, Lin Li, Wentai Liu, "Online Artifact-Cancellation in Same-electrode Neural Stimulation and Recording Using a Combined Hardware and Software Architecture," *IEEE Trans. Biomedical Circuits and Systems*, 11(3), pp. 497-509, April, 2018, DOI: [10.1109/TBCAS.2018.2816464](https://doi.org/10.1109/TBCAS.2018.2816464)
6. Yi Qiang, Kyung Jin Seo, Xuanyi Zhao, Pietro Artoni, Negar H. Golshan, Stanislav Culaclii, Po-Min Wang, Wentai Liu, Katherine S. Ziemer, Michela Fagiolini, and Hui Fang, "Bilayer Nanomesh Structures for Transparent Recording and Stimulating Microelectrodes," *Advanced Functional Material*, Nov. 2017, 1704117, DOI: [10.1002/adfm.201704117](https://doi.org/10.1002/adfm.201704117)
7. Yikai Lo, Yencheng Kuan, Stan Culaclii, Brian Kim, P. Gad, V. R. Edgerton, and Wentai Liu, "A Wireless SoC for Motor Function Recovery after Spinal Cord Injury," *IEEE Trans. Biomedical Circuits and Systems*, vol. 11, pp. 497-509, May 2017, (invited paper for Special Issue); DOI: [10.1109/TBCAS.2017.2679441](https://doi.org/10.1109/TBCAS.2017.2679441)
8. Wentai Liu, Po-Min Wang, and Yikai Lo, "Towards closed-loop neuromodulation: a wireless miniaturized neural implant SoC," *SPIE Micro- and Nanotechnology Sensors, Systems, and Applications IX*, 1019414, May 2017; doi:10.1117/12.2263566
9. Ying Li, Jing Qin, Yue-Loong Hsin, Stanly Osher, and Wentai Liu, "s-SMOOTH: Sparsity and smoothness enhanced EEG brain tomography," *Frontiers of Neuroscience*, Nov. 2016; <https://doi.org/10.3389/fnins.2016.00543>
10. Wentai Liu, "Introduction to the Special Bio-Section of the 2016 International Solid-State Circuits Conference (ISSCC)," Editorial, 50<sup>th</sup> Anniversary Issue, *IEEE JSSC*, Nov. 2016; DOI: [10.1109/JSSC.2016.2608159](https://doi.org/10.1109/JSSC.2016.2608159)
11. Chih-Wei Chang, Yue-Loong Hsin, and Wentai Liu, "A spatially focused method for high density electrode-based functional brain mapping applications," *IEEE Trans. Neural Systems and Rehabilitation Technology (IEEE TNSRE)*, pp. 1029-1040, March 2016; DOI: [10.1109/TNSRE.2016.2537146](https://doi.org/10.1109/TNSRE.2016.2537146)
12. Y. K. Lo, K. Chen, P. Gad and W. Liu, "An On-Chip Multi-Voltage Power Converter with Leakage Current Prevention Using 0.18 um High-Voltage CMOS Process," in *IEEE Transactions on Biomedical Circuits and Systems*, vol. 10, no. 1, pp. 163-174, Feb. 2016; DOI: [10.1109/TBCAS.2014.2371695](https://doi.org/10.1109/TBCAS.2014.2371695)
13. Y. Lo, J. Wagner, C. Chang, J. D. Rouch, J. Dunn, W. Liu, "Single-Electrode Colon Stimulation and Impedance Monitoring in an Intestinal Aganglionosis Model," *Gastroenterology*, vol. 148, no. 4, pp. S-121-S-122, April 2015; DOI: [http://dx.doi.org/10.1016/S0016-5085\(15\)30422-4](http://dx.doi.org/10.1016/S0016-5085(15)30422-4)
14. Y. Kuan, Y. Lo, Y. Kim, M. F. Chang, and W. Liu, "Wireless Gigabit Data Telemetry for Large-Scale Neural Recording," *IEEE J. Biomedical and Health Informatics*, vol. 19, pp. 949-957, March, 2015; DOI: [10.1109/JBHI.2015.2416202](https://doi.org/10.1109/JBHI.2015.2416202)
15. J. Xu, T. Wu, W. Liu, and Z. Yang, "A frequency-shaping neural recorder with 3-pF input capacitance and 15.5-bit dynamic range," *IEEE Trans on Biomedical Circuits and Systems*, vol. 8, no. 4, pp. 510-527, 2014. DOI: 10.1109/TBCAS.2013.2293821
16. Y. Lo, K. Chen, and W. Liu, "A fully integrated high compliance voltage SoC for epiretinal and neural prosthesis," *IEEE Trans. On Biomedical Circuits and Systems (TBCAS)*, vol. 7, no.6, pp. 761-772, Dec. 2013.

DOI:10.1109/TBCAS.2013.2297695

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19. G. Wang, P. Wang, Y. Tang, and W. Liu, "Analysis of dual band power and data telemetry for biomedical implants," *IEEE Trans. on Biomedical Circuits and Systems*, vol. 6, no. 3, pp. 208-215, 2012
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23. K. Chen, Z. Yang, L. Hoang, J. Weiland, M. Humayun and W. Liu "An Integrated 256-channel Epiretinal Prosthesis," *IEEE J. of Solid State Circuits*, vol. 45, no. 9., Sept. 2010.
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26. A. Rosen, W. Liu, and M. Tohgi, "MTT Special Issue on RF and Microwave Techniques for Wireless Implants and Biomedical Applications: Guest Editorial," *IEEE Trans. on Microwave Theory and Techniques*, vol. 57, no. 9, Sept. 2009
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33. M. Zhou and W. Liu, "A Non-Coherent DPSK Data Receiver with Interference Cancellation for Dual-Band Transcutaneous Telemetries," *IEEE Journal of Solid-State Circuits*, 2008
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35. Z. Yang, W. Liu and E. Basham, "Optimization of Coils for Biomedical Applications," *IEEE Transactions on Magnetics*, Volume: 43, Pages: 3851 – 3860, October 2007.
36. M. R. Yuce and W. Liu, "Design and performance of a wideband sub-sampling front-ends for multi-standard software radios," *International Journal of Electronics and Communications*, Elsevier, March 2007.
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38. R. Bashirullah, W. Liu, and R. Cavin, "A 16Gb/s Adaptive Bandwidth Bus Based on Hybrid Current/Voltage Mode Signaling Repeaters," *IEEE Journal of Solid-State Circuits*, Volume: 41, Pages: 461 – 473, Feb. 2006.
39. W. Liu and M. Sivaprakasam, "IC Technology Challenges for Implantable Devices," *Future Fab International*, Volume: 20, Pages: 17 – 19, January 2006. (Invited)
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44. J. D. Weiland, W. Liu and M. Humayun, "Retinal Prosthesis," *Annual Review of Biomedical Engineering*, Volume: 7, August 2005. (Invited)
45. G. A. Kendir, W. Liu, G. Wang, M. Sivaprakasam, R. Bashirullah, M. S. Humayun, and J. D. Weiland, "An Optimal Design Methodology for Inductive Power Link with Class-E Amplifier," *IEEE Transactions on Circuits and Systems – I*, Volume: 52, Pages: 857 – 866, May 2005.
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### Conference Publications

1. Jonathan Massachi\*, Yi-Kai Lo, Po-Min Wang, Wentai Liu, "A Wireless Platform to Support Pre-Clinical Trial of Neural Implant for Spinal Cord Injury," 40<sup>th</sup> *Int'l Conf. of the IEEE Engineering in Medicine and Biology Society*, July 2018, Hawaii (accepted for presentation)
2. Hanyue Zhou\*, Yushan Wang, Ying Li, Dan Ruan, Wentai Liu, "Improving EEG Source Localization with a Novel Regularization: Spatiotemporal Graph Total Variation (STGTV) Method," 40<sup>th</sup> *Int'l Conf. of the IEEE Engineering in Medicine and Biology Society*, July 2018, Hawaii (accepted for presentation)
3. Yushan Wang\*, Hanyue Zhou, Ying Li, Wentai Liu, "Impact of Electrode Number on the Performance of High-Definition Transcranial Direct Current Stimulation (HD-tDCS)," 40<sup>th</sup> *Int'l Conf. of the IEEE Engineering in Medicine and Biology Society*, July 2018, Hawaii (accepted for presentation)
4. Jing Qin, Tianyu Wu, Ying Li, Wotao Yin, Stanley Osher, and Wentai Liu, "Accelerated High-Resolution EEG Source Imaging," *IEEE EMBS Neural Engineering Conference (NER'17)*, May 2017, Shanghai, China
5. Luyao Chen, Yi-Kai Lo, Yushan Wang, and Wentai Liu "Thermal Model of Spiked Electrode in Transcutaneous Electrical Nerve Stimulation (TENS)," *IEEE EMBS Neural Engineering Conference (NER'17)*, May 2017, Shanghai, China
6. G. Tacolla, P. Gad, C. Chang, H. Zhong, W. Liu, V. R. Edgerton, "Dynamic electrical stimulation modulates spinal reflexes," *Neuroscience 2016, Neuroscience Society*, Nov. 15, 2016
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- IEEE Engineering in Medicine and Biology Society (EMBC)*, Orlando, FL, 2016, pp. 6190-6193. doi: 10.1109/EMBC.2016.7592142
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