

Jie Yang

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PERSONAL SUMMARY

Highly motivated, reliable and capable person with profound interdisciplinary research experience of integrated circuit, digital design, image processing and computer vision. Possess vast subject knowledge, confidence, communication skills and interest to educate others in a very friendly and comprehensive manners.

EDUCATION

- Ph.D. Microelectronics, University of Chinese Academy of Sciences, Beijing, 2015
Dissertation: *Design of Vision Chip Based On Hierarchical Heterogeneous Parallel Processing Architecture*
Supervisor: Prof. Nanjian Wu
Committee: Zhihua Wang (chair), Jie Chen, Yuepeng Yan, Haigang Yang, Huaxiang Lu
- B.S. Electronic Science and Technology, Tianjin University, 2010

ACADEMIC APPOINTMENTS

- 2015.09–2019.04 University of Calgary, Calgary
Postdoctoral Scholar, Integrated Intelligent Sensing Lab, Schulich School of Engineering
Supervisor: Prof. Orly Yadid-Pecht, **FIEEE, FSPIE, FAIMBE**

RESEARCH/TEACHING INTERESTS

Very large scale integrated (VLSI) circuit design
Computer vision, Machine Learning
VLSI architecture for computer vision and machine learning

INTERNATIONAL PATENTS

- 2019 O. Yadid-Pecht, **J. Yang**, "MACHINE-LEARNING BASED MEDICAL ANALYSIS SYSTEM AND METHOD THEREFOR." *Provisional patent*.

- 2018 O. Yadid-Pecht, **J. Yang**, “NEURAL NETWORK TRAINED SYSTEM FOR PRODUCING LOW DYNAMIC RANGE IMAGES FROM WIDE DYNAMIC RANGE IMAGES.” *Provisional patent filled September, 2018*.
- 2017 O. Yadid-Pecht, **J. Yang**, U. Shahnovich, and A. Horé, “METHOD OF PRESENTING WIDE DYNAMIC RANGE IMAGES AND A SYSTEM EMPLOYING SAME.” *PCT/CA2017/050842, Filed July 11, 2017*.

PUBLICATIONS

Peer-Reviewed Journal Articles

- 2019 **J. Yang**, U. Shahnovich, and O. Yadid-Pecht, “Mantissa-exponent based Tone Mapping for Wide Dynamic Range Image Sensors,” accepted at *IEEE Transactions on Circuits and System II: Express Briefs*, DOI: 10.1109/TCSII.2019.2903101.
- 2018 **J. Yang**, A. Horé and O. Yadid-Pecht, “Local tone mapping algorithm and hardware implementation,” *Electronics Letters*, vol. 54, no. 9, pp. 560-562, 5 May 2018.
- 2018 **J. Yang**, Y. Yang, Z. Chen, L. Liu, J. Liu, and N. Wu, “A Heterogeneous Parallel Processor for High-Speed Vision Chip,” *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 28, no. 3, pp. 746-758, March 2018.
- 2014 **J. Yang**, C. Shi, L. Liu, J. Liu, and N. Wu, “Pixel-parallel feature detection on vision chip,” *Electronics Letters*, vol. 50, no. 24, pp. 1839-1841, 20 December 2014.
- 2014 **J. Yang**, C. Shi, L. Liu, and N. Wu, “Heterogeneous vision chip and LBP-based algorithm for high-speed tracking,” *Electronics Letters*, vol. 50, no. 6, pp. 438-439, 13 March 2014.
- 2017 Y. Yang, **J. Yang**, L. Liu, and N. Wu, “High-Speed Target Tracking System Based on a Hierarchical Parallel Vision Processor and Gray-Level LBP Algorithm,” *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 47, no. 6, pp. 950-964, June 2017.
- 2017 V. Nshunguyimfura, **J. Yang**, L. Liu, and N. Wu, “Property-driven functional verification technique for high-speed vision system-on-chip processor,” *Japanese Journal of Applied Physics*, vol. 56, no. 4s, pp. 4CF15, March 2017.
- 2016 Y. Yang, **J. Yang**, Z. Zhang, L. Liu, and N. Wu, “High-speed visual target tracking with mixed rotation invariant description and skipping searching,” *Science China Information Sciences*, vol. 60, no. 6, Dec. 2016.
- 2016 Z. Chen, **J. Yang**, C. Shi, Q. Qin, L. Liu, and N. Wu, “High speed vision processor with reconfigurable processing element array based on full-custom distributed memory,” *Japanese Journal of Applied Physics*, vol. 55, no. 4S, pp. 04EF08, 16 March 2016
- 2016 Y. Yang, **J. Yang**, Z. Zhang, L. Liu, and N. Wu, “High-speed visual tracking with mixed rotation invariant description,” *Electronics Letters*, vol. 52, no. 7, pp. 511-513, 31 March 2016
- 2014 C. Shi, **J. Yang**, Y. Han, Z. Cao, Q. Qin, L. Liu, N. Wu, and Z. Wang, “A 1000 fps Vision Chip Based on a Dynamically Reconfigurable Hybrid Architecture Comprising a PE Array Processor and Self-Organizing Map Neu-ral Network,” *IEEE Journal of Solid-State Circuits*, vol. 49, no. 9, pp. 2067-2082, Sept. 2014.
- 2014 C. Shi, **J. Yang**, N. Wu, and Z. Wang, “A high speed multi-level-parallel array processor for

- vision chips,” *Science China Information Sciences*, vol. 57, no. 6, pp. 1-12, Jun. 2014.
- 2017 Z. Liu, L. Liu, **J. Yang**, and N. Wu, “A CMOS fully integrated 860-GHz terahertz sensor,” *IEEE Transactions on Terahertz Science and Technology*, vol. 7, no. 4, pp. 455-465, July. 2017.
- 2014 C. Shi, Z. Chen, **J. Yang**, N. Wu, and Z. Wang, “A compact PE memory for vision chips,” *Journal of Semiconductors*, vol. 35, no. 9, pp. 095002, 2014.

Peer-Reviewed Conference Proceedings

- 2018 **J. Yang**, D. McDonald, U. Shahnovich, and O. Yadid-Pecht, “Mobile GPU implementation of wide dynamic range image compression based on multi-scale histogram synthesis,” *Electronics Imaging 2018*. Burlingame, California
- 2017 **J. Yang**, A. Horè, U. Shahnovich and O. Yadid-Pecht, “Multi-Scale histogram tone mapping algorithm for display of wide dynamic range images,” *International Workshop on Computational Advances in Multi-Sensor Adaptive Processing*, Curacao, Curacao
- 2017 **J. Yang**, A. Horé, U. Shahnovich, K. Lai, S. N. Yanushkevich and O. Yadid-Pecht, “Multi-Scale histogram tone mapping algorithm enables better object detection in wide dynamic range images,” *IEEE International Conference on Advanced Video and Signal Based Surveillance*, Lecce, Italy 2017
- 2013 **J. Yang**, C. Shi, Z. Cao, Y. Han, L. Liu and N. Wu, “Smart image sensing system,” *IEEE International Conference on Sensors*, Baltimore, MD, 2013
- 2017 H. Zheng **J. Yang**, and J. Chen “A performance evaluation method for infrared tracker,” *International Conference on Image and Vision Computing*, Christchurch, New Zealand 2017.
- 2015 Z. Zhang, **J. Yang**, H. Li, L. Liu, J. Liu, and N. Wu, “High-speed object detection based on a hierarchical parallel vision chip,” *IEEE 11th International Conference on ASIC*, Chengdu, China 2015
- 2014 C. Shi, **J. Yang**, Y. Han, Z. Cao, Q. Qin, L. Liu, N. Wu and Z. Wang, “A 1000fps vision chip based on a dynamically reconfigurable hybrid architecture comprising a PE array and self-organizing map neural network,” *IEEE International Solid-State Circuits Conference Digest of Technical Papers*, San Francisco, CA, 2014, pp. 128-129.
- 2013 Z. Chen, **J. Yang**, C. Shi, and N. Wu, “A novel architecture of local memory for programmable SIMD vision chip,” *IEEE 10th International Conference on ASIC*, Shenzhen, China 2013
- 2015 Z. Liu, L. Liu, **J. Yang**, and N. Wu, “A fully-integrated 860-GHz CMOS terahertz sensor,” *IEEE Asian Solid-State Circuits Conference*, Xiamen, China 2015
- 2015 H. Li, Z. Zhang, **J. Yang**, L. Liu, and N. Wu, “A novel vision chip architecture for image recognition based on convolutional neural network,” *IEEE 11th International Conference on ASIC*, Chengdu, China 2015

Manuscripts in Preparation

- 2019 **J. Yang**, H. Li, Z. Zhang, L. Liu and N. Wu, “Hierarchical Heterogeneous Processor for Vision Chip,” *Target: IEEE Transactions on Circuits and Systems for Video Technology*, Fall 2019.
- 2019 **J. Yang**, M. Lin, U. Shahnovich and Orly Yadid-Pecht, “Deep Reformulated Laplacian for

TEACHING EXPERIENCE

University of Calgary

Integrated Micro and Nanotechnology Sensory System (fall '17)

Integrated Micro and Nanotechnology Sensory System (fall '16)

PEER REVIEWER

Israel Science Foundation

IEEE Transactions on Circuits and Systems for Video Technology

International Journal of Remote Sensing

International Journal of Innovative Computing and Applications

Future Generation Computer Systems

The Second International Conference on Physics, Mathematics and Statistics

WORK STYLE

Passionate for challenges and innovation

Quick learner for new knowledge and skills, adaptable to new environments

Independent and optimistic personality

Excellent team-worker and team-builder

REFERENCES

Prof. Orly Yadid-Pecht

IEEE, FSPIE, FAIMBE

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