Yuyang Wang

APPOINTMENT -

University of Connecticut

Assistant Professor, Department of Electrical and Computer Engineering

Storrs, CT, USA 2025-Present

Columbia University in the City of New York

Postdoctoral Research Scientist, Columbia Nano Initiative

New York, NY, USA 2021-2025

EDUCATION -

University of California, Santa Barbara

Ph.D. in Electrical and Computer Engineering

University of California, Santa Barbara

M.S. in Electrical and Computer Engineering

B.Eng. in Electronic Engineering

Tsinghua University

Santa Barbara, CA, USA

2018-2021

Santa Barbara, CA, USA

2015-2018

Beijing, China

2011-2015

Experience -

Semiconductor Research Corporation (SRC) Research Scholars Program

Research Scholar, Center for Ubiquitous Connectivity (CUbiC) under SRC JUMP 2.0

2023-2025

Hong Kong University of Science and Technology

Postgraduate Visiting Intern, Department of Electrical and Computer Engineering

Hong Kong SAR, China Aug. 2019-Dec. 2019

Cadence Design Systems, Inc.

Design Engineering Intern - Photonics, Custom IC & PCB Group

San Jose, CA, USA Jun. 2018-Sep. 2018

Rice University

Student Intern, Department of Electrical and Computer Engineering

Houston, TX, USA Jul. 2014-Sep. 2014

Publication -

Journal Articles

- J1 R. Parsons, K. Jang, Y. Wang, A. Novick, A. M. Smith, C. C. Tison, Y. Gebregiorgis, V. Deenadayalan, M. van Niekerk, L. Carpenter, T. Ngai, G. Leake, D. Coleman, X. Meng, S. Preble, M. L. Fanto, K. Bergman, and A. Rizzo, "Highly uniform thermally undercut silicon photonic devices in a 300 mm CMOS foundry process," Scientific Reports, vol. 15, no. 1, p. 29 906, Aug. 2025. @ 10.1038/s41598-025-14480-4
- J2 S. Wang, Y. Wang, S. Sanyal, R. Parsons, X. Ji, Y. Okawachi, X. Meng, M. Lipson, A. Gaeta, and K. Bergman, "Automated tuning of a ring-assisted MZI-based interleaver for Kerr frequency combs," Optics Letters, vol. 50, no. 2, p. 698, Jan. 2025. @ 10.1364/OL.546772
- Y. Wang, S. Wang, R. Parsons, S. Sanyal, V. Gopal, A. Novick, A. Rizzo, M. Lipson, A. L. Gaeta, and K. Bergman, "Co-Designed Silicon Photonics Chip I/O for Energy-Efficient Petascale Connectivity," IEEE Transactions on Components, Packaging and Manufacturing Technology, vol. 15, no. 8, pp. 1581-1591, Aug. 2025. 10.1109/TCPMT.2024.3492189 invited
- Z. Wu, L. Yuan Dai, Y. Wang, S. Wang, and K. Bergman, "Flexible silicon photonic architecture for accelerating distributed deep learning," Journal of Optical Communications and Networking, vol. 16, no. 2, A157, Feb. 1, 2024. 10.1364/JOCN.497372 invited
- A. James, A. Rizzo, Y. Wang, A. Novick, S. Wang, R. Parsons, K. Jang, M. Hattink, and K. Bergman, "Process Variation-Aware Compact Model of Strip Waveguides for Photonic Circuit Simulation," Journal of Lightwave Technology, pp. 1–14, 2023. @ 10.1109/JLT.2023.3238847

- J6 A. Novick, A. James, L. Y. Dai, Z. Wu, A. Rizzo, S. Wang, Y. Wang, M. Hattink, V. Gopal, K. Jang, R. Parsons, and K. Bergman, "High-bandwidth density silicon photonic resonators for energy-efficient optical interconnects," *Applied Physics Reviews*, vol. 10, no. 4, p. 041 306, Nov. 2023.
- J7 Y. Wang, P. Sun, J. Hulme, M. A. Seyedi, M. Fiorentino, R. G. Beausoleil, and K.-T. Cheng, "Energy Efficiency and Yield Optimization for Optical Interconnects via Transceiver Grouping," *Journal of Lightwave Technology*, vol. 39, no. 6, pp. 1567–1578, Mar. 2021. (20) 10.1109/JLT.2020.3039489
- J8 Z. Zhang, R. Wu, Y. Wang, C. Zhang, E. J. Stanton, C. L. Schow, K.-T. Cheng, and J. E. Bowers, "Compact Modeling for Silicon Photonic Heterogeneously Integrated Circuits," *Journal of Lightwave Technology*, vol. 35, no. 14, pp. 2973–2980, Jul. 2017. 20 10.1109/JLT.2017.2706721

Conference Proceedings

- C1 A. Rovinski, Y. Ou, C. Ou, D. Khilwani, Y. Wang, S. Wang, S. Lee, K. Bergman, A. Molnar, and C. Batten, "Scaling co-packaged optical interconnects using hybrid 2.5D/3D integration," in 2025 IEEE International Symposium on Circuits and Systems (ISCAS), accepted.
- C2 N. Nauman, J. Robinson, Y. Wang, K. Jang, X. Meng, and K. Bergman, "Photonic Analog-to-Digital Architecture for Accelerating Multiply-Accumulate Operations," in *Optical Fiber Communication Conference (OFC) 2025 (2025), Paper W3D.5*, Optica Publishing Group, Mar. 2025, W3D.5.

 10.1364/OFC.2025.W3D.5
- C3 R. Parsons, S. Sanyal, M. Cullen, **Y. Wang**, A. Novick, X. Ji, Y. Okawachi, X. Meng, M. Lipson, A. Gaeta, and K. Bergman, "Dispersion-Engineered Resonator-Based Interleaver Co-Designed with Kerr Comb Source," in *Optical Fiber Communication Conference (OFC)* 2025 (2025), Paper Tu2G.6, Optica Publishing Group, Mar. 2025, Tu2G.6. 10.1364/OFC.2025.Tu2G.6
- C4 Y. Wang, S. Wang, S. Sanyal, N. Nauman, R. Parsons, J. Robinson, M. Hattink, K. Jang, A. Novick, K. J. McNulty, X. Meng, M. Lipson, A. L. Gaeta, and K. Bergman, "Order-Preserving Channel Calibration of Kerr Comb-Driven Microresonator-Based DWDM Link," in *Optical Fiber Communication Conference (OFC) 2025 (2025), Paper W1E.1*, Optica Publishing Group, Mar. 2025, W1E.1. (2013) 10.1364/OFC.2025.W1E.1
- C5 A. Novick, M. Hattink, A. Rizzo, **Y. Wang**, V. Gopal, S. Wang, R. Parsons, and K. Bergman, "Integrated Photonic Resonant Modulator-Based Equalization and Optimization for DWDM," in *Optical Fiber Communication Conference (OFC) 2024*, San Diego California: Optica Publishing Group, 2024, W1K.5. D1.1364/OFC.2024.W1K.5
- C6 S. Wang, Y. Wang, X. Meng, K. Hosseini, T. T. Hoang, and K. Bergman, "Automated Tuning of Ring-Assisted MZI-Based Interleaver for DWDM Systems," in *Optical Fiber Communication Conference (OFC) 2024*, San Diego California: Optica Publishing Group, 2024, Th1A.3.
- C7 Y. Wang, S. Wang, R. Parsons, A. Novick, V. Gopal, K. Jang, A. Rizzo, C.-P. Chiu, K. Hosseini, T. T. Hoang, S. Shumarayev, and K. Bergman, "Silicon Photonics Chip I/O for Ultra High-Bandwidth and Energy-Efficient Die-to-Die Connectivity," in 2024 IEEE Custom Integrated Circuits Conference (CICC), Denver, CO, USA: IEEE, Apr. 21, 2024, pp. 1–8. 10.1109/CICC60959.2024.10529018
- C8 Z. Wu, R. Parsons, S. Wang, Y. Wang, and K. Bergman, "Wavelength Reconfigurable Transceiver For Multi-Interface Compute Accelerator Networks," in *Optical Fiber Communication Conference (OFC) 2024*, San Diego California: Optica Publishing Group, 2024, W4F.2. 10.1364/OFC.2024.W4F.2
- C9 G. Michelogiannakis, Y. Arafa, B. Cook, L. Y. Dai, A.-H. Hameed Badawy, M. Glick, **Y. Wang**, K. Bergman, and J. Shalf, "Efficient Intra-Rack Resource Disaggregation for HPC Using Co-Packaged DWDM Photonics," in 2023 IEEE International Conference on Cluster Computing (CLUSTER), Santa Fe, NM, USA: IEEE, Oct. 2023, pp. 158–172. (20) 10.1109/CLUSTER52292.2023.00021
- C10 S. Wang, A. Novick, A. Rizzo, R. Parsons, S. Sanyal, K. J. McNulty, B. Y. Kim, Y. Okawachi, Y. Wang, A. Gaeta, M. Lipson, A. Gaeta, M. Lipson, and K. Bergman, "Integrated, Compact, and Tunable Band-Interleaving of a Kerr Comb Source," in CLEO 2023, San Jose, CA: Optica Publishing Group, 2023, STh3J.6. 2013164/CLEO_SI.2023.STh3J.6
- C11 Y. Wang, A. Novick, R. Parsons, S. Wang, K. Jang, A. James, M. Hattink, V. Gopal, A. Rizzo, C.-P. Chiu, K. Hosseini, T. T. Hoang, and K. Bergman, "Scalable architecture for sub-pJ/b multi-Tbps comb-driven DWDM silicon photonic transceiver," in *Next-Generation Optical Communication:*Components, Sub-Systems, and Systems XII, G. Li, K. Nakajima, and A. K. Srivastava, Eds., San Francisco, United States: SPIE, Mar. 2023, p. 55.

 10.1117/12.2649506 invited
- Y. Wang, S. Wang, A. Novick, A. James, R. Parsons, A. Rizzo, and K. Bergman, "Dispersion-Engineered and Fabrication-Robust SOI Waveguides for Ultra-Broadband DWDM," in *Optical Fiber Communication Conference (OFC) 2023*, San Diego California: Optica Publishing Group, 2023, Th₃A.4. 10.1364/OFC.2023.Th₃A.4
- C13 A. James, **Y. Wang**, A. Rizzo, and K. Bergman, "Flexible, Process-Aware Compact Model of Effective Index in Silicon Waveguides for Commercial Foundries," in 2022 International Conference on Numerical Simulation of Optoelectronic Devices (NUSOD), Turin, Italy: IEEE, Sep. 2022, pp. 173–174. (a) 10.1109/NUSOD54938.2022.9894784
- C14 Y. Wang and K.-T. Cheng, "Traffic-Adaptive Power Reconfiguration for Energy-Efficient and Energy-Proportional Optical Interconnects," in 2021 IEEE/ACM International Conference On Computer Aided Design (ICCAD), Munich, Germany: IEEE, Nov. 2021, pp. 1–9. 10.1109/ICCAD51958.2021.9643475
- C15 Y. Wang, J. Hulme, P. Sun, M. Jain, M. A. Seyedi, M. Fiorentino, R. G. Beausoleil, and K.-T. Cheng, "Characterization and Applications of Spatial Variation Models for Silicon Microring-Based Optical Transceivers," in 2020 57th ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, USA: IEEE, Jul. 2020, pp. 1–6. 10.1109/DAC18072.2020.9218608
- Y. Wang and K.-T. Cheng, "Task Mapping-Assisted Laser Power Scaling for Optical Network-on-Chips," in 2019 IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Westminster, CO, USA: IEEE, Nov. 2019, pp. 1–6. 10.1109/ICCAD45719.2019.8942146

YUYANG WANG CURRICULUM VITAE 2/5

- Y. Wang, M. A. Seyedi, J. Hulme, M. Fiorentino, R. G. Beausoleil, and K.-T. Cheng, "Bidirectional tuning of microring-based silicon photonic transceivers for optimal energy efficiency," in Proceedings of the 24th Asia and South Pacific Design Automation Conference, Tokyo Japan: ACM, Jan. 2019, pp. 370-375. (a) 10.1145/3287624.3287649
- Y. Wang, L. Shao, M. A. Lastras-Montano, and K.-T. Cheng, "Taming Emerging Devices' Variation and Reliability Challenges with Architectural and System Solutions [Invited]," in 2019 IEEE 32nd International Conference on Microelectronic Test Structures (ICMTS), Kita-Kyushu City, Fukuoka, Japan: IEEE, Mar. 2019, pp. 90-95. 10.1109/ICMTS.2019.8730924 invited
- Y. Wang, M. A. Seyedi, R. Wu, J. Hulme, M. Fiorentino, R. G. Beausoleil, and K.-T. Cheng, "Energy-efficient channel alignment of DWDM silicon photonic transceivers," in 2018 Design, Automation & Test in Europe Conference & Exhibition (DATE), Dresden, Germany: IEEE, Mar. 2018, pp. 601-604. 4 10.23919/DATE.2018.8342079
- R. Wu, M. A. Seyedi, Y. Wang, J. Hulme, M. Fiorentino, R. G. Beausoleil, and K.-T. Cheng, "Pairing of microring-based silicon photonic transceivers for tuning power optimization," in 2018 23rd Asia and South Pacific Design Automation Conference (ASP-DAC), Jeju: IEEE, Jan. 2018, pp. 135-140. @ 10.1109/ASPDAC.2018.8297295
- R. Wu, Y. Wang, Z. Zhang, C. Zhang, C. L. Schow, J. E. Bowers, and K.-T. Cheng, "Compact modeling and circuit-level simulation of silicon nanophotonic interconnects," in Design, Automation & Test in Europe Conference & Exhibition (DATE), 2017, Lausanne, Switzerland: IEEE, Mar. 2017, pp. 602–605. (a) 10.23919/DATE.2017.7927057
- A. Ghofrani, M. A. Lastras-Montaño, Y. Wang, and K.-T. Cheng, "In-place Repair for Resistive Memories Utilizing Complementary Resistive Switches," in Proceedings of the 2016 International Symposium on Low Power Electronics and Design, San Francisco Airport CA USA: ACM, Aug. 2016, pp. 350-355. (a) 10.1145/2934583.2934590
- C. Xu, F. X. Lin, Y. Wang, and L. Zhong, "Automated OS-level Device Runtime Power Management," in Proceedings of the Twentieth International Conference on Architectural Support for Programming Languages and Operating Systems, Istanbul Turkey: ACM, Mar. 2015, pp. 239–252. @ 10.1145/ 2694344.2694360

Under Review and In Preparation

- V. Gopal, A. Novick, M. Hattink, S. Sanyal, S. Wang, M. Cullen, A. Rizzo, A. E. James, Y. Wang, X. Meng, M. Lipson, A. L. Gaeta, and K. Bergman, "Resonant modulator-based equalization for frequency comb-driven dense wavelength division multiplexing interconnects," Journal of Lightwave Technology, under review.
- S. Wang, R. Parsons, A. Novick, V. Gopal, M. Cullen, A. Rizzo, Y. Wang, X. Meng, and K. Bergman, "Compact and efficient 32Gbps PAM4 segmented vertical junction silicon microdisk modulator," in preparation.
- Y. Wang, S. Wang, P. Dilip, R. Parsons, K. Jang, M. Haimowitz, V. Gopal, A. Novick, A. Rizzo, and K. Bergman, "128-channel DWDM silicon photonic transmitter for > 10 Tbps/mm optical I/O," in preparation.
- T. Zypman, R. Parsons, Y. Wang, K. Jang, S. Wang, X. Meng, and K. Bergman, "Silicon photonic MIMO DSP for mode-division multiplexing and multi-dimensional data transmission," Optics Express, under review.
- J. Robinson, R. Parsons, Y. Wang, K. Jang, X. Meng, and K. Bergman, "Silicon Photonic DWDM Micro-Resonator Link Initialization Under Fabrication Variation," Optics Express, Aug. 2025, under review. @ 10.1364/opticaopen.29963318.v2

Presentation —

Seminar Dept of ECE, University of Connecticut Storrs, CT, USA Photonics-Empowered Computing: From Efficient to Functional Data Movement

Feb. 2025

Tempe, AZ, USA **Seminar** School of ECEE, Arizona State University Photonics-Empowered Computing: From Efficient to Functional Data Movement Feb. 2025

Seminar Dept of ECE, University of Minnesota Minneapolis, MN, USA Photonics-Empowered Computing: From Efficient to Functional Data Movement Feb. 2025

Presentation SRC TECHCON Austin, TX, USA

Scalable Kerr-Comb Driven DWDM Silicon Photonics Chip I/O Sep. 2024

Seminar School of EECS, Pennsylvania State University University Park, PA, USA Co-Designing Photonics for Heterogeneously Integrated Systems

Apr. 2024

Invited Talk SPIE Photonics West San Francisco, CA, USA

Scalable Architecture for Sub-pJ/b Multi-Tbps Comb-Driven DWDM Silicon Photonic Transceiver Jan. 2023

CURRICULUM VITAE 3/5 YUYANG WANG

Poster Ph.D. Forum, ACM/IEEE Design Automation Conference (DAC)

Design and Optimization of Variation-Aware Runtime-Reconfigurable Optical Interconnects

Online Virtual Event Iun. 2020

Invited Talk Optical/Photonic Interconnects for Computing Systems (OPTICS) Workshop

Dresden, Germany

Optimal Pairing and Non-Uniform Channel Alignment of Microring-Based Transceivers for Comb Laser–Driven DWDM Silicon Photonics

Mar. 2018

Seminar Department of ECE, Hong Kong University of Science and Technology

Variation-Aware Modeling and Design of Silicon Photonic Systems

Hong Kong SAR, China

Jan. 2018

Poster Optical/Photonic Interconnects for Computing Systems (OPTICS) Workshop

Variation-Aware Modeling and Design of Nanophotonic Interconnects

Lausanne, Switzerland

Mar. 2017

Mentoring —

U: undergraduate; G: graduate

Songli Wang G

Ph.D. Student at Columbia University

Scalable link architectures, automated post-fabrication tuning

Resulting joint publication(s): [P2], [P3], [J2], [J3], [C4], [C6], [C7], [C11], [C12] Resulting joint publication(s): [P3], [J1], [C3], [J3], [C7], [C11], [C12]

Aneek E. James G

Ph.D. Student at Columbia University, now with Draper Laboratory Wafer-scale process variation extraction and characterization

Resulting joint publication(s): [J5], [C12], [C13]

Kaylx Jang G

Ph.D. Student at Columbia University

DWDM dispersion engineering, optically connected memory

Resulting joint publication(s): [P3], [C12]

Tobias Zypman G

Ph.D. Student at Columbia University

Photonics-Enabled Signal Processing

Resulting joint publication(s): [P4]

James Robinson G

Ph.D. Student at Columbia University

Variation-aware tuning of microresonator-based DWDM links

Resulting joint publication(s): [P5], [C4]

Abidur Rahman U

Undergraduate Student at University of Michigan, Ann Arbor

SURE Program of Columbia Engineering for under-represented students

Design space exploration of optically connected compute systems

Robert Parsons G

Ph.D. Student at Columbia University

Variation-aware modeling and uncertainty quantification

Zhenguo Wu G

Ph.D. Student at Columbia University

Reconfigurable architecture for optically connected systems

Resulting joint publication(s): [C8], [J4]

Nathaniel Nauman G

Ph.D. Student at Columbia University

Photonics-Enabled Compute for AI

Resulting joint publication(s): [C2]

Priyanka Dilip G

Ph.D. Student at Columbia University

Photonics design for testing and design for packaging

Resulting joint publication(s): [P3]

Max Haimowitz G

Ph.D. Student at Columbia University

Scripted and automated large-scale silicon photonics chip layout

> 80 mm²/reticle fully-scripted layout on a 300 mm full-wafer run

Teaching -

U: undergraduate; **G**: graduate

Columbia University in the City of New York

- Guest Lecturer ELEN 9404: Seminar in Lightwave Communications G Spring 2024

- Guest Lecturer ELEN 9403: Seminar in Photonics G Spring 2023

University of California, Santa Barbara

Santa Barbara, CA, USA

New York, NY, USA

- Teaching Assistant ECE 153B: Sensor & Peripheral Interface Design U Winter 2019

CURRICULUM VITAE 4/5 YUYANG WANG

Leadership —	
Center for Ubiquitous Connectivity (CUbiC)	SRC JUMP 2.0

Subgroup Leader, Systems and Testbeds, coordinating four research tasks across three teams
 CUbiC Scholar Leadership Council, leading monthly workshops with industry liaisons
 Task Co-Lead, Socket-to-Socket Distributed AI/ML/HPC Fabric Platform (SoSFab), photonics system testbed development

Columbia University in the City of New York

New York, NY, USA

Photonics Lead, DARPA PIPES, in collaboration with Intel, Cornell Univ. (Phase 2) and Orora Design Technologies (Phase 3)
 Design and Aggregation Co-Lead, custom 300 mm wafer run with AIM Photonics involving multiple internal/external riders

Service —

Technical Program Committee

- IEEE Chiplet Workshop: Standards, Circuits and Systems

2025

Journal Reviewer

- Nature Communications, Nature Publishing Group
- Nature Nanotechnology, Nature Publishing Group
- Communications Engineering, Nature Publishing Group
- APL Photonics, American Institute of Physics
- Journal of Lightwave Technology, IEEE/Optica
- Journal of Selected Areas in Communications, IEEE
- Journal on Emerging and Selected Topics in Circuits and Systems, IEEE
- IEEE Transactions on Computers, IEEE
- IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, IEEE
- IEEE Transactions on Very Large Scale Integration (VLSI) Systems, IEEE
- IEEE Access, IEEE

Conference Reviewer

- Optical Fiber Communication Conference (OFC)

2024

- IEEE International Symposium on High-Performance Computer Architecture (HPCA)

2020

2024

Textbook Translation

- T1 C. Hawkins, J. Segura, and P. Zarkesh-Ha, CMOS Digital Integrated Circuits: A First Course (Chinese Edition), trans. by Y. Wang and Y. Yin. China Machine Press, 2016, original work published by the Institution of Engineering and Technology (IET) in 2013.
- T2 S. Kundu and A. Sreedhar, *Nanoscale CMOS VLSI Circuits: Design for Manufacturability (Chinese Edition)*, trans. by **Y. Wang** and W. Xie. China Science Publishing, 2014, original work published by McGraw-Hill Education in 2010.

Under-Represented Student Mentor

- Summer Undergraduate Research Experience (SURE) Program, Columbia Engineering

YUYANG WANG CURRICULUM VITAE 5/5