Jinglong Xu

EDUCATION

Swiss Federal Institute of Technology Zürich (ETH Zürich) Switzerland Ph.D Candidate Oct. 2023 – Present Advisor: Prof. Hua Wang Research Interests: RF/mm-Wave Integrated Circuits and Systems, Phased Arrays, Power Amplifiers Korea Advanced Institute of Science and Technology (KAIST) South Korea M.S. – Electrical Engineering; GPA: 91.33/100 Sep. 2020 - Aug. 2022 Advisor: Prof. Sang-Gug Lee M.S. Thesis Title: Design of CMOS Receivers for 5G NR and LPWAN Applications Honors: Recipient of ISSCC 2022 Student Travel Grant Harbin Institute of Technology (HIT) China B.E. – Material Science and Engineering; Major GPA: 3.76/4.00 Sep. 2016 - Aug. 2020 Honors: Recipient of the National Scholarship by China Scholarship Council (CSC); First Prize of People's Scholarship (2016 & 2017) University College Dublin (UCD) Ireland CSC Outstanding Undergraduate Exchange Program; GPA: 3.98/4.20 Sep. 2018 - Aug. 2019

Major Courses: Radio-Frequency Electronics (A+); Solid-State Electronics (A+); Biophysics at the Nanoscale and Nanodevices (A+); Nanomaterials (A+); Advanced Metals/Materials Processing (A+); Physics of Nanomaterials (A+)

WORK EXPERIENCE

RF Technical Consultant - Point2 Technology Inc. South Korea D-Band (176 GHz) Wireline Transceiver SoC in 90-nm SiGe for an 800 Gb/s Link Sep. 2022 - Jun. 2023 • **D-Band Receiver**: Designed key receiver sub-blocks, including mixer, clock path, power divider, and output driver.

- RX Optimization: Conducted RX full-chain optimization for PAM-4, including LNA, mixer, LO, and output driver.
- Tape-outs: 90-nm SiGe BiCMOS Nov. 2022 (High-Band); 90-nm SiGe BiCMOS Mar. 2023 (Dual-Band)

Contract Researcher – KAIST

- Sub-6-GHz CMOS Wireless Receivers for IoT & 5G NR Applications
 - Low-Power WuRX: Led the receiver design for a 0.2 1.0 GHz radio SoC integrating RF, MODEM, and PMU unit.
 - **Duty-Cycling Scheme**: Implemented a novel two-step wake-up scheme for the sub-10- μ W duty-cycled WuRX.
 - Time-Modulated RX: Designed the DLL and RX for a novel time-divided I/Q switched capacitor RX architecture.
 - Tape-outs: 55-nm CMOS Oct. 2022; 65-nm CMOS May. 2023 (Time-Modulated RX); 55-nm CMOS Sep. 2023

Research Experience

•	RF/mm-Wave Integrated Circuits and Systems for Satellite and 6G Applications	ETH Zürich
	Ph.D. Candidate	Oct. 2023 – Present

- Power Amplifiers: Developing advanced power amplifier architectures for Ku/Ka-band SATCOM phased-array systems, including high power density designs, compact single-footprint Doherty architectures, and VSWR-resilient solutions.
- Phased Arrays: Developing Ku/Ka/Q/V-band transmitters for SATCOM arrays featuring VSWR-resilient PAs and integrated digital/PMIC SoC; Developing novel dynamic array architectures for joint communication and sensing.
- Taped-outs: <u>22-nm SOI</u>; Completed 9 tapeouts to date in GF22 FDX+: 5 building blocks, 4 phased-array systems.

Multi-Band Radio SoC with a Sub-10- μ W Wake-Up RX for IoT Applications

- M.S. Candidate
 - RX Circuit: Designed LNA, mixer, baseband PGA, complex IRNF, and BFSK demodulator for the RX signal path.
 - **Duty-Cycling Scheme**: Proposed a novel two-step wake-up duty-cycling scheme for the sub-10- μ W wake-up RX.
 - **Taped-out**: <u>55-nm CMOS</u>; RX architecture verified, achieved -96 dBm sensitivity for 250 kb/s R_{chip} under 300 μ W.

Sub-6-GHz Low Noise Front-End Module for 5G NR Applications

- M.S. Candidate
 - Ultra-Low-Noise LNA: Designed an n79 (4.7GHz) gain-switching LNA with proposed linearity improvements.
 - Testbench Modeling: Developed a strong foundation in parasitics-aware RF design, with model-validated testbench.
 - **Taped-out**: <u>65-nm CMOS</u>; Achieved the best FoM among LNAs at 4 6 GHz, outperforming commercial benchmarks.

Graphite Nanoplatelet-Based Flexible Electronics and Thermal Management

Undergraduate Research Assistant

• Flexible Electronics: Designed GNP-based flexible strain/pressure sensors with application on soft robotic control.

• Thermal Management: Designed thermal interface structure for soft and high thermal conductivity PCB substrates.

Aug. 2021 - Oct. 2022

Sep. 2020 - Aug. 2021

Sep 2017 - Sep. 2020

KAIST

HIT

South Korea

Sep. 2022 - Oct. 2023

KAIST

Skills

- Languages: Mandarin (Native), English (Fluent, IELTS 7.5), Korean (Basic), German (Basic, Targeting B1).
- IC Simulation: Cadence Virtuoso, EMX, Keysight ADS, Matlab, Simulink, Ansys HFSS, and related EDA tools.
- IC Evaluation: Test Automation, NF and Sensitivity, Linearity, PA Power & Modulation, and related RF testing.
- Soft Skills: Strong Work Ethic, Communication, Teamwork, Leadership, Time Management, Public Speaking.
- Hobbies: Long-Distance Cycling, Bikepacking, Marathon Running, Skiing (Cross-Country & Alpine), Cooking.

Selected Publications

Google Scholar ORCID

- Conference: J. Xu, E. Liu, M. Eleraky, T.-Y. Huang, C. Chu, H. Wang, "An Ultra-Compact Ku-Band Doherty Power Amplifier with a Single-Footprint Triple Two-Turn Asymmetric Doherty Combiner for 6G FR3," *EuMIC Accepted*, 2025.
- Journal: J. Xu, M. Eleraky, T.-Y. Huang, C. Chu, H. Wang, "A Compact Doubly Neutralized Ku Band Power Amplifier with 39% Peak PAE and 23 dBm Output Power in 22FDX+ EDMOS for 6G FR3," <u>MWTL Invited</u>, <u>IMS</u> 2025 Top-50 Papers.
- Conference: J. Xu, K.-M. Kim, H.-U Mahmood, J. Kim and S.-G Lee, "An n79 Sub-1-dB Noise Figure Highly Linear Variable-Gain LNA Employing Adaptive Imbalanced Bleeding for 5G NR," <u>A-SSCC</u>, 2022.
- Journal: J. Xu, H. Wang, T. Ma, Y. Wu, R. Xue, H. Cui, X. Wu, Y. Wang, X. Huang, W. Yao, "A graphite nanoplateletbased highly sensitive flexible strain sensor," *Carbon* (IF: 10.5), 2020.
- Conference: C. Chu, J. Xu, Y. Liu, J. Zeng, A. Wang, T. Torii, S. Shinjo, K. Yamanaka, H. Wang, "AI-Assisted Template-Seeded Pixelated Design for Multi-Metal-Layer High-Coupling EM Structures: A Ku-Band 6G FR3 PA in 22nm FDX+," *IMS*, 2025.
- Conference: H.-U Mahmood, K.-M. Kim, D. Tran, J. Xu, A. Qahir, J. Ko, J. Kim, S.-G. Lee, K.-S. Choi, "A 24% Efficient, 15.36 dBm Output Power, Multi-Standard Digital Polar Transmitter with 7-bit Phase Interpolator-based BFSK Modulator and 23 dB Sidelobe Suppressed PA for Low-Power Wide Area Networks," <u>A-SSCC</u>, 2024.
- Journal: K.-M. Kim, K.-S. Choi, H. Jung, B. Yun, J. Xu, J. Ko, S.-G. Lee, "A -124-dBm Sensitivity Interference-Resilient Direct-Conversion Duty-Cycled Wake-Up Receiver," <u>JSSC</u>, 2023.
- Patent: S.-G. Lee, K.-M. Kim, J. Ko, K.-S. Choi, J. Xu, E.-R. Jeong, "A Duty-Cycling Method for Wake-Up Radios," Korean Domestic Patent Number: 10-2022-0054080, 02 May, 2022.
- Journal: X. Wu, H. Wang, Z. Wang, J. Xu, Y. Wu, R. Xue, H. Cui, C. Tian, X. Huang, B. Zhong, "Highly Conductive Thermal Interface Materials with Vertically Aligned Graphite-Nanoplatelet Filler towards: High Power Density Electronic Device Cooling," <u>Carbon</u> (IF: 10.5), 2021.
- Journal: Y. Wang, H. Wang, F. Liu, X. Wu, J. Xu, H. Cui, Y. Wu, R. Xue, C. Tian, B. Zheng, W. Yao, "Flexible printed circuit board based on graphene/polyimide composites with excellent thermal conductivity and sandwich structure," *Composites Part A* (IF: 8.1), 2020.
- Journal: Y. Du, Y. Xu, W. Zhou, Y. Yu, X. Ma, F. Liu, J. Xu, Y. Zhu, "MOF-derived zinc manganese oxide nanosheets with valence-controllable composition for high-performance Li storage," *Green Energy & Environment* (IF: 10.7), 2021.
- Journal: X. Wu, Y. Wang, H. Wang, B. Zheng, Y. Wu, R. Xue, J. Xu, H. Cui, W. Yao, B. Zhong, X. Huang, "Semi-quantitative orientation control of graphite nanoplatelets in GNP/PU nanocomposite via balancing the effects of gravity and micro-flow field and application in manufacturing heat spreader substrate with excellent thermal conductivity," *Composites Part A* (IF: 8.1), 2021.