XINGCHEN LI

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EDUCATION

Tianjin University   Tianjin, China
Bachelor of Engineering, Major in Electrical Engineering   Sep. 2016 – Jun. 2020

- Cumulative GPA: **3.9/4.0** or **92.8/100** (rank **1/89**);
- Admitted on basis of performance on National College Entrance Exam (top **0.37%** in Shanxi Province);
- More than 10 personal honors and awards, and more than 20 prizes in various of technology and academic contests and competitions;
- **Main Courses:** Analog and Digital Circuit (4.0/4,0), High-Frequency Electronic Circuit (4.0/4.0), Semiconductor Physics (4.0/4,0), Electromagnetic Field (4.0/4,0), Quantum Mechanics (4.0/4,0), MEMS and nanotechnology (4.0/4.0), Dielectric Physics (4.0/4.0), Verilog HDL (4.0/4,0), etc.

PATENT AND PAPER

1. **Xingchen Li**, Kaixue Ma, "A General Theory of Symmetrical Multiple-Coupled LC-Tanks", IEEE Transactions on Circuits and Systems I: Regular Papers (submitted)
2. Kaixue Ma, **Xingchen Li** and Haipeng Fu, "A Circuit Analysis Method Based on Multiple Coupled LC Tanks", CN110378007A (Chinese patent, in process)
3. **Xingchen Li**, Changlu Li, Yun Wang and Mengqi Lei, "An Infrared Communication System based on Handstand Pendulum", Experiment Science and Technology. (submitted, No: 2019-0309)

MAIN RESEARCH EXPERIENCES

Tianjin University (Summer Internship)   Tianjin, China
Research Assistant to Prof. **Mark A. Reed,** Yale University   Jul. 2019 – Present
Fellow, IEEE; Fellow, CIFAR; Fellow, APS.
Programmable Nano-Filters and Other Devices Based on GHz Acoustic Fluidic Tweezers

- Aimed to design both novel GHz devices and RF peripherals, and discover new microfluidic phenomenon.
- Analyzed and solved two problems of previous GHz-acoustic-tweezer based devices. Developed two design principals and designed eleven novel programmable structures which are under fabrication currently.
- Designed, fabricated and measured a microstrip-line based switch system, which has Insertion Losses of -2.93dB (on-state) and -32.36dB (off-state) at 2GHz. Other RF peripheral circuits are being designed as well.
- Designed a monolithic programmable (36 inputs) RF platform for measurements and controls of GHz devices. Two patents are being written.

Tianjin University (School of Microelectronics)   Tianjin, China
Research Assistant to Prof. **Haipeng Fu**   Apr. 2019 – Present
77GHz Automotive Millimeter-Wave-Radar Imaging

- Aimed to implement a millimeter wave imaging system basing on an integrated single-chip FMCW transceiver and embed the system onto vehicles.
- Designed an antenna array for data sending and receiving, established a testing platform for chip programming and measurement and achieved the receiving of unprocessed raw data.
- Literature reviewed current solutions of long/short range radars, modulation methods and imaging algorithms.

Tianjin University (School of Microelectronics)   Tianjin, China
Research Assistant to Prof. **Kaixue Ma,** Dean, School of Microelectronics.   Sep. 2018 – Present
General Theories of Multiple Coupled LC Resonators

- Aimed to mathematically model the inner mechanisms of Multiple Coupled LC-tank structures and theoretically explain reasons of their good performances under strong coupling situations.
- Proposed and applied promoted decoupling and even-and-odd-mode methods into analysis, and for the first time comprehensively demonstrated reasons that the structures can improve Q-values and reduce space consumptions.
- Proposed several guidelines for future designs and tunings of these structures in both integrated and board level circuits, and gave out full-frequency-scale input impedance calculating formulas.
- Planned to implement the proposed structure and design guides on SISL (Substrate Integrated Suspended-Line).

Tianjin University (School of Microelectronics)   Tianjin, China
Research Assistant to Professor **Qiang Liu**, Vice Dean, School of Microelectronics.   Apr. 2018 – Aug. 2019
Design of an Acoustic Tweezer Based Particle Levitating System

- Built an 40kHz acoustic-tweezer system, and designed an amplifier system with frequency and temperature compensation.
- Designed parallel controlling strategies and phase basing on RTL descriptions that embedded in a Xillinx FPGA.
- Implemented the levitation of a maximum of 8 polystyrene particles in a space of $1cm \times 1cm \times 7cm$, and achieved the manipulations of particle movements.
- Awarded the first prize in the 3rd National Integrated Circuit Competition (in 2019), broke the record in the history of Tianjin University.

Tianjin University (School of Microelectronics)   Tianjin, China
    Research Assistant to Prof. **Guoxuan Qin**   Apr. 2017 – Mar. 2018
A Study of RF oscillators on Bendable Flexible Substrates
- Aimed to design an oscillator on a bendable substrate by using ADS and HFSS.
- Implemented the simulation of a Ka-band substrate resonator on bendable plastic membrane.
- Learnt numerous theories and got systematic training of RF circuit designs and simulations in this project.

SELECTED AWARDS AND HONORS

Personal Honors

China National Scholarship (**top 1%, the Highest Scholarship awarded by Chinese government**)	2017
Tianjin University Student Science Award (**one of the highest awards, awarded to 10 students**)	2019
Tianjin University Excellent Students (**top 3%**)	2018
Jinglongyu Scholarship (**awarded to only one student in the peer**)	2019
CASC Scholarship (**awarded to 18 students in the university for outstanding academic performance**)	2018
Top 10 Youth, School of Microelectronics (**the only college freshman who won the award**)	2017
Tianjin University Student Science Award, Nominated (**the youngest winner**)	2018
Student with Excellent Academic Achievement, Tianjin University (**twice**)	2019/2018

Awards

Special Prize, Institute of Physics CAS "Three-Minute Physics" Contest (**top 1 nationwide**)	2017
Regional Finalist, Innovate FPGA, FPT'19 (**top 15 in Greater China Region**)	2019
First Prize in China & North China, China College IC Competition (**top 10 nationwide**)	2019
First prize in North China, the NXP Cup National University Students Smart Car Race (**top 7**)	2018
Excellent Project, Undergraduate Innov. & Entrepre. Training Program (**top 2 among peers**)	2018
First prize in Tianjin, China Undergraduate Mathematical Contest in Modelling	2017
Honorable Mentioned Prize, Comap MCM/ICM International Math Modeling Contest (**twice**)	2019/2018

LEADERSHIP AND EXTRACURRICULAR ACTIVITIES

Student Science Association of School of Microelectronic   Tianjin, China
President of Technology Department   Sep. 2018 – Jun. 2019
Minister of Technology Department   Sep. 2017 – Jun. 2018
- Main organizer and lecturer of over 40 series courses and 6 huge technology themed events. More than 500 students were benefited from our courses and trainings in total.
- The initiator of File Management Activity, which has been a standard of organizing files in association.
- Awarded Excellent President (2019) and Excellent Minister (2018) of the Year.

Social Survey of Tianjin Integrated Circuit Industry   Tianjin, China
Team Co-Leader   Aug. 2018
Team Vice Leader   Feb. 2018
- Comprehensively studied the current situations of Integrated Circuit Industry in Tianjin, China.
- Visited and surveyed several companies and institutions in Tianjin, including SMIC, NXP, Zhonghuan Semiconductor and Tianjin IC Design center, etc. Covered fields of IC design, fabrication and IC testing.
- Wrote a 6,000-words survey report, awarded the Second Prize of 2019 social practice evaluation in TJU.

ADDITIONAL INFORMATION

- Wing forward in Soccer Team, School of Microelectronics (total of 10 goals in 16-17 and 17-18 seasons)
- Started playing the piano for 10 years and sketching for 12 years.
- Built an *MCU controlled wireless charging vehicle*, *a pendulum based infrared communication system* and a *programmable 7.18MHz Tesla Coil system* respectively.
- MS Office, Matlab, ADS, HFSS, AutoCAD, Python, C, ARM cortex-M1/4 and 51 based MCUs.
- Participated in a *Natural Language Processing* research in Department of Computer Science as the leader.
- Established a *Deep Reinforced Learning Algorithm* based automatic control system.
- Languages: Mandarin (Native), Jin Dialect (Native), Cantonese (Intermediate).