Sun, Jingdong

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EDUCATION

Missouri University of Science & Technology (Missouri S&T) *Aug. 2016-Present*
Ph.D. Candidate in Electrical and Computer Engineering GPA: 4.0/4.0

Missouri University of Science & Technology (Missouri S&T) *Aug. 2014-May. 2016*
M.S. in Electrical and Computer Engineering GPA: 4.0/4.0

Huazhong University of Science & Technology (HUST) *Sept. 2010-Jun. 2014*
B.S. in Electronics and Information Engineering (Honors Program) GPA: 3.7/4.0

HORNORS AND AWARDS

Best Student EMC Hardware Design Award *Mar. 2015*
First Author. Granted by IEEE Electromagnetic Compatibility Society.

Exceptional Performance in the International EM Proficiency Test *Oct. 2014*
Executed by National Taiwan University & TEMIAC
Top 4% among 265 exam takers from Japan, HK, Korea, Taiwan, and U.S.

Graduate Research Assistant Scholarship *Sept. 2014*
Full research scholarship granted by EMC Laboratory, Missouri S&T.

National Prize in Mathematical Contest CUMCM *Sept. 2012*
Contemporary Undergraduate Mathematical Contest in Modeling
Top 5% among all the participates from China, Singapore, and U.S.

WORKING EXPERIENCE

Google Inc. *Jan. 2019-July. 2019*
Hardware Intern, Phone SIPI Group *Mountain View, U.S.*

- End-to-end power distribution network (PDN) modeling for mobile platforms.
- Debugging on the USB charging desense issue.
- Conducted various RFI/PDN measurements, including micro-probing and near-field scanning.

ConvenientPower Systems (CPS), Leading in Wireless Charging *Apr. 2017-Aug. 2018*
Manager, RX System Group (14 members) *Chengdu, China*

- IC-based wireless power receiver solutions for mobile phones & accessories.
- Definition and system-level development for multiple wireless charging receiver ICs.
- **CPS Wireless Charging Case for Meizu POP TWS Earphones**, Project Lead
  World's 1st earphones product certified by WPC Qi standard. Developed the minimum wireless power receiver solution with the most compact magnetic coil design for tiny form-factor device.
- **CPS Wireless Charging Function Integration for Gionee M7P Phone**, Project Lead
  In-depth integration of wireless charging function on mechanical structure, hardware, driver and manufacturing test setup. Launched the 1st 10W fast wireless charging phone in China.

H3C Technologies Co., Ltd. *May. 2011-Jan. 2013*
Software Engineer *Wuhan, China*

- Software development (C/C++) in user space and kernel for H3C Comware platform.
- Implementation of common protocols, including ICMP, UDP, TCP, FTP, HTTP, DHCP, etc.
- **H3C PPPoE Server Development Project**, Technical Lead

  Implement the PPP protocol over the local Ethernet on the H3C Comware V7 distributed platform, including kernel architecture and user space application design.
- **H3C Network Quality Analyzer Development Project**, Core Member

  Using probes and traces to collect statistical and historical information for the routers connected to the Internet, and analyze the network quality based on multiple network protocols.

PUBLICATIONS

Guangyao Shen, Sen Yang, **Jingdong Sun**, Shuai Xu, David J. Pommerenke, and Victor V. Khilkevich. "Maximum Radiated Emissions Evaluation for the Heatsink/IC Structure Using the Measured Near Electrical Field." IEEE Transactions on Electromagnetic Compatibility 59, no. 5 (2017): 1408-1414

Chen, Bichen, Srinath Penugonda, **Jingdong Sun**, and Jun Fan. "Fast Transmitter and Receiver Eye Diagrams Acquisition in the MIPI D-PHY Interface." In 2019 IEEE International Symposium on Electromagnetic Compatibility, Signal & Power Integrity (EMC+ SIPI), pp. 570-574. IEEE, 2019.

Sun, Ze, Nicholas Erickson, **Jingdong Sun**, Ryan From, and Jun Fan. "Monte Carlo Particle Simulation for Electrical and Thermal Analysis of a MESFET using the Finite-Element Approach." In 2019 IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization (NEMO), pp. 1-4. IEEE, 2019.

Lu, Hongyu, Huapeng Zhao, Anfeng Huang, Dongwook Kim, **Jingdong Sun**, Jun Hu, and Hongseok Kim. "High Power Wireless Power Transfer Efficiency and EMI Co-optimization Based on Fast Field-Circuit Co-simulation." In 2019 IEEE International Conference on Computational Electromagnetics (ICCEM), pp. 1-3. IEEE, 2019.

Jonghyun Cho, **Jingdong Sun**, Heegon Kim, Jun Fan, Yanling Lu, Siming Pan. "Coil design for 100 KHz and 6.78 MHz WPT system: Litz and solid wires and winding methods." In Electromagnetic Compatibility & Signal/Power Integrity, 2017 IEEE International Symposium on, pp. 803-806.

Chen Tian, **Jingdong Sun**, Weimin Wu, Yan Luo. "Optimal bandwidth allocation for hybrid Video-on-Demand streaming with a distributed max flow algorithm." Computer Networks 91 (2015): 483-494.

Junhua Yan, Chen Tian, **Jingdong Sun**, and Hanzi Mao. "Improve distributed client lifecycle control in shadowstream." International Journal of Web Services Research (IJWSR) 11, no. 4 (2014): 62-78.

Hanzi Mao, Chen Tian, **Jingdong Sun**, Junhua Yan, Weimin Wu, and Benxiong Huang. "Shadow VoD: performance evaluation as a capability in production P2P-CDN hybrid VoD networks." In 2014 IEEE 11th Intl Conf on Ubiquitous Intelligence and Computing, and IEEE 11th Intl Conf on Autonomic and Trusted Computing, and IEEE 14th Intl Conf on Scalable Computing and Communications and Its Associated Workshops (UTC-ATC-ScalCom), pp. 771-776. IEEE, 2014.

PATENTS

US20190052103A1: Multi-coil placement method for power transmitter in wireless charging system

US20190004125A1: Method and system for evaluating magnetic field uniformity of magnetic coil

US20180277298A1: Sparse-routed magnetic coils for wireless power charging system

US20180269718A1: Wireless power transfer systems and methods using non-resonant power receiver

US20180241248A1: Combined voltage and frequency tuning for efficiency optimization

CONFERENCE PRESENTATIONS

Talk. "A Pattern Based Analytical Method for Impedance Calculation of the PDN in Mobile Platforms". Center for Electromagnetic Compatibility (CEMC) IAB Meeting. Nov. 2019.

Talk. "Study and Simulation of HPM Effects on Semiconductor Device using Monte Carlo Method". Center for Electromagnetic Compatibility (CEMC) IAB Meeting. Nov. 2016.

Poster. "Accurate Rectifier Characterization and Improved Modeling of WPT Systems". Center for Electromagnetic Compatibility (CEMC) IAB Meeting. Nov. 2019.

Poster. "Post-Design Methodology for Constant Power Load WPT Systems". Center for Electromagnetic Compatibility (CEMC) IAB Meeting. Nov. 2019.

Poster. "Accurate Modeling of PMIC Devices to Optimize Low Frequency Voltage Droop". Center for Electromagnetic Compatibility (CEMC) IAB Meeting. Nov. 2019.

Poster. "Designing a 40GHz Automated Channel Emulator Based on MEMS Switch". Center for Electromagnetic Compatibility (CEMC) IAB Meeting. Nov. 2014.

RESEARCH AND PROJECTS

Modeling on Wireless Power Transfer (WPT) Systems

- Developed accurate rectifier characterization method and improved system-level model.
- Proposed pre-design and post-design design methodology to optimize coils and system.
- Implemented an A4WP-resonance WPT prototype to demo at CES, Las Vegas, 2016.

Modeling on Power Distribution Network (PDN)

- Developed a novel pattern-based analytical method for PCB PDN impedance calculation.
- Developed an accurate PMIC model to optimize the PDN low frequency response.

Simulation of HPM / ESD Effects on Semiconductor Device

- Analyzed the device physics of failures caused by HPM / ESD injections.
- Predicted the upset events in a particle-level perspective using Monte Carlo method.

Automated Channel Emulator Based on MEMS Switch

- Designed multiple transmission line channels with good signal integrity performance.
- Integrated MEMS switch for channel selection, under the control of an embedded system.
- Implemented the automated control logic using Python script.

Heat Sink / IC Radiation Field Transformation

- Constructed an equivalent field source by the near-field scanning technique.
- Developed and validated a far-field transformation procedure for the heat sink / IC structure.

Wireless Smoke Detection Based on Structure Similarity of Video

- Designed the smoke detection algorithm using structure similarity of video frames.
- Implemented the hardware and software of the WiFi-UART module to transmit smoke alarm.

Open-Source Mirror Site Development

- Built the 1st and largest open-source mirror site in Central China.
- Completed the rsync synchronizing script (bash), the status updating script (Perl), and the front-end web page (HTML/PHP/Javascript).

SKILLS

Hardware
SIPI, RF and power delivery system design, schematic, PCB layout, bring-up and testing

Measurement
Oscilloscope, VNA, SA, TDR
Near-field scanning, micro-probing

Software
C/C++, Matlab, Perl, Python, Latex, Javascript, HTML/CSS, TCL/Tk

Simulation
RF simulation: HFSS, CST, EMC Studio
Circuit simulation: ADS, HSPICE, PowerSI

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