

Sun, Jingdong

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PROFESSIONAL EXPERIENCE

Apple

Display Electrical Engineer, iPhone

06/2023 - Present

San Diego, CA

- Electrical design and validation for iPhone Pro display modules (FPC, DDIC, DSiP).
- System-level coexistence debugging and mitigation.

Tesla

Staff Electronic Design Engineer, Autopilot Team

06/2020 - 06/2023

Palo Alto, CA

- Signal/power integrity design and validation for next-generation Dojo/Autopilot hardware.
- Lead voltage regulator module (VRM) spec, optimization and DFMEA for Dojo training tile.
- Hardware management and data analysis for end-of-line (EOL) testing in manufacturing process.
- High-speed channel full-wave simulations (Ansys HFSS) and micro-probing measurements.
- Design, draw schematic (Cadence), and guide PCB layout for interposer & tester boards.
- Built auto-testing platform, including power supply/oscilloscope/E-load/load slammer.
- Component characterization, including SerDes IP, VRM, PCB material, capacitor, etc.

Google

Hardware Intern, Pixel Phone SIPI Team

01/2019 - 07/2019

Mountain View, CA

- End-to-end power distribution network (PDN) modeling for mobile platforms.
- Investigated and mitigated USB charging desense issue.
- Conducted RFI/PDN measurements, near-field scanning, and PDN impedance characterization.

ConvenientPower Systems

Manager, RX System Team

05/2017 - 07/2018

Chengdu, China

- Provided IC-based wireless power receiver solutions for mobile phones & accessories.
- Developed the world's 1st Qi-certified wireless charging earpods (Meizu POP).
- Integrated the 1st 10W fast wireless charging function for mobile phone (Gionee M7P) in China.

EDUCATION

Missouri University of Science & Technology (Missouri S&T)

Ph.D. and M.S. in Electrical Engineering

08/2014 - 05/2020

Huazhong University of Science & Technology (HUST)

B.S. in Electronic Information and Communications (Honors Program)

09/2010 - 06/2014

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, JMP,
LaTeX, Javascript, HTML/CSS, TCL/Tk

Simulation

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

HONORS & AWARDS

IEEE EMC Society Best EMC Hardware Design Award First Author, awarded by IEEE Electromagnetic Compatibility Society.	2015
Exceptional Performance in the International EM Proficiency Test Top 4% among 265 exam takers from Japan, Korea, China, and U.S.	2014
Graduate Research Assistant Scholarship Full research scholarship funded by EMC Laboratory, Missouri S&T.	2014 - 2020
National Prize in Mathematical Modeling Contest Top 5% among all the participants from China, Singapore, and U.S.	2012

RESEARCH EXPERIENCE

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.
- Built Qi and A4WP standards compatible WPT prototypes (Demos at 2016 CES, Las Vegas).

Modeling on Power Distribution Network (PDN)

- Developed a novel pattern-based analytical method for PCB-level PDN impedance calculations.
- Established a topology-based accurate VRM model to optimize PDN low frequency responses.

Simulation of HPM/ESD Effects on Semiconductor Device

- Analyzed the device physics of failures caused by HPM/ESD injections.
- Predicted 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 (Python).

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

Open-Source Mirror Site Development

- Built the first and largest open-source mirror site in Central China.
- Established rsync synchronizing scripts (bash), status updating scripts (Perl), and front-end web pages (HTML/CSS/Javascript).

PUBLICATIONS

Articles: 15 peer-reviewed journal and conference papers, including *IEEE Transactions on Power Electronics* and *IEEE Transactions on Electromagnetic Compatibility*.

Patents: 7 US patents.

Presentations: 2 talks and 4 posters at CEMC IAB Meetings in 2014, 2016, and 2019.