Changseob **Lee**

SPICE DEVELOPER · MODELING EXPERT

1-1, Samsungjeonja-ro, Hwaseong, Rep. of KOREA

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Research Interests

Device Circuit Modeling, Physical Electronics, Photonics Integrated Circuits, Analog/Digital Integrated Circuits

Work Experience

Samsung Electronics. Co., Ltd.   *Hwaseong, S.Korea*

SPICE GROUP, SAMSUNG FOUNDRY   *Feb. 2018 - Present*

Project Experience

MBCFET(Multi-Bridge-Channel FET) SPICE Modeling   *Samsung Foundry*

3GAE PROCESS SPICE DEVELOPER   *Oct. 2018 - Oct.2019*

- Device behavior analysis and Process Design Kit structure development
- Implemented Characteristics of threshold voltage, Saturation & Linear Current

FinFET SPICE Modeling   *Samsung Foundry*

7NM PROCESS SPICE DEVELOPER   *Oct. 2018 - Dec. 2019*

- FinFET Layout Structure analysis
- Implemented Characteristics of threshold voltage, Saturation & Linear Current

FDSOI(Fully Depleted Silicon-On-Insulator) SPICE Modeling   *Samsung Foundry*

LN18FDSOI, LN28FDSOI SPICE DEVELOPER   *Oct. 2019 - Present*

- pre &post simulation on circuit designer's view
- Implemented Characteristics of threshold voltage, Saturation & Linear Current

Silicon Data Mining Tool Development   *Samsung Foundry*

TOOL DEVELOPER   *Mar. 2020 - Oct.2021*

- Integrated silicon handling method SPICE team, Device team and Fab
- Integrated HSPICE, Tcl, Perl, Python Code
- Awarded Samsung Foundry Work Smart Fair 2021.Q2

Samsung Unified Infra Structure Development   *Samsung Foundry*

TOOL DEVELOPER   *Mar. 2019 - Mar.2020*

- Standardized SPICE model library structure
- Encapsulation of HSPICE, Python, Verilog-A, Perl
- Awarded Design Platform Team Project

PMIC SPICE Modeling   *Samsung Foundry*

BCD1370, BCD1340HP, APM906M, BCD90GP SPICE DEVELOPER   *Oct. 2018 - Present*

- Developed schottky diode, zener diode, iso-bjt, resistor, varactor
- Reformed model equation, library structure, TEG structure

CMOS Image Sensor SPICE Modeling   *Samsung Foundry*

LF6/LF6S SPICE DEVELOPER   *Oct. 2018 - Present*

- Implemented Characteristics of threshold voltage, Saturation & Linear Current
- Reformed model equation, library structure, TEG structure

Pannel & Mobile DDI SPICE Modeling   *Samsung Foundry*

LL1313GP, LL1318GPS, LL13A13P SPICE DEVELOPER   *Oct. 2018 - Present*

- Implemented Characteristics of threshold voltage, Saturation & Linear Current
- Reformed model equation, library structure, TEG structure

MOS Varactor Model Equation Development   *Samsung Foundry*

THE 2ND AUTHOR   *Oct.2020*

- Published Samsung Foundry Symposium
- Increased Performance by 3x, Reduced Memory usage by 20%

Education

SKKU(SungKyunKwan University)   *Suwon, S.Korea*

B.S. IN SEMICONDUCTOR SYSTEMS ENGINEERING   *Mar. 2012 - Feb. 2018*

- Relevant Courses: Analog IC Design, Digital IC Design, Semiconductor Integration Engineering, Physical Electronics, Display Device and Process, Electromagnetism, Probability Random Process, Honor Calculus

Scholarships & Awards

2021.Jun	**Individual Award**, Samsung Foundry Work Smart Fair 2021.Q2	*Samsung Foundry*
2020.Mar	**Project Award**, Developed Samsung Unified Modeling Infra Structure	*Samsung Foundry*
2012-2017	**Samsung Rental Scholarship**, which is given to promising students (7 Semesters)	*B.S in SKKU*
2012-2017	**Samsung Semiconductor Scholarship**, which is given to promising students (6 Semesters)	*B.S in SKKU*

Hosted Seminars

Deembedding Methodology   *Samsung Foundry*

TO ST MICRONICS, FRANCE   *Aug.2022-Oct.2022*

- How to de-embed Metal, Contact Access Effect in SOI Process

HSPICE Optimizer Algorithm   *Samsung Foundry*

TO SAMSUNG FOUNDRY   *Sep.2022*

- Levenberg-Marquardt algorithm, Combination of Steepest Decent method and the Gauss-Newton method

Ridge Regression, Linear Algebra   *Samsung Foundry*

TO SAMSUNG FOUNDRY   *Apr.2022*

- Geometric, statistical interpretation of Ridge Regression and how to apply in SPICE Model

SPICE Modeling Methodology   *Samsung Foundry*

TO SSIR(SAMGSUNG SEMICONDUCTOR INDIA RESEARCH), INDIA   *Jun.2019*

- Library Structure, usage of internal SPICE modeling tools

Photo Diode Model Implement Methodology   *Samsung Foundry*

TO SAMSUNG FOUNDRY   *Jun.2019*

- Build model equation, model &Silicon correlation Verification, Netlist Library

Field Training in Samsung Electronics

2022.Sep	**Digital Integrated Circuit Design (40hr)**, Memory, Multiplier&Shifter, Adder, Desgin methodology, Timing	
2021.Oct	**Regression Analysis (36hr)**, Model Validation and Diagnostics, Ridge&LASSO Regression, Projection	
2021.Sep	**Mathematical Statistics (24 hr)**, Method of Estimation, Confidence Interval, Normal Distribution	
2021.Nov	**Structured Big Data Analysis (32hr)**, Ensemble Algorithms,Linear Regression	
2020.Jun	**Python (32 hr)**, scikit-learn (K-Nearest Neighbor, Decision Tree, PCA, mRMR, DTW)	
2019.Mar	**Machine Learning (32 hr)**, Dimension Reduction Algorithm, Support Vector Machine	
2019.Jun	**FinFET Layout (32hr)**, Layout drawing, LVS & DRC verification	
2018.Aug	**Process Design Kit (12hr)**, Connection of SPICE, PEX, CDS, DRC, LVS Teams	
2018.Jun	**Analog Integrated Circuit Design (32hr)**, OP-Amplifier Circuits, Output Stages and Power Amplifiers	
2018.Jun	**Device/Process (64hr)**, Advanced transistor, Future Devices	

Skills

Programming	Python, Perl, Git, Verilog-A, C/C++, Matlab, LINUX, Excel VBA, Tcl
Tools	HSPICE, Spectre, BSIMProPlus, IC-CAP, Cadence tools, Spotfire