Ipoom Jeong · Hardware Engineer · Illinois, USA · **jip9110@gmail.com** · (US, +1) 217 778 8808 · (KR, +82) 10 9180 7008

Ipoom Jeong | Resume

❱ Status: Postdoctoral Research Associate at UIUC

❱ Interests: High-Performance and Energy-Efficient CPU/GPU Microarchitectures and Memory/Storage System Designs

❱ Profile: Accomplished and highly self-motivated Ph.D. with 10+ years of experience in computer system engineering. Rich experience in the design and verification of computer systems.

❱ Website: http://ipoom-jeong.com/

❱❱❱ Experience

2022.09 - Present   **Postdoctoral Research Associate**   University of Illinois Urbana-Champaign, USA

- ❱ Coordinated Science Lab (CSL)
- ❱ Principal Investigator (PI): Professor Nam Sung Kim
- ❱ Architectural Optimizations for Datacenters, CXL-Based Device Architectures, Smart-I/O Devices (SmartSSD, SmartNIC, etc.)

2021.09 - 2022.08   **Research Professor**   Yonsei University, Korea

- ❱ BK21 Y-BASE R&E Institute, Department of Electrical and Electronic Engineering
- ❱ Energy-Efficient CPU/GPU Microarchitectures, Processing-in-Memory (PIM) Architectures

2020.03 - 2021.08   **Engineer/Staff Engineer**   Samsung Electronics, Korea

- ❱ Advanced Solution Development Team, Memory Business
- ❱ CXL-Based Accelerator/Memory Expansion Device, SmartSSD 2.0 (Computational Storage Drive) SoC Architecture

2014.03 - 2020.02   **Research Assistant**   Yonsei University, Korea

- ❱ Embedded Systems and Computer Architecture Lab (esCaL)
- ❱ Advisor: Professor Won Woo Ro
- ❱ Energy-Efficient CPU/GPU Microarchitectures, Multi-Core Architectures

2014.03 - 2020.02   **Teaching Assistant**   Yonsei University, Korea

- ❱ Undergraduate courses: Computer Architecture (EEE3530, 14-1st, 16-1st), Electrical and Electronic Engineering Experiments: Fundamentals (EEE2111, 14-2nd, 15-2nd), Graduation Research (15-1st)
- ❱ Graduate courses: Advanced Computer Architecture (E6501, 17-1st), System Design and Applications Lab (EEE6611, 18-1st, 18-2nd)

2013.08 - 2014.02   **Undergraduate Research Assistant**   Yonsei University, Korea

- ❱ Embedded Systems and Computer Architecture Lab (esCaL)
- ❱ Advisor: Professor Won Woo Ro
- ❱ Exploiting Back-end Fusion in Multi-Core Processors

❱❱❱ Education

2014.03 - 2020.02   **Doctor of Philosophy**   Yonsei University, Korea

- ❱ Department of Electrical and Electronic Engineering
- ❱ Dissertation: Energy-Efficient Instruction Scheduling Mechanisms for Out-of-Order Superscalar Processors

2010.03 - 2014.02	**Bachelor's Degree**	Yonsei University, Korea

❱ Department of Electrical and Electronic Engineering
❱ Graduation thesis: Exploiting Back-end Fusion in Multi-Core Processors

❱❱❱ Scholarships and Awards

2021.11	**Encouragement Prize at the Outstanding Patent Award**	SK Hynix

❱ Memory Device Including a Plurality of Area Having Different Refresh Periods, Memory Controller Controlling the Same and Memory System Including the Same
❱ US patent, Registered in 2022.03.15 (Application no: 16/988478, Registration no: 11276452)

2020.02	**Bronze Prize at the 26th Samsung Humantech Paper Award**	Samsung Electronics

❱ **Ipoom Jeong** and Seihoon Park
❱ CASINO Core Microarchitecture: Generating Out-of-Order Schedules Using Cascaded In-Order Scheduling Windows

2019.11	**Excellent Graduate Researcher Scholarship**	Yonsei University

2018.02	**Encouragement Prize at the 24th Samsung Humantech Paper Award**	Samsung Electronics

❱ **Ipoom Jeong** and Changmin Lee
❱ Cg-CMT: Expanding Instruction Window via Coarse-Grained Instruction Commit

2010.03 - 2014.02	**National Scholarship for Science and Engineering**	KOSAF

❱❱❱ Publications

2023.06	**LADIO: Leakage-Aware Direct I/O for I/O-Intensive Workloads**	International Journal

❱ **Ipoom Jeong**, Jiaqi Lou, Yongseok Son, Yongjoo Park, Yifan Yuan, and Nam Sung Kim
❱ IEEE Computer Architecture Letters, Accepted

2022.12	**CASH-RF: A Compiler-Assisted Hierarchical Register File in GPUs**	International Journal

❱ Yunho Oh, **Ipoom Jeong**, Won Woo Ro, and Myung Kuk Yoon
❱ IEEE Embedded Systems Letters, Volume: 14, pp. 187 - 190, Dec. 2022 (IF: 1.524, Q3, JCR2021)

2022.10	**Reconstructing Out-of-Order Issue Queue**	International Conference

❱ **Ipoom Jeong**, Jiwon Lee, Myung Kuk Yoon, and Won Woo Ro
❱ The 55th IEEE/ACM International Symposium on Microarchitecture (MICRO 2022, IF: 4, NRF BK21+)

2022.08	**TEA-RC: Thread Context-Aware Register Cache for GPUs**	International Journal

❱ **Ipoom Jeong**, Yunho Oh, Won Woo Ro, and Myung Kuk Yoon
❱ IEEE Access, Vol. 10, pp. 82049 - 82062, Aug. 2022 (IF: 3.476, Q2, JCR2021)

2020.02	**CASINO Core Microarchitecture: Generating Out-of-Order Schedules Using Cascaded In-Order Scheduling Windows**	International Conference

❱ **Ipoom Jeong**, Seihoon Park, Changmin Lee, and Won Woo Ro
❱ The 26th IEEE International Symposium on High Performance Computer Architecture (HPCA 2020, IF: 4, NRF BK21+)

2019.12	**OverCome: Coarse-Grained Instruction Commit with Handover Register Renaming**	International Journal

> ❱ **Ipoom Jeong**, Changmin Lee, Keunsoo Kim, and Won Woo Ro
> ❱ IEEE Transactions on Computers, Vol. 68, Issue 12, pp. 1802-1816, Dec. 2019 (IF: 3.131, Q1, JCR2018)

| 2018.06 | **Constructing Resilient Region in Dynamic Optimization Systems via Dynamic Adjustment of Bias Thresholds** | International Conference |

> ❱ **Ipoom Jeong** and Won Woo Ro
> ❱ The 3rd IEEE International Conference On Consumer Electronics Asia (ICCE-ASIA 2018)

| 2017.11 | **Parallel In-Order Execution Architecture for Low-Power Processor** | International Conference |

> ❱ Kyungmin Lee, **Ipoom Jeong**, and Won Woo Ro
> ❱ The 14th International SoC Design Conference (ISOCC 2017)

| 2017.01 | **Dynamic Warp Scheduler Selection Policy Using Linear Regression for GPUs** | International Conference |

> ❱ Hyunjune Shin, Kyungmin Lee, **Ipoom Jeong**, Jong Hyun Park, and Won Woo Ro
> ❱ The 16th International Conference on Electronics, Information and Communication (ICEIC 2017)

| 2016.06 | **Heterogeneous Single Core with Functional Unit Gating for High Energy-Efficiency** | Domestic Conference |

> ❱ Yoonsoo Kim, **Ipoom Jeong**, and Won Woo Ro
> ❱ 2016 Annual Summer Conference of IEIE

| 2016.06 | **Analyzing Development Trends and Performance/Power Characteristics of Multi-Core Processors** | Domestic Conference |

> ❱ **Ipoom Jeong** and Won Woo Ro
> ❱ 2016 Annual Summer Conference of IEIE

| 2014.11 | **Exploiting Back-end Fusion in Multi-Core Processors** | Domestic Conference |

> ❱ Jonghyun Park, **Ipoom Jeong**, and Won Woo Ro
> ❱ 2014 Annual Fall Conference of KIPS

❱❱❱ Patents

| 2022.12 | **Memory Management Unit and Method of Page Table Walk** | Domestic Patent |

> ❱ Jiwon Lee, Won Woo Ro, **Ipoom Jeong**, Hongju Kal, Gun Ko, and Hyunwuk Lee
> ❱ Applied in 2022.12.15 (Application no: 10-2022-0175909)

| 2022.07 | **Apparatus and Method for Instruction Scheduling of High-Performance Out-of-Order Cores** | Domestic Patent |

> ❱ **Ipoom Jeong** and Won Woo Ro
> ❱ Applied in 2022.07.15 (Application no: 10-2022-0087365)

| 2022.04 | **Neural Network Processing Method Including Memory Optimization Techniques** | Domestic Patent |

> ❱ Won Woo Ro, Hongju Kal, Cheonjun Park, Hyunwuk Lee, **Ipoom Jeong**, and Jiwon Lee
> ❱ Applied in 2022.04.04 (Application no: 10-2022-0041848)

| 2021.09 | **Memory Device, Operating Method of Memory Device, and Electronic Device Including Memory Memory Device** | Domestic Patent |

❱ Won Seob Jeong, Heehyun Nam, Younggeon Yoo, Jeongho Lee, Younho Jeon, **Ipoom Jeong**, and Chanho Yoon

❱ Applied in 2021.09.29 (Application no: 10-2021-0128940)

| 2021.01 | **Smart Storage Device** | Domestic Patent |

❱ Hyeokjun Choe, Younho Jeon, Younggeon Yoo, Hyodeok Shin, and **Ipoom Jeong**

❱ Applied in 2021.01.20 (Application no: 10-2021-0007897)

| 2020.11 | **Memory Device Including Direct Memory Access Engine, System Having the Same and Operating Method of Memory Device** | Domestic Patent |

❱ Heehyun Nam, Jeongho Lee, Won Seob Jeong, **Ipoom Jeong**, and Hyeokjun Choe

❱ Applied in 2020.11.06 (Application no: 10-2020-0148133)

| 2020.10 | **System, Device, and Method for Accessing Device-Attached Memory** | Domestic Patent |

❱ Jeongho Lee, Heehyun Nam, Jaeho Shin, Hyodeok Shin, Younggeon Yoo, Younho Jeon, Won Seob Jeong, **Ipoom Jeong**, and Hyeokjun Choe

❱ Applied in 2020.10.15 (Application no: 10-2020-0133743)

| 2020.10 | **System, Device, and Method for Indirect Addressing** | Domestic Patent |

❱ Jeongho Lee, **Ipoom Jeong**, Younggeon Yoo, and Younho Jeon

❱ Applied in 2020.10.14 (Application no: 10-2020-0132978)

| 2020.08 | **Memory Device Including a Plurality of Area Having Different Refresh Periods, Memory Controller Controlling the Same and Memory System Including the Same** | International Patent |

❱ Won Woo Ro, Hyunwuk Lee, Gun Ko, **Ipoom Jeong**, Minseong Kim, Yongtag Song, and Sungjae Lee

❱ **Registered in 2022.03.15** (Application no: 16/988478, Registration no: 11276452)

| 2020.04 | **Memory Device Including a Plurality of Area Having Different Refresh Periods, Memory Controller Controlling the Same and Memory System Including the Same** | Domestic Patent |

❱ Won Woo Ro, Hyunwuk Lee, Gun Ko, **Ipoom Jeong**, Minseong Kim, Yongtag Song, and Sungjae Lee

❱ Applied in 2020.04.14 (Application no: 10-2020-0045023)

| 2020.03 | **Apparatus and Method for Managing Physical Register File of High-Performance Out-or-Order Superscalar Cores** | Domestic Patent |

❱ **Ipoom Jeong** and Won Woo Ro

❱ **Registered in 2021.08.17** (Application no: 10-2020-0033669, Registration no: 10-2292580)

| 2019.11 | **Apparatus and Method for Managing Reorder Buffer of High-Performance Out-or-Order Superscalar Cores** | Domestic Patent |

❱ **Ipoom Jeong** and Won Woo Ro

❱ **Registered in 2020.10.22** (Application no: 10-2019-0146601, Registration no: 10-2170966)

❱❱❱ Projects

| 2020.09 - 2021.08 | **SmartSSD 2.0: Developing Next-Generation Computational Storage Drive** |

❱ Research and development project at Samsung Electronics

❱ A prototype was announced in Flash Memory Summit (FMS) 2022

2020.03 - 2020.08   **Developing CXL-Based Accelerator and Memory Expansion Device**

❯ Research and development project at Samsung Electronics

❯ Developing CXL (Compute eXpress Link) Type 2 accelerator and Type 3 memory expansion device by leveraging NAND flash

2019.02 - 2020.02   **Developing CPU-GPU Heterogeneous Computing Simulation Framework**

❯ Research project at Yonsei University joint with SK Hynix

❯ Developing a simulation framework for CPU-GPU heterogeneous computing that supports processing of the state-of-the-art deep learning algorithms

2018.07 - 2019.06   **Developing Energy-Efficient Approximate Memory for Neural Network Applications**

❯ Research project at Yonsei University joint with SK Hynix

❯ Exploring an energy-efficient approximate memory architecture for deep learning applications

2017.09 - 2018.08   **Developing Processor and Memory System for Next-Generation Security Platform**

❯ Research project at Yonsei University joint with Samsung Electronics

❯ Developing ASIPs (Application-Specific Instruction-Set Processors) for cryptographic algorithms (e.g., AES, SHA-256, and RSA-2048)

2015.07 - 2015.12   **Constructing a Verification Environment for Data Plane Acceleration and Performance Analysis**

❯ Research project at Yonsei University joint with ETRI

❯ Developing and verifying optimization techniques for improving data plane acceleration in virtualized network environment

2014.07 - 2017.11   **Developing Low-Power Mobile Computing Platform**

❯ Research project at Yonsei University joint with LG Electronics

❯ Inter- and Intra-core optimization techniques for higher energy-efficiency of mobile APs (Application Processors)

❯❯❯ Activities

2023.06 - 2023.06   **Tutorial Organizer**

❯ On-chip Accelerators in 4th Gen Intel® Xeon® Scalable Processors: Features, Performance, Use Cases, and Future!

❯ 50th International Symposium on Computer Architecture (ISCA 2023)

2022.06 - 2022.06   **Conference Session Chair**

❯ Artificial Intelligence Circuits and Systems 2022 (AICAS 2022)

2022.01 - Present   **External Reviewer**

❯ IEEE Transactions on Emerging Topics in Computing (TETC), 2022, 2023

❯ Microprocessors and Microsystems, 2022