
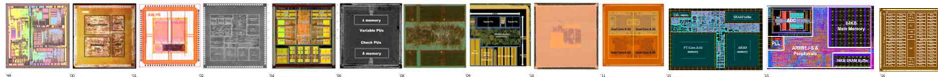


<Professor In-Cheol Park's Lab>

 Integrated Computer Systems Laboratory		■ Contact information	
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LAB.		Email: jmkim@ics.kaist.ac.kr	Tel: 010-8365-8393
Website		http://ics.kaist.ac.kr/	
■ Current state of the Lab. (in 2025 Spring Semester)			
Postdoctoral Fellows : 0		PhD Students: 3	Master's Student: 12
■ Research Areas			
<p>Intelligence Computing Systems Laboratory (ICSL) was established in 2000 by Professor In-Cheol Park. The research focus of ICSL is on computer architecture, embedded processors, and VLSI architectures for computationally intensive function blocks, such as multimedia signal processing and communication system. The current research scope of ICSL is VLSI designs for error correcting code blocks, deep neural networks, and communication systems.</p> <ul style="list-style-type: none">• Design of microprocessors: Many kinds of processors were developed such as single-chip programmable SoC platform, and multithread embedded processor. A SoC platform based on 32-bit embedded processor and on-chip bus was developed together with its corresponding development environment including software.• VLSI design for error-correcting codes: Error correction is one of the most important techniques used in communication and storage systems to recover messages corrupted in noisy environments. In addition, low-power LDPC decoders optimized for NAND flash were devised. Also, LDPC and polar decoders for communication standards such as 5G-NR were developed to achieve near-optimal error-correcting performance with high throughput.• VLSI design for neural networks: The neural network accelerators were proposed to achieve high energy efficiency while supporting the scalable structure, which can compute a neural network algorithm in multiple processors. In addition, processing-in-memory hardware architecture was designed to achieve high energy efficiency. 			
■ Recommended courses & Career after graduation			
<p>'Digital system design', 'Digital signal processing', 'Signals and systems', 'Introduction to computer architecture', and 'Electronic circuits' are recommended as prerequisite courses. Most graduates are employed as professors or as researchers in major companies such as Samsung Electronics, SK Hynix, Google, Meta (Facebook), and Apple or national research centers such as ETRI and ADD.</p>			
■ Introduction to other activities besides research			
<p>Our laboratory members enjoy out-of-study activities. We usually go out for dinner. We sometimes go out for drinks.</p>			
■ Introduction to the Lab.			
<p>ICSL provides one personal PC, two FULL HD monitors per person, and servers for simulations and EDA tools. We have one project and one research meetings every week, which provide proper guidance for works and researches. Our research topics focus on everything related to VLSI architectures including communications systems, storage systems, neural networks and error-correction codes.</p>			
■ Recent research achievements (2025)			
<p>[1] In-Cheol Park et al, "Multiple-Resolution Decoding Architecture for QC-LDPC Codes", IEEE Transactions on Circuits and Systems-I: Regular Papers, May. 2025</p> <p>[2] In-Cheol Park et al, "Multi-Bit Successive Cancellation List Decoding of Polar Codes Using One-Bit Error Boundary", IEEE Communication Letters, Apr. 2025</p> <p>[3] Sungho Kim et al, "High-Speed CMOS Synchronous Binary Counter with Constant Counting Rate", IEEE Access, Mar.2025</p> <p>[4] Kangjoon Choi and In-Cheol Park, "Hardware-Efficient Architecture for Multiple Quantized Gaussian Noise Generation", IEEE Transactions on Circuits and Systems-I: Regular Papers, Jan. 2025.</p>			