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| Field：Computer Architecture, System Software, Information Security |

Ryota Shioya's Group

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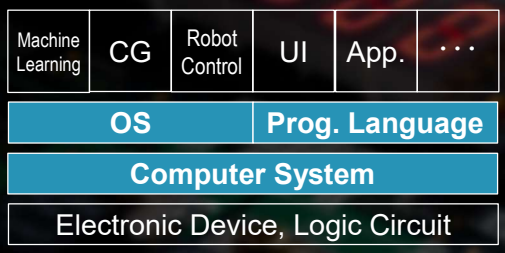
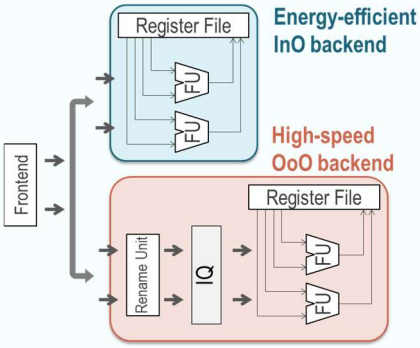


Our group's mission is to improve the performance, energy efficiency, and security of computer systems. We are conducting research on a wide range of topics, including computer hardware, programming languages, operating systems, and information security.

- Our research interests are in computer hardware and system software. We typically conduct research that includes both sides, such as good hardware that considers software properties, or good software that considers hardware properties.
- We welcome students who are interested in computer hardware, the foundation layers of software (language processing systems and operating systems), and information security.

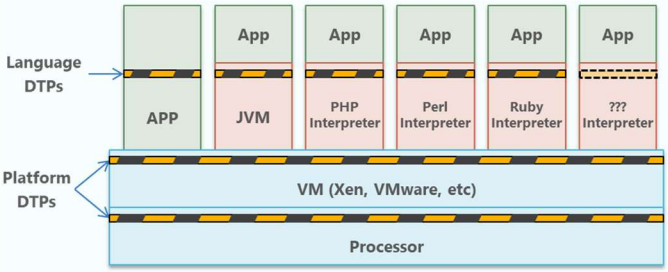
Energy-efficient Hybrid CPU

We are conducting research on an energy-efficient hybrid CPU that combines different CPUs specialized to various situations.



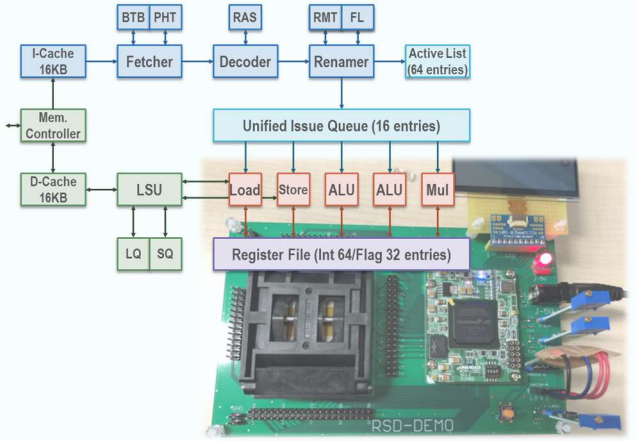
Dynamic Information Tracking for Security

We are conducting research on secure computer systems by tracking "information flow" and "the amount of information entropy" within a program. We are developing language runtimes for this purpose.



Advanced RISC-V CPU "RSD"

RISC-V is an open CPU standard, which has recently appeared. We are conducting research and development of advanced RSIC-V compatible CPU "RSD" that introduced our research results.



Other Research Topics

- Memory Compression for Scripting Languages
- Compiler/Binary Translator for our New CPU
- Fuzzing for Computer Hardware
- Hardware Accelerator for Self-driving Car
- CPU for Next-Generation Super Computer
- Energy Efficient GPU Architecture
- CPU Pipeline Visualization Tool