■ ISCA'19 **論文メモ**

ISCA'19 の論文が読めるようになってたのでいくつか． >>> 論文読み

Full-Stack, Real-System Quantum Computer Studies: Architectural Comparisons and Design Insights

https://dl.acm.org/citation.cfm?id=3322273

Scafolled で種々の Quantum Computer 向けに最適な実装するフルスタックツールチェイン TriQ.
備えるべきゲートや通信パスの考察に使えるよ（考察してみたよ）

- Our work performs a full-stack, benchmark-driven hardwaresoftware analysis of QC systems.
- TriQ, to conduct real-system measurements on seven running QC prototypes from three different groups, IBM, Rigetti, and University of Maryland.
    - TriQ, which allows us to start from QC programs written in a C-like high-level language
- Contributions
    - First, we perform the first multi-platform comparison of QCs from different vendors, built with different device technologies.
    - Second, to support our cross-platform studies, we have developed and will open-source the first multi-vendor QC compiler which compiles from high-level languages to multiple real-system QC prototypes, with device specific optimizations.
    - Third, our evaluation offers architectural insights for future QC systems.
    - Fourth, our compilation approach melding device specificity with a common core toolflow offers very good results;

Master of None Acceleration: A Comparison of Accelerator Architectures for Analytical Query Processing

https://dl.acm.org/citation.cfm?id=3322220

大規模な問題の場合, ヘテロ (Q100) な構成じゃなくてホモな構成のアクセラレータでも同じくらいの性能はでるよ，面積や消費電力では有利だよ，という話，かな.

- We find that the heterogeneous and homogeneous accelerators are equivalent for large designs, while for small designs the homogeneous is better.
- In total, there are 43 instructions in the homogeneous ISA
- the Q100 maximum operating frequency is higher (1100MHz) than that of the homogeneous design (950 MHz).