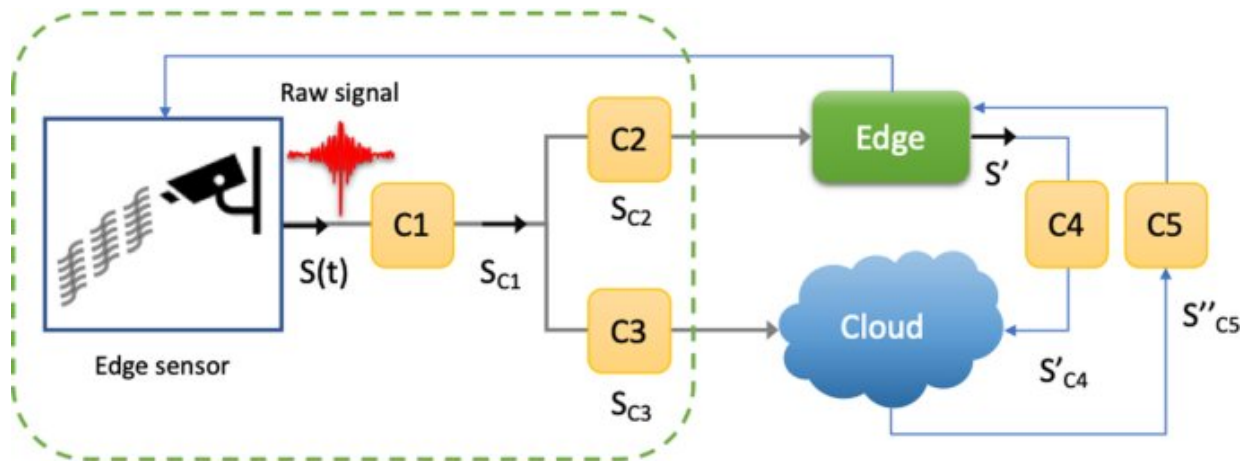


# Study seeks to define quantum compression

April 20 2023, by Matt Lakin



Graphical abstract. Credit: *Computing* (2023). DOI: 10.1007/s00607-023-01154-0

A study led by Oak Ridge National Laboratory researchers identifies a new potential application in quantum computing that could be part of the next computational revolution. The work is published in the journal *Computing*.

The study surveys techniques for compressing data generated by sensors in edge computing—which processes data at or near [sensors](#)—and compares classical techniques with quantum approaches, which are mostly in development. Compressing data saves [storage space](#) and network bandwidth.

Classical computing stores information in bits equal to 0 or 1. Quantum computing stores information in qubits, which can exist in more than one state simultaneously and can carry more information than classical bits.

"Classical data [compression](#) is pretty well defined, but not quantum compression," said Sarah Chehade, an ORNL postdoc and co-author of the study with ORNL's Ali Passian. "We wanted to identify where quantum compression stands as a new enabling tool for edge applications so we can start more conversations on a definition and standards."

UT-Battelle manages ORNL for the DOE's Office of Science, the single largest supporter of basic research in the [physical sciences](#) in the United States. The Office of Science is working to address some of the most pressing challenges of our time.

**More information:** Maryam Bagherian et al, Classical and quantum compression for edge computing: the ubiquitous data dimensionality reduction, *Computing* (2023). [DOI: 10.1007/s00607-023-01154-0](https://doi.org/10.1007/s00607-023-01154-0)

Provided by Oak Ridge National Laboratory

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