How reverse computing removes quantum computing bottlenecks

Quantum computing holds the key for an exciting future by incorporating Reverse Computing (RC) into its fold.
The news is full of breakthroughs in quantum computing, enhancement of processing frameworks and the ability to solve complex problems in record time. The most recent achievement was from the Sycamore chip using 53 qubits inside Googles quantum computer. The Sycamore chip produced binary strings over a million times and samples results to come up with the probability that any given string would appear. The Sycamore chip was able to achieve a solution to this problem within 200 seconds whereas, the fastest IBM computer (Summit) would take over 10,000 years. Google claimed quantum supremacy. There are several

other examples of news around quantum computing such as — the group of scientist led by Argonne National Laboratory that claimed that they reversed time and claims of quantum annealing chips performing faster than training algorithms. When such claims are made, scientist cast doubts, issue counterclaims and rebuttals by comparing the results with GPU, adjusted code on classical machines or plain dismissal. Since the scope of this article is not to discuss counter claims, it is important to mention that such claims should be viewed via a keyhole. These claims are for niche applications and results are misinterpreted for the quantum computing realm as a whole. While breakthroughs have applications that may be extrapolated to future developments, it is important to view them as a unique application for a particular solution, i.e., they can be applied towards a targeted problem with predefined equations, hardware and environment setup. They cannot be applied to any problem using another computing machine and that is the stumbling block that holds back the promise of quantum computing.

To enable quantum computing to realise its full potential, RC needs to be updated and applied to quantum processes. RC would enable application of quantum processes across generic problems, solve the query matching and process speed bottlenecks.

RC has the ability to:
First, Create advance relationships between input and output data processing within the classical and quantum realms. The advance relationship enables a close to perfect input and output against any undefined data within any application owing to Reversible Gates (RG). A RG holds information for long durations of time they can be reused against standardised data input across any computing problem in classical or quantum realm. A standardised input to an RG results in a perfect output with zero or very low error rates. This enables quantum computing processes to decreases gate errors to less than 0.012%. This decrease in gate errors is of vital importance when building larger and complex quantum systems.
Second, RC automatically provides significant upgrades for fault tolerance coupled with a decrease in gate errors. As a computing system with a RG can provide an accurate response, the fault tolerance of a quantum system may be comparable to a classical system. Both advantages (as above) are coupled together to enable staggering advances. The error correction is applicable for both bit and phase flips that will achieve better coherence when building superconductor qubits. Hence, RC delivers better coherence in gate errors and it resolves several

engineering and physics limitations of quantum computing.

Third, RC results in better measurement metrics which would augment the applicability of quantum volume. Quantum volume includes several metrics but the optimal usage is highly debatable. The implementation of RC can establish a new measurement index across future quantum computers. The new measurement matrix or RC Measurement Matrix (RCMM) will be a significant deviation from Boson sampling and operates for higher-order correlations. To ensure ubiquitous applicability, RCMM may be used for operations on quantum, supercomputing, GPU or classical computers while ensuring support across all logical equations, problems and computing platforms.

Finally, RC will resolve the heat problem by removing the chandelier of wires and enabling standardisation with a brand new exciting solution. The removal of chandler will enable applications such as smaller sizes quantum machines, removal of absolute zero and incorporation of new elements to read, store and manager super positioning state of electrons.