

**Toward Energy-Efficient
Stochastic Circuits Using Parallel
Sobol Sequences**

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ABSTRACT

- In this paper, a type of low-discrepancy sequences, the Sobol sequence, is considered for use in SC.
- Compared to the use of pseudorandom sequences generated by linear feedback shift registers, the use of Sobol sequences improves the accuracy of stochastic computation with a reduced sequence length.
- The inherent feature in Sobol sequence generators enables the parallel implementation of random number generators with an improved performance and hardware efficiency.

EXISTING SYSTEM

- Stochastic computing often requires long stochastic sequences and, thus, a long latency to achieve accurate computation.
- The long latency leads to an inferior performance and low energy efficiency compared with most conventional binary designs.

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PROPOSED SYSTEM

- In particular, the underlying theory is formulated and circuit design is proposed for an arbitrary level of parallelization in a power of 2.
- In addition, different strategies are implemented for parallelizing combinational and sequential stochastic circuits.
- The hardware efficiency of the parallel stochastic circuits is measured by energy per operation, throughput per area, and runtime.

HARDWARE REQUIREMENTS

- Processor - intel core i3
- RAM - 2GB
- Hard Disk - 20 GB

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SOFTWARE REQUIREMENTS

- Tool - MICRO WIND
- Operating system - Windows 7,8

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