

Evolving Bio Plausible Design With Heterogeneous Noc

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Abstract— With the increasing complexity of various communication and multimedia standards, Network on Chip (NoC) is evolving as a solution for on-chip communication problems. Bio-inspired paradigms such as spiking neural networks (SNNs), when incorporated can take full advantage of their inherent parallelism and offer the potential to meet the demands of real-time fault tolerant applications. This paper presents a scalable, configurable 2-D irregular mesh network on chip (NoC)-based SNN architecture. The modules are placed in such a way to minimize the spatial traffic density, unnecessary switch links and nodes resulting in reduced SNN area requirements. The proposed design is based on a planar grid of switches that route the traffic according to a fixed shortest path (XYDT based) discipline. It uses input buffering scheme and employs multi-class wormhole forwarding to support multiple service priority classes thus ensuring QoS.



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