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Evolving Combinational Logic Circuits Using a Hybrid Quantum Evolution and Particle Swarm Inspired Algorithm

An algorithm inspired from quantum evolution and particle swarm optimization is used to evolve combinational logic circuits. This algorithm uses the framework of the local version of particle swarm optimizations with quantum evolutionary algorithms, and integer encoding. A multi-objective fitness function is used to evolve the digital circuits in order to obtain a variety of feasible circuits with minimal number of gates in the design. A comparative study indicates the superior performance of the hybrid quantum evolution-particle swarm inspired algorithm over the particle swarm and other evolutionary algorithms (such as genetic algorithms) independently.

Phillip is a senior attending at the University of Missouri-Rolla majoring in Computer Engineering. He is the son of Mark and Beverly Moore and is from High Ridge, Missouri. On campus he is actively involved in the Real-Time Power and Intelligent Systems (RTPIS) Laboratory and has been involved in the solar house team. Off campus, he works at SMMJ Legal Auditing firm as a web developer to develop web applications and sites dictated by outside clients. Phillip plans on furthering his education to graduate studies at the University of Missouri-Rolla.