Elica (Elitsa) Kyoseva

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Title: Defining the quantum-GPU supercomputer

Abstract: Quantum computing has the potential to offer giant leaps in computational capabilities, impacting a huge range of industries, from drug discovery to portfolio optimization. Realizing these benefits requires pushing the boundaries of quantum information science in developing algorithms, researching more-capable quantum processors, and creating tightly integrated quantum-classical systems and tools. We'll review these challenges, offer insight into how AI supercomputing will enable quantum advantage, and discuss the latest developments in software and systems for tightly integrated quantum-classical computing.

Short bio: Dr. Elica Kyoseva is Director of Quantum Algorithm Engineering at NVIDIA, where she leads efforts to define the future of quantum computing through AI-powered, hybrid GPU–QPU systems. She leads the development of next-generation quantum algorithms and hybrid quantum–AI workflows. Her team works at the intersection of quantum hardware, AI, and high-performance computing, partnering with leading quantum hardware providers, national labs, and research institutions to develop end-to-end hybrid workflows that integrate GPU acceleration with emerging QPU capabilities. Prior to NVIDIA, she founded and led the Quantum for Bio challenge program at Wellcome Leap, a $50M global initiative that brought together leading institutions across quantum computing and the life sciences to develop transformative quantum applications for human health.

Dr. Kyoseva earned her PhD in Quantum Optics from University of Sofia, Bulgaria. She subsequently held academic positions at the National University of Singapore and Singapore University of Technology and Design, and was a Fellow at Massachusetts Institute of Technology and Tel Aviv University.