The Future of Parallel Computing
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Abstract: Solving the biggest challenges in science, industry, and society requires dramatic increases in computing efficiency. Parallel architectures are now ubiquitous, so programming and parallel programming can no longer be treated as separate topics. Today's applications must be parallelized to unlock the benefits of current and future hardware. Consequently, new programmers must be taught how to exploit parallelism as early as possible. They must also be taught how to use programming tools to increase application efficiency as well as their own productivity. This is particularly important because as heterogeneous parallelism becomes more common, the gap between domain experts and tuning experts widens. Effective use of programming tools helps narrow the gap between domain experts and tuning experts. As programming complexity increases, domain experts expect higher levels of abstraction in the form of productivity languages and domain-specific frameworks. Programming tools will allow the next generation of tuning experts to deliver the necessary high-performance frameworks.

Bio: Henry Gabb is a senior principal engineer in the Intel Architecture, Graphics, and Software Group. He first joined Intel in 2000 to help drive parallel computing inside and outside the company. Prior to joining Intel, Henry was Director of Scientific Computing at the U.S. Army Engineer Research and Development Center MSRC, a Department of Defense high-performance computing facility. Henry holds a BS in biochemistry from Louisiana State University, an MS in medical informatics from the Northwestern Feinberg School of Medicine, a PhD in molecular genetics from the University of Alabama at Birmingham School of Medicine, and a PhD in information science from the University of Illinois at Urbana-Champaign. He has published extensively in computational life science and high-performance computing. Henry is also the editor of *The Parallel Universe*, Intel's quarterly magazine for software innovation.