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Frontiers of Volunteer Computing

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Content :

Ten years from now, as today, the majority of the world's computing and storage resources will reside not in machine rooms but in the hands of consumers. Through volunteer computing much of these resources will be available to science. The first PetaFLOPS computation was done using volunteered computers, and the same is likely to be true for the ExaFLOPS milestone. Volunteer computing has existed for a decade and is being used to do breakthrough science in areas ranging from molecular biology to radio astronomy; however, it is an emerging technology and has potential applications in many new areas, including those involving storage and processing of large data.
The landscape of volunteer computing is shaped by many factors. Some of these involve hardware technology; mobile devices, Graphics Processing Units (GPUs), wired and wireless communication networks, memory, and storage. I will discuss trends in these areas. Other factors involve software: technologies like virtualization are making it easier for scientists to use volunteer computing, while the rise of proprietary software environments and vendor-controlled application markets is making it more difficult. Finally, I will discuss the organizational, economic, and marketing issues that must be addressed for volunteer computing to achieve its potential.

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