Agnostic Programming: "Less is More"

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Entrada libre hasta completar el aforo

Resumen:

In the Exa-scale and extreme heterogeneity era, programming is becoming an extremely expensive task. Current portable programming techniques, such as the directive-based programming model, or more recently, the C++ template libraries, have been positioned as potential solutions with other approaches such as task-based runtimes or domain-specific languages (DSLs). However, there is still a long way to walk towards a fully agnostic programming solution, where application developers don't have to worry about hardware/software constraints. In this talk, I will explore some current efforts that face such a challenge, providing some examples where less complicated programs are often more performing. Examples, of such efforts are the use and integration of performance models into the languages, as well as the exploitation of prescriptive approaches instead of descriptive ones. Future directions, such as the integration of AI-accelerated and -assisted techniques into programming solutions will be discussed and presented too.

Sobre Pedro Valero Lara:

Pedro Valero-Lara (PhD) is a Computer Scientist in the Programming Systems Group in the Advanced Computing Systems Research Section and Computer Science and Mathematics Division of Oak Ridge National Laboratory. The experience of Pedro is focused on high-performance, parallel, and scientific computing/programming applied to numerous problems of research and industrial interest. His work is part of several reference software packages for scientific computing: Kokkos, IRIS, Cray/HPE LibSci-Acc, PLASMA, and NVIDIA cuSparse, among others. Pedro was awarded the IEEE-CS Early Career Researcher Award for Excellence in HPC in 2020, the Juan de la Cierva Fellowship in 2018, the FPI-CIEMAT scholarship in 2011, and the Microsoft Imagine Cup in 2009. Previously, he held different leading positions in industry, as Sr Research Engineer at Cray, and academia, as founder and lead of the Linear Algebra and Math Libraries unit at Barcelona Supercomputing Center. He has participated in numerous important projects, such as the Exascale Computing Project, CORAL-2, and Human Brain Project, among many others. .