

SORS: Facilitating the Programming of Heterogeneous Devices using the HPL Library

Objectives

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Abstract: Heterogeneous systems have increased their popularity in recent years. The Heterogeneous Programming Library, HPL, intends to facilitate their programming. This library provides a simplified API and an embedded language that allow to generate OpenCL code. As a consequence, it can be used to program any kind of device for which OpenCL is available. In this seminar, we will make an overview of the library and, also, of its most recent new characteristics, such as, multidevice and performance portability support.

More information about HPL in <https://github.com/fraguela/hpl>



Short Bio: Dr. Diego Andrade is an associate professor of the Universidade da Coruña where he is a member of the Computer Architecture Group. He made his Ph.D thesis on cache memory performance analysis but in the last years his research focus moved to the GPGPU field. His research in this field has two main targets: improving the programmability of heterogeneous systems and enabling automatic performance portability on them.

Problems of heterogeneity

- More and more different systems
- Greater programming effort
 - New software managed hardware features
 - Separate memory: communication with host CPU
- Portability can be compromised
 - Each vendor/device may have its development environment. E.g.: CUDA



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