SORS: From heterogeneous co-execution to DSAs: An overview of past, present and future research lines

Objectives

Abstract: Heterogeneous architectures are prevalent, ranging from supercomputing to handheld devices. However, the collaboration of devices with different capabilities poses challenges of its own. This talk will introduce different software and hardware techniques for a transparent and efficient use of all the devices in a heterogeneous system. Furthermore, over the last few years, heterogeneous systems have become even more diverse with the advent of new players. Domain specific accelerators (DSAs) are an opportunity to tune the hardware to the needs of a particular set of problems, for extra performance and energy efficiency. A particularly interesting domain to accelerate is stencil algorithms, as they are one of the main drivers of science and engineering. This talk will present some preliminary ideas for a DSA for this kind of algorithms. Overall, this talk will provide an overview of my past works on heterogeneous systems and current research interests.

Short bio: Borja Pérez graduated in Computer Science from University of Cantabria in 2014 and received a PhD degree in Science and Technology from the same university in 2019. He is currently a researcher in the Department of Computer Engineering and Electronics of the University of Cantabria. His research interests include heterogeneous sytems, both from the architecture and the programming viewpoint, and high performance computing.

Speakers

Borja Pérez, researcher in the Department of Computer Engineering and Electronics of the University of Cantabria.
Barcelona Supercomputing Center - Centro Nacional de Supercomputación