

Séminaire ASTRE : Stephane Zuckerman

24 Avril 2017, 15:00 – 16:30

Titre du séminaire et orateur

Fine-grain event-driven multithreading and resource management for extreme-scale computing.

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Abstract

With the end of Dennard scaling and the rise of the power wall, micro-processors have been steadily increasing the number of cores on a single chip. High-end general-purpose processors feature nearly 100 processing elements on a single chip. However, computer systems designers tend to still rely on coarse-grain execution and programming models to orchestrate the execution on such compute nodes. As a result, a lot of time and power is wasted in synchronization costs, as well as context switching and scheduling in general. Moreover, as the hardware allows for finer-grained control over specific resources, better resource management techniques are called for to allow for adaptive and self-aware computing. In this talk, I'll present the Codelet Model, which is a fine-grain, event-driven program execution model, inspired by dataflow models. I'll also show how we can bridge the Codelet Model and self-aware computing to better control how resources are managed from a system software point of view.