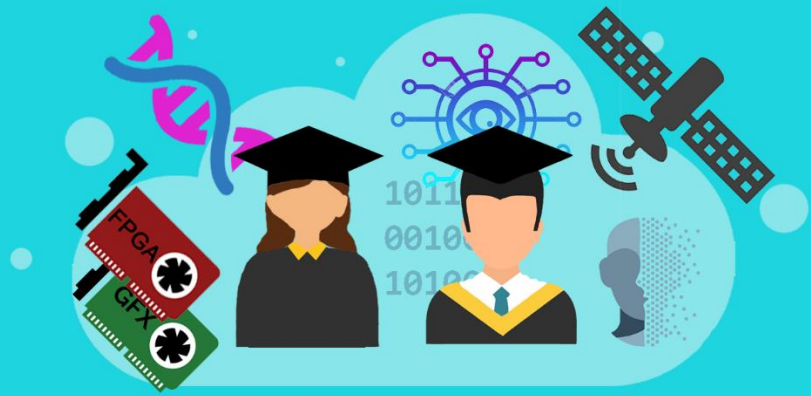


Diploma Thesis

Microprocessors and
Digital Systems
Laboratory



Resource-centric refinement of application characterization in multi-core Platforms

Many-core systems can offer tremendous speed-up for applications that exploit the thread level parallelism. However, cores are not fully independent processors but share resources, such as caches and memory controllers, and this can result in performance degradation. Threads, when running simultaneously, compete against each other using destructively the shared resources of a many-core system. Even threads of the same application can not take advantage of the underlying resources if they exhibit coarse-grained sharing. Applications are slowed down by hundreds of percent compared to running alone on the many-core system.

The thesis will focus on the implementation of the following tasks: (i) Application profiling, classification and prediction; and (ii) run-time management for avoiding and managing contention. The main focus will be to extend an internal developed tool, for managing applications at the user level, by integrating control for cache (Intel CAT) and memory bandwidth (Intel MBA).

REREQUISITES:

Good knowledge of C/C++, computer architecture

READING MATERIAL:

1. KPart: A Hybrid Cache Partitioning-Sharing Technique for Commodity Multicores

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