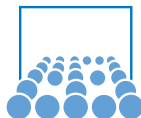


Master Seminar: Resource-Aware Computing - Summer 15

Initial Meeting

Chair of Scientific Computing (SCCS)

January 21st, 2015



Outline

1. Introduction

2. Organization

Introduction

- Master Seminar: Resource-Aware Computing
- Modules: IN2107, IN2183, IN0014
- Participants:
 - ▶ Master students
 - ▶ Senior Bachelor students (6th semester)
- Supervisors:
 - ▶ Univ.-Prof. Dr. Michael Bader
 - ▶ Dr. Josef Weidendorfer
 - ▶ Emily Mo-Hellenbrand, M.Sc.
 - ▶ Alexander Pöpl, M.Sc.
 - ▶ Isaías Comprés, M.Sc.

Motivation

- Growing Hardware Complexity
 - ▶ SIMD instructions
 - ▶ Cache hierarchies
 - ▶ Multiple cores
 - ▶ Multiple CPUs

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- New programming techniques and paradigms
 - ▶ Expose structure to users (e.g. OpenCL)
 - ▶ Expose allocation to users (e.g. Invasive Computing)

Topics (preliminary)

- Invasive Computing: Concepts
- Invasive Computing: Frameworks
- Invasive Computing: Invasive algorithms
- Invasive Computing: Problem characterization and pattern extraction
- Invasive Computing: Invasive Network-on-a-Chip architectures (iNoCs)

Topics (preliminary) contd.

- Dark Silicon
- Faults and Fault-Tolerance
- Hardware-aware security mechanisms
- Resource management for shared-/distributed-memory architectures
- Resource management for heterogeneous architectures
- Heterogeneous computing frameworks: OpenCL
- Power saving by Dynamic Voltage and Frequency Scaling (DVFS) and Power Capping (PC)
- Resource-aware runtime systems

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Requirements

- **Language:** English
- **Independent literature research**
- **Paper:**
 - ▶ In total 5-10 pages (max 10 pages)
 - ▶ IEEE format
- **Peer review process:**
 - ▶ 2 reviews (topics will be assigned)
- **Presentation:**
 - ▶ 30 minutes talk
 - ▶ 15 minutes discussion
- **Mandatory attendance:**
 - ▶ Must attend all presentations
 - ▶ Rules for absence/sickness

Time Plan

Semester

Week

Event

1st

Kick-off meeting

3rd**Submission of paper outline. Flash Talk session.**

7th

Submission of paper draft to supervisors (voluntary)

8th**Submission of paper for review****9th****Submission of reviews**

10th

Presentations (sessions 1 & 2)

11th

Presentations (sessions 3 & 4)

12th

Presentations (sessions 5 & 6)

12th**Submission of paper final version**

Deadlines & Grading

Important Deadlines:

- **April 27th**, 23:59 PM: submission of paper topic and outline
- **June 5th**, 23:59 PM: submission of paper for review
- **June 12th**, 23:59 PM: submission of 2 reviews
- **July 3rd**, 23:59 PM: submission of final paper

Note: failure to meet these deadlines may result in grade deduction or failure.

Grading:

- **Major components:** final paper, presentation
- **Deduction:** attendance, deadlines, pre-release paper, plagiarism
- **Bonus:** commitment, activeness, self-implementation, etc.