

Seminar

„Energy Efficient Databases“

Ralf Schenkel



Christian Pölitz

Meetings

- Initial Meeting:
Wednesday, April 13, 16:00 in room 0.01, E1 7
- Regular Meetings:
Wednesdays, 16:00-17:30, in room 0.01, E1 7
starting May 11
- Exceptions:
 - May 11: 2 talks
 - May 18, June 1: no talk

General Topics

- **Overall topic:**
Finish job **within given time** with **minimal energy consumption**
- Energy Efficiency in Databases
 - Query Processing (algorithms in DB core)
 - Measuring and Modeling Power Usage
 - Storage
 - Distributed Systems
- Mostly recent scientific publications from the last 4 years (one exception: 1993)

Topics 1 – Query Processing

- **Energy Efficient Query Optimization (May 11)**
SIGMOD 1993
- **Energy Efficiency of a Database Server (May 11)**
SIGMOD 2010
- **Eco-Friendly DBMS (May 25)**
CIDR 2009; IEEE DEBull 2011
- **Power-Performance Tradeoffs in DBMS (June 8)**
ICDE 2010

Topics 2 – Power Usage

- **Power-Consumption Analysis of TPC-C; JouleSort (June 15)**
VLDB 2008; SIGMOD 2007
- **Power Models (June 22)**
HotPower 2008

Topics 3 – Storage

- **Flash Disk Use in Databases (June 29)**

BTW 2009; C3S2E 2010

- **Energy Proportionality for Disk Storage (July 6)**

EDBT 2011; SOSP 2009

Topics 4 – Distributed Systems

- **Energy-Efficient MapReduce (July 13)**

UCB TechReports from 2009 and 2010

- **MapReduce Tradeoffs (July 20)**

UMN TechReport; Green Computing 2009

What we expect you to do - basics

- Attend all talks;
write a short mail if you cannot participate
- Be on time (talks start 16:00)
- Participate in the discussion after the talks
- Mandatory meeting with tutor
at least two weeks before your talk

What we expect you to do – talk (1)

- Read your paper(s) and related literature
- Prepare a 30 minutes talk on the topic
 - Prepare slides in English
 - Pick the most interesting, challenging or futuristic contributions from the papers
 - Start with an introduction to the topic, possibly including related papers
 - Discuss any weaknesses or problems in the talk
 - Don't copy conference slides!
 - Interact with your tutor

What we expect you to do – talk (2)

- Send your slides to your tutor
Hard deadline: Friday before the talk, 4pm
- Give your talk in English
 - If you need a notebook, talk to your tutor
- Answer any questions from the audience
- Prepare a short written report
 - up to 5 pages
 - about strengths, weaknesses, and own ideas
 - until two weeks after the talk
 - together with your **opponent**

What we expect you to do – opponent

- One preselected student per paper
- Prepares tough questions to challenge the paper (not to challenge the talk or the speaker!)
- Gets the preliminary slides on Friday
- Prepares the final report together with the speaker

Opponent assignments will be done early next week

What we provide

- Tutor helps by
 - answering general questions on the topics
 - providing hints for selecting the topic of the talk
 - providing feedback on the slides
 - providing technical support (notebook etc)
- Feedback meeting after talk

Your final grade is influenced by...

- Your oral presentation, including your slides
- Your knowledge about your topic (answers to questions)
- Your questions as opponent
- Your two written reports
 - as presenter
 - as opponent
- Your overall participation in the seminar

Registration

- Fill in the form with **unique** priorities for topics (1 – like most, 10 – dislike most)
- Assignment available until Friday 1pm (probably earlier)