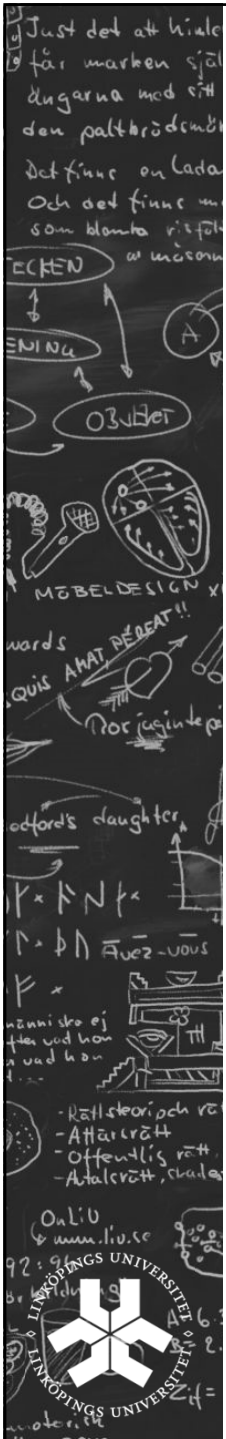


## Selection of an article

- While selecting the article you would like to present, keep into account that:
  - Each article is assigned to a session (date)
  - Articles are related to different topics
  - Articles require different background knowledge (specified also on the web page of the course)
  
- Articles are assigned on the basis of the email timestamp (first arrived, first served)



# Topic overview

- The course articles are linked in the course website
  - Seminar section:

<http://www.ida.liu.se/~TDDD50/seminars>

- The topics seminars will focus on are:

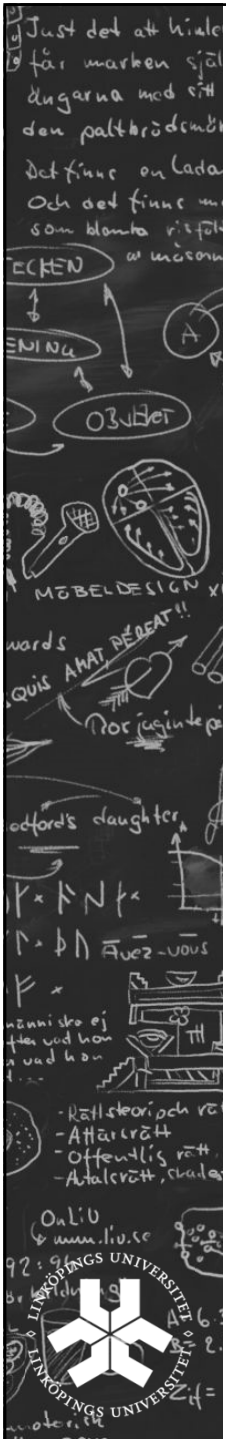
Life cycle  
assessment

Data  
centres

Networking

Power  
management

Mobile/applications



# Topic: Life Cycle Assessment

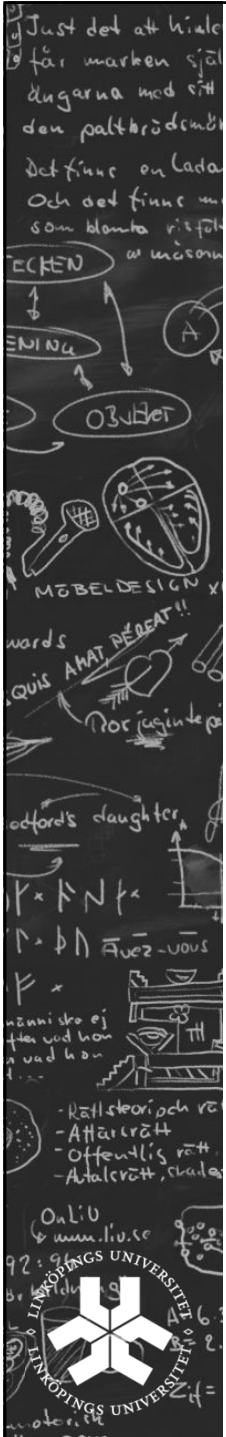
Life cycle  
assessment

[1] Title: "Regional or Global WEEE Recycling. Where to Go?"

- Overview on the electronic waste problem, legislation, standards and global initiatives
- A study of the electronic waste movements between importing and exporting countries

Length: 12 pages

Required knowledge: basic computer architecture



# Topic: Data centres

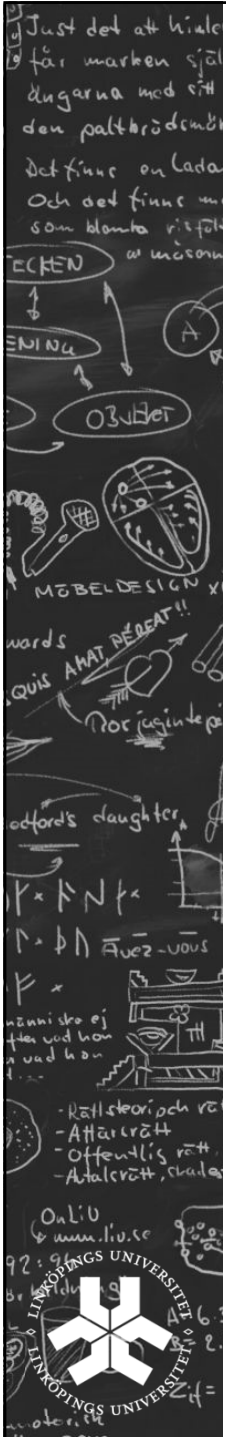
Data centres

[2] Title: "Characterizing the power cost of virtualization environments"

- Compares the power consumption of servers used in data centres deploying two alternatives: virtual machines and containers
- Uses both measurements and modelling to understand the difference between the two solutions' energy efficiency

Length: 11 pages

Required knowledge: basic computer architecture



# Topic: Mobile Games

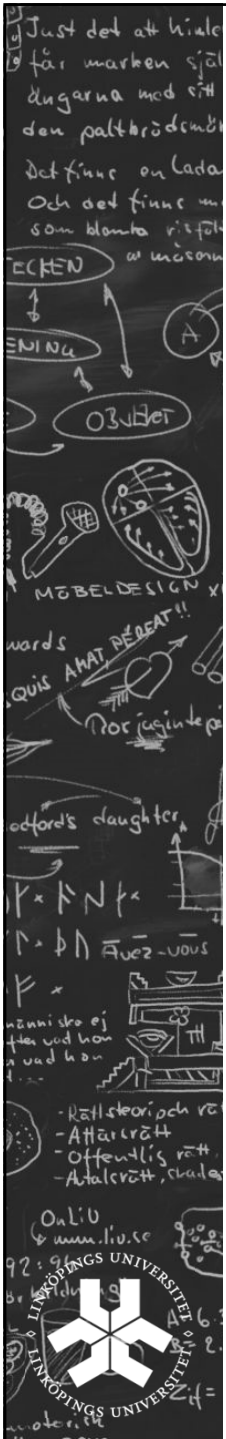
Mobile/app

[3] Title: "Communication Energy Overhead of Mobile Games"

- Quantification and modelling of mobile transmission energy consumption using data collected from 20 mobile games on Android top 100 games
- Studies differences between the games in terms of how much time they spent in 3G high energy states

Length: 6 pages

Required knowledge: basic computing and networking



# Topic: Applications, IM

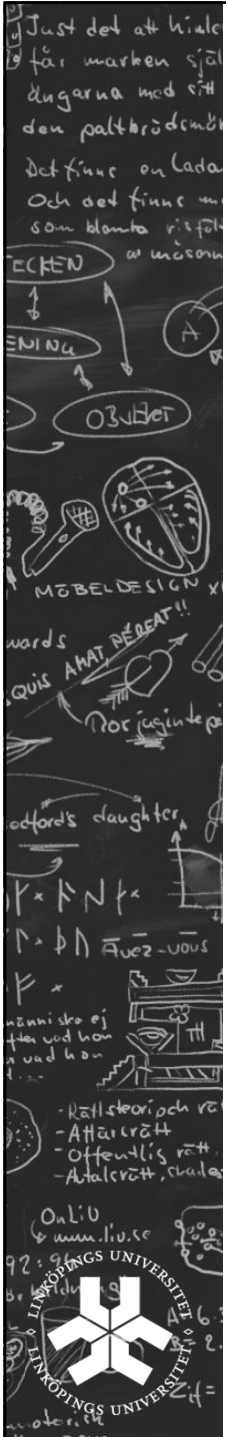
Mobile/app

[4] Title: "When Mice Consume Like Elephants: Instant Messaging Applications"

- 3G communication energy
- Study of the usage characteristics and communication energy consumption created by instant messaging applications
- Quantification of a application feature and a simple approach to trade off energy and delay by bundling messages
- Thesis project of a former student of this course!

Length: 10 pages (Choose to focus on section 7 or 8)

Required knowledge: basic computer networks



# Topic: Mobile devices/app

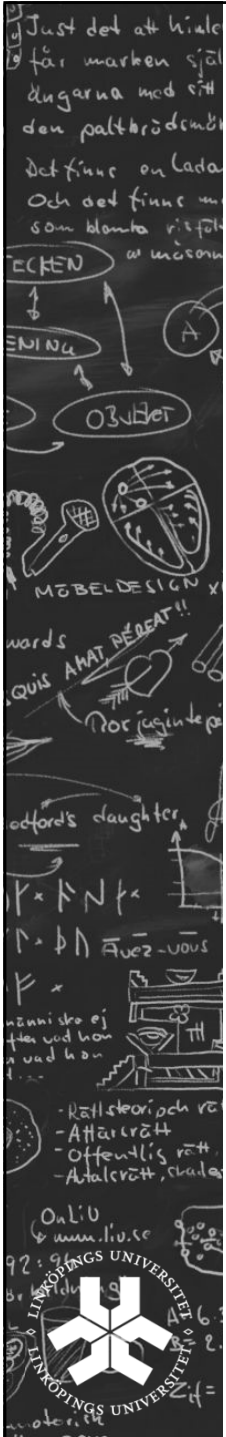
Mobile/app

[5] Title: "A POI-Aware Power Saving Scheme for Ubiquitous Touring Service using Mobile Devices over the Cellular and Wi-Fi Hybrid Network"

- Analysis the energy consumption of location-based services
- Proposes methodologies to reduce it

Length: 14 pages (either focus on the cache or the transmission details, choosing between Tables 3 and 4)

Required knowledge: basic computer engineering





# Topic: Applications

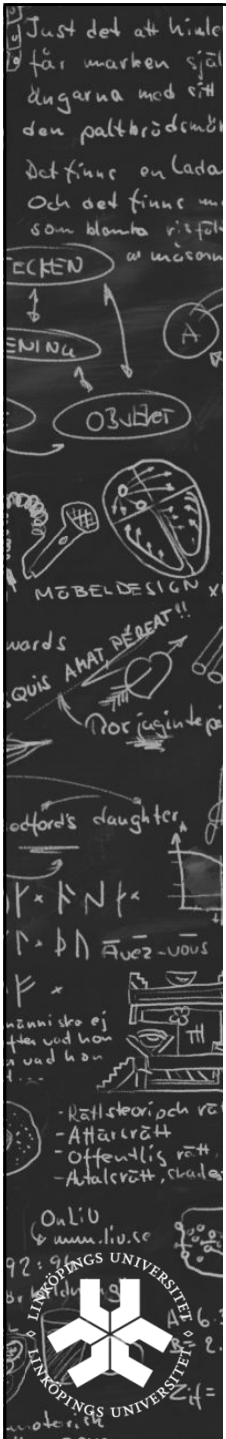
Mobile/app

[6] Title: "All you can stream: Investigating the role of user behavior for greenhouse gas intensity of video streaming"

- Analyses the energy consumption of video streaming services
- Investigates how different user behavior (device) factors impact the CO2-intensity of video streaming

Length: 10 pages

Required knowledge: basic computer engineering





# Topic: Networking

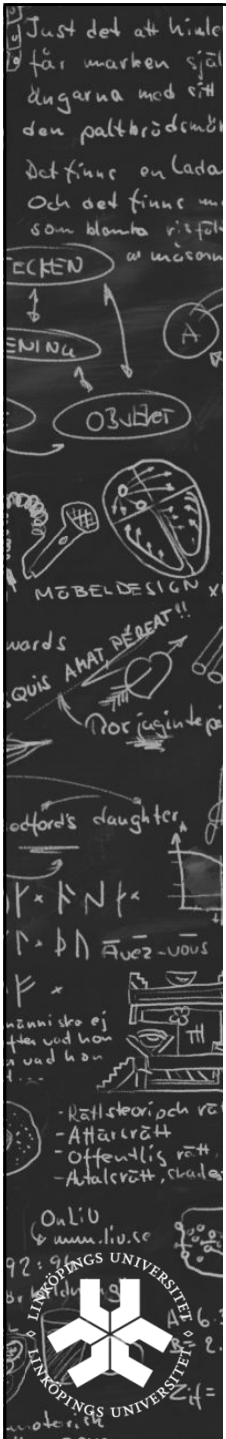
Networking

[7] Title: "IEEE 802.3az: The Road to Energy Efficient Ethernet"

- Describes the new standard for energy efficient Ethernet to make network interface cards move to sleep mode
- Analyses the environmental (energy) and monetary benefits deriving from the standard
- Analyses the Quality of Service tradeoff resulting from the standard application

Length: 7 pages

Required knowledge: computer networks



# Topic: Networking

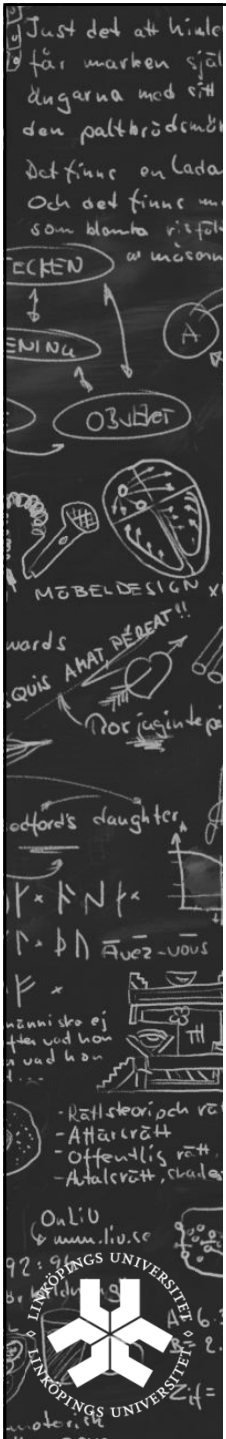
## Networking

[8] Title: “Electricity Intensity of Internet Data Transmission: Untangling the estimates”

- Analyses and discusses fourteen earlier reports that provide estimates for the Internet transmission energy – with results that are different by several orders of magnitude!
- Identifies a way to consistently derive energy per transmitted bit estimations.
- Tries to answer the question: has Internet transmission energy in developed countries increased or decreased within a 15 year perspective?

Length: 14 pages (Several are large tables)

Required knowledge: basic computer networks



# Topic: Power management

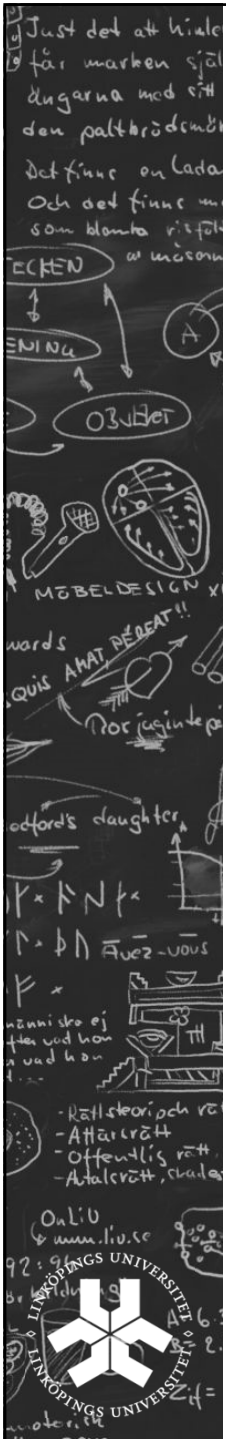
Power  
management

[9] Title: "Parasol and GreenSwitch: Managing Datacenters Powered by Renewable Energy"

- A prototype green datacenter built as a research platform
- It uses solar panels and battery as well as grid power as supply

Length: 12 pages (Sections 2 except "Managing workloads in green datacenters" and 5.2 can be skipped)

Required knowledge: computer architecture



# Topic: Data centres

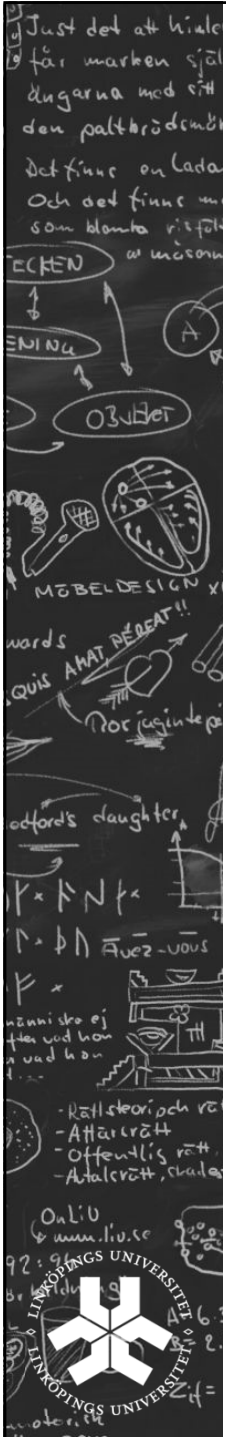
Data centres

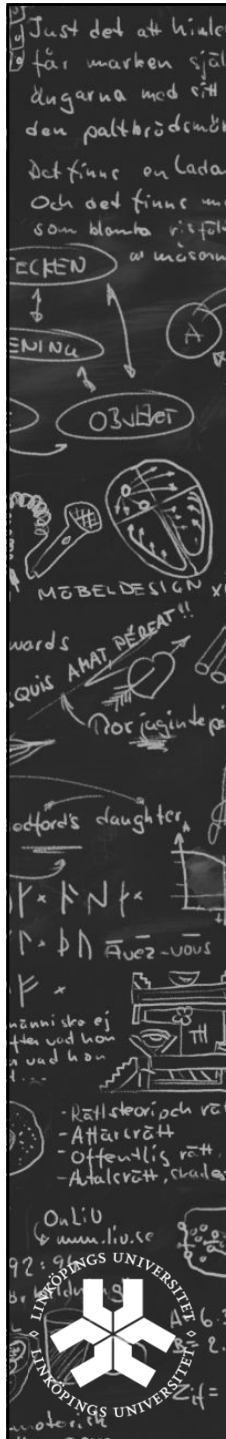
[10] Title: “ Making Data Centers Fit for Demand Response: Introducing GreenSDA and GreenSLA Contracts”

- Proposal for inclusion of energy-related topics in Service Level Agreements (SLA) between datacentres and users, and Supply Demand Agreements (SDA) between datacentres and energy suppliers
- Discusses how datacentres can work with clients and suppliers to overcome the tradeoffs between going green and providing reliable services

Length: 12

Required knowledge: basic computer engineering





# Topic: Data centres

Data centres

[11] Title: “Exploring HW Profile-Guided Green Datacenter Scheduling”

- Introduces energy saving techniques for datacenters based on HW profiling
- Shows how insights about the available HW can help to reduce the energy consumption of datacenters

Length: 10 pages

Required knowledge: basic distributed systems