T-111.350 Multimedia Technology

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Agenda

- Topic
- Staff
- General
- Requirements
- Book
- Lecture hours
- Lectures
- Laboratory exercises

Topic

- The topic of the course is
  + digital audio and video
  + hardware and software
  + interchange formats
  + communications and video conference
  + multimedia systems
- The objective is to give basic knowledge about multimedia technology and its effects on communication and computer technology

Staff

- lecturer: prof. Petri Vuorimaa
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- main assistant: Jussi Teirikangas
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General

- News group:
  + opinnot.tik.mmtekn
- www page:
  + http://www.tml.hut.fi/Studies/T-111.350/

Requirements

- The requirements include accepted exam and laboratory exercise
- Exam is based on lecture material
- Laboratory exercise is done as group work
- It is possible the get ½ (1,5 points) or 1 (3 points) raise from the laboratory exercise to exam result

  + one must have at least grade 1 from the exam, though

Book

- Course book is Chan-Hwa Wu and J. David Irvin, Emerging Multimedia Computer Communication Technologies, Prentice Hall, 1998
- Book is available at university book shop (?)
- Chapters 1-3 and 7-10 covered at lectures
- Only most important topics are covered form chapters 4-6

Lecture hours

- Lectures in English are given on Fridays at 9 - 11 in seminar room B130 of computer science building
- Weekly laboratory exercises are not held

Lectures

- Arrangements
- Introduction
- Hardware
- Software
- Audio and video I
- Audio and video II
- Interchange formats
- Development tools
- Communications
- Multicast
- Video conference
- Access networks

Lectures

- Arrangements
  - + topic
  - + staff
  - + general
  - + requirements
  - + book
  - + lecture hours
  - + lectures
  - + laboratory exercises
- Introduction
  - + What is multimedia
  - + Multimedia systems
  - + Quality of service
  - + Synchronization & orchestration
  - + Standards
  - + Applications
  - + Convergence
  - + Value chain

Lectures

- Hardware
  - + Multimedia computers
  - + Video and graphics
  - + Audio
  - + Telephone, video conference, and networks
  - + CD and DVD
  - + USB and FireWire
  - + Processors
  - + Video for Windows, DirectX, and ActiveMovie
- Software
  - + Introduction
  - + Browser based software architecture
  - + Distributed software
  - + Servers
  - + Network
  - + Terminals

Lectures

- Audio and video I
  - + Introduction
  - + Digital audio
  - + Psycho acoustics
  - + Digital presentation of sound
  - + Digital images
  - + JPEG
- Audio and video II
  - + Video signal
  - + Camera sensors
  - + Colors
  - + Color television
  - + Equipment
  - + Compression systems
  - + Basics of video compression
  - + Methods
  - + Algorithms

Lectures

- Interchange formats
  - + Introduction
  - + Application areas
  - + Requirements
  - + Track and object model
  - + Real-time transfer
  - + Different transfer formats
  - + Comparison
- Development tools
  - + Introduction
  - + Production process
  - + Tools
  - + Barriers
  - + Development areas

Lectures

- Communications
  - + QoS
  - + ATM
  - + QoS implementations
  - + Integrated Services
  - + Differentiated Services
- Multicast
  - + Introduction
  - + Group control
  - + Routing
  - + Real-time transfer and control protocols
  - + Resource reservation
  - + Session control
  - + MBone

Lectures

- Video conference
  + Introduction
  + Standards
  + Products
  + Internet telephony
  + CTI (Computer Telephony Integration)
- Access networks
  + Introduction
  + Cable television
  + Digital subscriber lines
  + UMTS
  + Digital television
  + Conclusions