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Seminar Computer Networks
Interactive Teaching - an experiment

Introduction

Bernhard Wiegel, Institute OMI, October 25th, 2011

Content

- Motivation
- General things / Organization
- Schedule

Motivation „System for Interactive Teaching“

- **Idea:** Docents and students communicate during the lectures via a digital network

- General advantages
  - Fast and direct feedback
  - Parallel communication
  - Interactive elements will relax the atmosphere

- Advanced teaching possibilities
  - Discovery of comprehension problems
  - Discovery of redundant and for comprehension not necessary content
  - Collecting additional useful information on the lectures‘ topics
  - Collecting of frequently asked questions
  - Evaluation of the provided materials
  - More active participation

Technical Implementation / Prerequisites

– Several possibilities
  - Participating students are located in one lecture hall
  - Some participating students are geographically separated from the docent

– Special „for this purpose only“ - input / output devices are costly and impractical

– Many students are equipped with mobile devices capable of communication and acting as user interfaces
  - Notebook
  - Smartphone
  - Tablet

→ The necessary technology is already deployed to build such a system

Why not build and discuss the technology of such a system in a Computer Networks seminar ?

Technical Implementation / Course of Action

- Discussion of features / services

- Identification of requirements and parameters of the features
  - Real-Time
  - Ad-Hoc
  - Latency, Reliability
  - Privacy, Security

- Development of the system design

- Description of different functional modules and its interfaces

- Presentation and implementation of these modules within the seminar

Goals of this seminar

Teaching goals for the students

- Comprehension of complex context on a specific networking related topic
- Design of a networking concept / protocol that could be integrated into a „Interactive Teaching“ system
- Presentation and implementation of the designed concepts
- Objectives
  - Gather information for a specific topic
  - Understand and arrange the context in a comprehensible way
  - Design of a protocol / system component
  - Prepare and hold a presentation on the topic and your design
  - Implementation of the concept for a real system

Goal of this teaching experiment

- Does a system for „Interactive Teaching“ provide the benefits ?
- Will students use the system in class ?
- Is it possible for the students to implement system components during the seminar ?

Procedure

- A system design is presented at the beginning of the semester
- System components related to specific networking topics can be identified
- Groups of two students choose a topic
- Groups will be provided with hardware (notebook / tablet) and a framework for the software (server / client)
- Groups prepare a presentation on the related networking problem and their concept to be implemented
- Presentations will be held in the middle of the semester (mid. Nov. to X-mas)
- Implementations and a presentation of their functionality should be finished by the end of the semester (mid Feb.)

Procedure (timeline)

Initial familiarization to the context „Interactive Teaching“

- Introduction / Motivation (today)
- Presentation of basic system design / group assignments / hardware deployment (Nov. 8th)
- Tutorial for iOS / Python development (Nov. 15th)

Concept presentations start Nov. 22nd

- 6 possible dates
- Begin is after the lecture of Prof. Großmann (app. 15:30)
- There is time for a max. of three 15 minute presentations per date
- Discussion of the concepts afterwards

Functional presentations in the End of January / Beginning of February

Rules

Rules

- Presentation of problems and concept: 15 minutes
- Functional presentation: 5 - 10 minutes
- Special presentation date in the following cases
  - Low quality of the prepared slides
  - Copied slides or presentations
  - Late submission of the presentation (Deadline: One week before the presentation date)
  - Incomprehensible of incoherent presentation of the topic
- A successful presentation during the seminar is mandatory in order to take part in the exam of the Computer Networks lecture
- Your attendance to the seminar is mandatory. All topics presented during the seminar are relevant for the exam!

Guidelines for good presentations

Text layout

- Templates for presentation slides with appropriate settings are available on the lecture‘s website
  - Generally: Smaller font sizes for sub-information
  - Avoid just one line of additional information under a keyword
  - Use Sans serif fonts like Arial
  - Uniform layout for all of your slides

- Figures have to improve the comprehension and should not be just colored spots

- Number of slides should fit the the given time
  - guideline: 1-2 minutes per slide, sometimes even more
  - maximum of 12 slides for a 15 minutes presentation

Information sources

Standards

- Best source
- Basis of all real implementation
- Important standard committees for this lecture: IEEE, IETF, (RFC)

Books

- Better to understand, as there are more explanations

Other publications

- Articles in magazines, white papers from companies
- Normally reliable when published by a well-known institution

Wikipedia

- Good possibility for a first overview
- Unreliable
- **Not to be used as a reference**

Contact information

Information on the web

- Group assignments
- Presentation dates
- Presentation templates for Open-Office and PowerPoint
- Templates and tutorial for implementation part
- Lecture material
- Web: www.uni-ulm.de/in/omi

Contact

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