E6998-03: Advanced Internet Services

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Overview

- Course Outline
- prerequisites
- who is where?
- assignments
- projects
- exams
Course Outline: Internet Multimedia

- Review of Internet architecture, protocols, standardization
- Real-time and multicast services:
  - Multicast routing
  - Properties of real-time services
  - Resource reservation, scheduling and transport
  - Streaming audio and video (RTSP)
  - Reliable multicast and application sharing
  - Internet telephony and conferencing
    - Internet telephony signaling (H.323, SIP)
    - Interoperation with the telephone system
  - Metering, charging, settlements
Course Outline: WWW

WWW and its extensions:

- Review of WWW technologies: HTML, HTTP, URLs
- WWW performance and scaling problems
- The web as universal front-end (cgi, database integration)
- Java and web scripting languages
- HTML and beyond: cascading style sheets, SGML, XML, VRML, PICS, ...
- Directory services for people and services: X.500, LDAPv2/v3, whois++
Course Goals

- descriptive: what’s out there
- skill-oriented: Java, project, programming assignments
- critical: what’s wrong with... , how else can we do this?
- interactive: discussion, questions encouraged
- work-in-progress...
Am I in the Right Room?

This course does not address:

- “How do I make money on the Internet?”
- “How do I configure an Apache web server?”
- “Social/Psychological/Eschatological Impact of the Internet”

You should know…

- general networking concepts (packets, CL vs. CO, …)
- TCP vs. UDP
- HTML vs. HTTP
- C; other languages (Tcl, Perl, …) helpful
Who and where?

- class in *Columbia Video Network* “TV studio” in NYC
- video tapes shipped to students off-campus
- students in lecture hall at Technical University Berlin
- TAs in Berlin and NYC
Course Mechanics

WWW page:  http://www.cs.columbia.edu/~hgs/teaching/ais/

Email list:  ais@cs.columbia.edu

News group:  columbia.spring.cs6998-sec3 on the Columbia and CS news hosts

Homeworks:  5 assignments: questions + small programming problems

Grading:  Homeworks 20%, project 50%, final 30%

Projects:  See list on server: discuss early!
Books for Course

None *required*; suggested reading:

- manuscripts and slides to be made available via web page


Reference Books


Internet Multimedia Projects

- Web by phone
- Email by phone
- Phone-to-Internet gateway
- Multimedia jukebox: catalogue
- Multimedia jukebox: audio CDs
- Conversion of AVI to H.261
- Write MPEG payload format
- LPC integration into NeVoT
- MPEG L3 integration into NeVoT
- RTP translator
- RSVP integration into NeVoT
- NeVoT reliability enhancements
- NeVoT as VCR
- NeVoT stereo placement
- Measurements and comparisons of audio and video codecs for networks
- H.263 implementation
- Clock measurements
- Multimedia server
- Digital editing of live content
- Classroom question manager
- Voice mail system
- Telephony interface
- RTP conformance tester
- RTP-based “AudioFile”
- Background eliminator
• Remote-control web and conferencing camera
• Directory Services for Internet Telephony
• “Buddy List”
• Calendar interface for Internet telephone
• Scheduling of repeated events
• Bandwidth estimation and measurement
• Use of Netscape addressbook for Internet telephony
• RTCP for network management
• Service differentiation for data and real-time
• DNS service records
• Call controller
• H.323 Implementation
• Network reliability
• Delay measurements
WWW-Related Projects

- Web statistics
- Web delay analysis
- Web integrity tools
- Email notification
- Web authoring tools: link generation, outliner
- Web-based OS
- WWW local file sharing
- Web page and file system synchronization
- Java applets for collaborative computing
- Java xfig renderer