

**COMM 533 Emerging Communication Technologies**  
**Annenberg School for Communication**  
**University of Southern California**  
**Spring Semester 2006**

Seminar Hour: Online course

Course Website:

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### **Overview**

This course examines new and emerging information and communication technologies with a special focus on computer-related technologies (including the Internet, interactive television, mobile technologies, computer games, educational simulation, speech user interfaces, social interfaces, agents, avatars, virtual reality, and social robots). Socio-cultural, economic, and psychological implications of new technologies are the main concerns of the course. Diverse methodological tools and viewpoints will be provided in the class to help students analyze the implications of future unseen technologies. There is no requirement for engineering or technological backgrounds. The structure of this online course will be similar to that of a live course. Each student is required to read assigned readings and send a weekly reaction paper to the instructor. Students may watch the lecture slide either before or after reading. Students are required to virtually present two articles during the semester (see below for details). At the end of the semester, students will physically meet the instructor and present their final projects.

### **Requirements**

Grades will be based on online discussion participation (18%), two virtual class presentations (16%), eleven one-pagers (11%), twelve weekly reaction papers (18%), and a term paper (including a real-life presentation in front of the instructor at the end of the semester) (37%).

Your online participation score will be determined by both quality and quantity of discussion participation in the class. By Sunday of each week, each student should post 1-2 discussion points (or questions) about that week's readings on the Blackboard discussion board. In addition, each student should post his/her response to at least 1 discussion point raised by other students.

Each student needs to virtually present two articles (chosen from articles with \* sign in the syllabus) to the class during the semester. Each presentation should be at most 15 min. In addition to the presentation, each presenter should answer discussion points/questions (if any) related to the article they present on the Blackboard discussion board. There is no mandatory format for the virtual presentation. You are free to use whatever format (e.g., MS-Powerpoint, HTML, MS-Word, flash, voice recording, video recording, or other types of presentation techniques) that you feel comfortable, as long as it is DIGITAL. A digital format is mandatory for the online distribution. Remember it is presentation, not a paper. Use of recorded narration is encouraged. If not, a written script of the narration should be included in or accompanied with the presentation file. Each presenter should send a digital copy of his/her presentation by Sunday of each week.

By Sunday of each week, each student should email (NOT post on the discussion board) a weekly reaction paper (2 pages, double spaced) focused on the week's assigned readings and a one-pager assignment. The reaction paper should include a paraphrased summary of each reading and your general reactions to them. The discussion points that you already posted on the Blackboard discussion board can be included in this reaction paper too.

One pager assignment (1 page, double spaced) is to give you chance to subjectively reflect the week's readings in a relatively casual format. One pager assignment for each week is due one week after the week. For example, One Pager 1 assigned at Week 3 should be emailed to the instructor by Sunday of Week 4.

The term paper requires a through investigation of socio-cultural, economic, and/or psychological implications of emerging information and communication technologies which are not covered by the current class. The term paper should also include some technological description (or backgrounds) of each technology in the beginning (e.g., the current status of technology, enabling mechanisms, key players, key technological barriers or issues such as standards or spectrum allocation, and a possible time schedule for mass adoption). Students are encouraged to provide their own predictions or opinions about the technology at the end of the paper. The term paper should be at most 20 pages (including a cover page and references). An APA writing style is encouraged. If students are not familiar with the APA guideline, they can follow whatever writings styles they are familiar with (e.g., MLA, Chicago). In any case, proper citations and references are mandatory. Any type of plagiarism will automatically result in a failure in the class. The last two weeks of the semester will be reserved for student's off-line presentation and the instructor will make every effort to meet each student's schedule. Basically, each student should come to the instructor's office to present his/her term paper during the last two weeks of the semester. Appropriate topics for the term paper include (but not limited to):

- Wireless Internet (e.g., Wi-Fi, Wi-Max)
- Cell phones / Interfaces
- Mobile services and applications (e.g., mobile commerce, mobile banking, mobile games) → can focus on only one part such as mobile games
- XM Satellite Radio
- Online games
- Smart Cars/Car interface
- Smart home system
- Digital music technologies (MP3, iPod, etc)
- Home robots
- RFID
- Wearable computers
- Ubiquitous computing
- Digital TV

## **Academic Integrity**

The Annenberg School for Communication is committed to upholding the University's Academic Integrity code as detailed in the SCampus Guide. It is the policy of the School of Communication to report all violations of the code. Any serious violation or pattern of violations of the Academic Integrity Code will result in the student's expulsion from the Communication major or minor. See section 11 of Scampus.

## **Students with Disabilities and Academic Accommodations**

Students requesting academic accommodations based on a disability are required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP when adequate documentation is filed. Please be sure the letter is delivered to Professor Lee as early in the semester as possible. DSP is open Monday-Friday, 8:30-5:00. The office is in Student Union 301 and their phone number is (213) 740-0776. For additional information, see the Web page of the Disabilities Services Program in SCAMPUS.

## **Required Books**

*Emerging Communication Technologies Course Reader* (Available from the instructor)

Negroponce, N. (1995). *Being digital*. Knopf: New York.

Reeves, B. & Nass, C. (1996). *The media equation: How people treat computers, television, and new media like real people and places*. New York: Cambridge University Press.

## **Schedule: Detailed Readings, Lecture, and One-Pager List**

- **Week 1. Introduction to the Course**
  - Review Syllabus
  - Blackboard Orientation
  
- **2. Theoretical Approaches to Technology**

- Nass, C. I. & Mason, L. (1990). On the study of technology and task: A variable-based approach. pp. 46-67 in J. Fulk & C. Steinfeld (Eds.), *Organization and communication technology*. Newbury Park: Sage.
- Steuer, J. (1992). Defining Virtual Reality: Dimensions Determining Telepresence, *Journal of Communication*, 42(4), 73-93.
- Weiser, M. (September, 1991). The computer for the 21st century. *Scientific American*, 265,(3), 94-104.
- \*Reeves, B. & Nass, C. (1996). The media equation: How people treat computers, television, and new media like real people and places. New York: Cambridge University Press. Chapter 1.
- \*McLuhan, M. (1964). *Understanding Media: The Extensions of Man*. New York: McGraw-Hill. Chapter 1 (pp. 7-21).
  
- **3. Welcome to Digital Life**
  - Negroponte, N. (1995). *Being digital*. Knopf: New York.
    - Ch. 1. The DNA of Information
    - Ch. 2. Debunking Bandwidth
    - Ch. 3. Bitcasting
    - Ch. 4. The Bit Police
    - Ch. 5. Commingled Bits
    - Ch. 6. The Bit Business
    - Ch. 13. The Post-Information Age
  - Issues of Standards and Standardization
    - \*Lee, K. M. (2002). Modeling the regional differences in 3G standardization: the Entrepreneur, the Committee, and the Gambler. *Communications and Strategies*, 47, 11-32

One Pager 1: Describe a communication mode, device, content, process, or phenomenon that least benefits from being digital. Explain why.

- **4. Interacting with Computers; Issues in Interfaces and Design**

- What is Interface?
  - Johnson, S. (1999). *Interface culture: How new technology transforms the way we create and communicate*. San Francisco: HarperEdge. Pp. 1-25.
  - Negroponte, N. (1995). *Being digital*. Knopf: New York.
    - Ch. 7. Where People and Bits Meet
    - Ch. 8. Graphical Persona
    - Ch. 9. 20/20 VR
- What is Design?
  - Norman, D. A. (1988). *The design of everyday things*. New York: Doubleday. Chapter 1.
  - \*Nussbaum, B. (2004 May 17). The power of design. *Business Week*,
- Introduction to Human-Computer Interaction
  - Preece, J. et al. (1994). *Human-computer interaction*. New York, Addison-Wesley. Ch.1.
  - Preece, J. et al. (1994). *Human-computer interaction*. New York, Addison-Wesley. Ch. 2
  - \*Nielson, J. (1993). *Usability Engineering*. San Diego, CA: Academic Press. Ch. 2.
- Visit/Browse: ACM SIGCHI Special Interest Group on Computer-Human Interaction <http://www.acm.org/sigchi/> THE international organization dedicated to the study of human-computer interaction.
- One Pager 2: Describe your experience with cell phone interfaces and suggest a new design for them.
- **5. What users feel when they use media, computers, and telecommunication devices – feelings of presence**
  - Concepts
    - Lee, K. M. (2004). Presence, explicated. *Communication Theory*, 14, 27-50

- Lee, K. M. (2004). Why presence occurs: Evolutionary psychology, media equation, and presence. *Presence: Teleoperators and Virtual Environments*, 13, 494-505.
- \*Lombard, M., & Ditton, T. (1997). At the heart of it all: The concept of presence. *Journal of Computer-Mediated Communication*, 3(2), <http://www.ascusc.org/jcmc/vol3/issue2>
- Measures and Applications
  - \*Lombard, M., Reich, R., Grabe, M. E., Bracken, C. & Ditton, T. (2000). Presence and Television: The role of screen size. *Human Communication Research*, 26 (1). 75-98.
  - Lee's other papers throughout the semester → You will read it later.
- Long-term Implications
  - Biocca, F. (1997). The Cyborg's Dilemma: Progressive Embodiment in Virtual Environments, *Journal of Computer-Mediated Communication*, 3(2), <http://www.ascusc.org/jcmc/vol3/issue2>
- Visit/Browse: Presence Research Organization, an international organization dedicated to the study of presence. <http://www.presence-research.org/>
- One pager 3: Compare your experience of feeling strong presence while reading a novel versus while using other media such as TV, films, or computer games.
- **6. Entertainment Games and Educational Technologies**
  - General review and stand-alone entertainment games
    - Lee, K. M., & Peng, W. (in press). What Do We Know about Social and Psychological Effects of Computer Games/Video Games? In P. Vorderer & J. Bryant (Eds.), *Playing Computer Games—Motives, Responses, and Consequences*. Chap. 23.
    - \*Lee, K. M., Peng, W., & Klein, J. Will virtual experience influence your judgment on real-life incidents?: Self-identification with a violent game character and social judgment on violent criminals.

- Lee's other two studies on computer games will be briefly presented during the lecture. You don't need to read them.
- Multi-User Online games
  - Lee, K. M. (2000). MUDs and self-efficacy. *Educational Media International*, 37(3), 177-183.
  - \*Griffiths, Mark D.; Davies, Mark N. O.; Chappell, Darren (2004). Demographic Factors and Playing Variables in Online Computer Gaming. *CyberPsychology & Behavior*. Vol 7(4), Aug 2004, 479-487.
- Educational games and simulations
  - Negroponte, N. (1995). *Being digital*. Knopf: New York. Ch. 16. Hard Fun
  - \*Squire, K. & Jenkins, H. (2004). Harnessing the power of games in education. *Insight*, 3 (1), 5-33.
- One pager 4: Buy and play (or use a trial version of) a current online game for more than an hour, and report both good and bad consequences of playing online games (or alternatively describe both good and bad aspects of the game interface).
- **7. Revolution in the living room: DTV, Interactive TV, & DVR**
  - Fundamental Issues: Effects of Media Forms on Minds
    - Reeves, B. & Nass, C. (1996). *The media equation: How people treat computers, television, and new media like real people and places*. New York: Cambridge University Press.
      - Chapter 17. Image Size
      - Chapter 18. Fidelity
      - Chapter 19: Synchrony
      - Chapter 20: Motion
      - Chapter 21: Scene Change
      - Chapter 12: Specialists
  - Interactivity, Interactive TV and DVR

- Negroponte, N. (1995). *Being digital*. Knopf: New York. Chapter 14: Prime Time Is My Time
  - \*Kim, P. & Sawhney, H. (2002) A Machine-like New Medium – Theoretical Examination of Interactive TV. *Media, Culture & Society*, 24, 217–233.
  - \*Von Lohmann, F. (2005, March). *iPods, TiVo and Fair Use as Innovation Policy*. Paper presented at the 2005 Fordham Intellectual Property Conference, New York, NY.
- One pager 5: Imagine that you are buying a new digital TV set. What technological or psychological dimensions (except price) do you care most? And why?
  - **8. Social Responses to Computers – Social Interfaces**
    - Reeves, B. & Nass, C. (1996). *The media equation: How people treat computers, television, and new media like real people and places*. New York: Cambridge University Press.
      - Chapter 2. Politeness
      - Chapter 4. Flattery
      - \*Chapter 7. Personality of Interface
      - Chapter 13. Teammates
      - Chapter 16. Source Orientation
      - Chapter 23. Conclusions about the Media Equation
    - Nass, C., & Lee, K. M. (2001). Does computer-generated speech manifest personality?: Experimental tests of recognition, similarity-attraction, and consistency-attraction. *Journal of Experimental Psychology, Applied*, 7(3), 171-181.
    - \*Nass, C. & Moon, Y. (2000). Machines and mindlessness: Social responses to computers. *Journal of Social Issues*, 56(1), 81-103.
  - One Pager 6: Describe your experience of socially responding to computers or machines and reflect the reasons why you did that.

## ▪ 9. Agents

- What are agents and how people use them?
  - Johnson, S. (1999). *Interface culture: How new technology transforms the way we create and communicate*. San Francisco: Harper Edge. Pp. 173-205. Ch.6, “Agents”.
  - Laurel, B. (1993). *Computers as theatre*. Reading, MA: Addison-Wesley. pp. 14-33; 141-149.
  - \*Isbister, K., & Layton, T. (1995). Agents: What (or who) are they? IN J. Nielsen (Ed.), *Advances in Human-Computer Interaction* 5, 67-86. Norwood, J.J.: Ablex Publishing Corporation.
- Applications
  - Maes, P. (1994). Agents that reduce work and information overload. *Communications of the ACM*, 37(7), 31-40, 146.
  - Bailenson, J. N. & Yee, N. (2005). Digital Chameleons: Automatic assimilation of nonverbal gestures in immersive virtual environments. *Psychological Science*, 16, 814-819
  - Negroponte, N. (1995). *Being digital*. Knopf: New York. Ch. 12. Less Is More

One Pager 7: Pick a side between the two views on HCI (Direct manipulation vs. vs Delegation [indirect manipulation]). Defend your choice.

## ▪ 10. Avatars and Self-Representation

- What are avatars and how people use them?
  - Bailenson, J.N., & Blascovich, J. (2004) Avatars. *Encyclopedia of Human-Computer Interaction*, Berkshire Publishing.  
<http://www.stanford.edu/%7Ebailenso/papers/avatars.pdf>
  - \*Lee, O., and Shin, M. (2004). Addictive Consumption of Avatars in Cyberspace. *CyberPsychology & Behavior*. 7(4), 417-420.
- Philosophical Issues of self-representation through technologies

- Dennett, D. (1981). Where am I? In Hofstadter, D. R. & Dennett, D. C. (1981). *The mind's I* (pp. 217-231). New York: Bantam Books.
  - Turkle, S. (1984). *The second self: Computers and the human spirit*. Cambridge, MA: MIT Press. Pp. 11-25.
  - Turkle, S. (January, 1996). Who are we? In *Wired Magazine* (pp. 149-152, 193-199).
  - \*Nagel, T. (1981). What is it like to be a bat? In Hofstadter, D. R. & Dennett, D. C. (1981). *The mind's I* (pp. 391-403). New York: Bantam Books.
- One pager 8: Where is Dennett when Yorick and Hubert start running out of synch while they are attached to the same body?
- **11. Speech User Interface**
    - Fundamental Issues
      - Clark, H. (1996). *Using language*. New York: Cambridge University Press. Chapter 1.
      - \*Clark, H. H. (1999). How do real people communicate with virtual partners?, *Proceedings of 1999 AAAI Fall Symposium, Psychological Models of Communication in Collaborative Systems* (pp. 43-47). North Falmouth, MA: AAAI.
      - Nass, C. & Gong, L. (2000). Social aspects of speech interfaces from an evolutionary perspective: Experimental research and design implications. *Communications of the ACM*.
    - Applications
      - Negroponte, N. (1995). *Being digital*. Knopf: New York. Ch. 11. Can we talk about this?
      - Lee, K. M., & Nass, C. (2004). The multiple source effect and synthesized speech: Doubly disembodied language as a conceptual framework. *Human Communication Research*, 30, 182-207.
    - Technologies

- \*Olive, J. P. (1997). "The talking computer": Text to speech synthesis. In D. Stork (ed.), HAL's legacy: 2001's computer as dream and reality (pp. 101-130). Cambridge, MA: MIT. Chap. 6.
  - \*Kurzweil, R. (1997). When will HAL understand what we are saying? Computer speech recognition and understanding. In D. Stork (ed.), HAL's legacy: 2001's computer as dream and reality (pp. 131-170). Cambridge, MA: MIT. Chap. 7.
- One Pager 9: Describe your best and worst experiences in using automatic telephone response systems (e.g, customer service desks) and explain why.
- **12. Affective Computing**
    - Fundamentals of Emotion
      - Brave, S. & Nass, C. (2002). Emotion in human-computer interaction. pp. 251-271 in J. Jacko & A. Sears (Eds.), Handbook of human-computer interaction. New York: Lawrence Erlbaum Associates.
    - Affective Computing & Applications
      - Negroponte, N. (1995). *Being digital*. Knopf: New York. Chapter 10: Looking and Feeling
      - \*Picard, R. W. (1997). Does HAL cry digital tears? Emotions and computers. In D. Stork (ed.), HAL's legacy: 2001's computer as dream and reality (pp. 279-304). Cambridge, MA: MIT. Chap. 13.
- - One Pager 10: Describe applications or areas in which affective computing can be useful (excluding what Picard already discussed in her chapter).
- **13. Social Robots**
    - Overview and History
      - Fong, T., Nourbakhsh, I., & Dautenhahn, K. (2003). A survey of socially interactive robots. *Robotics and Autonomous Systems*, 42, 143-166.

- Thrun, S. (2004). Toward a Framework for Human-Robot Interaction. *Human-Computer Interaction, 19*, 9-24.
- \*Brooks, R. (2002). *Flesh and machines: How robots will change us*. New York, NY: Pantheon Books. Chapter 4. (pp 63 – 98))
- Human Robot Interaction
  - Lee, K. M., Park, N., & Song, H. (2005). Can a robot be perceived as a developing creature?: Effects of a robot's long-term cognitive developments on Its social presence and people's social responses toward It. *Human Communication Research, 31*, 538-563.
  - Kiesler, S., & Hinds, P. (2004). Introduction to this special issue on human-robot interaction. *Human-Computer Interaction, 19*(1-2), 1-8. → read only pp 1-4.
  - \*Hinds, P. J., Roberts, T. L., & Jones, H. (2004). Whose job is it anyway? A study of human-robot interaction in a collaborative task. *Human-Computer Interaction, 19*(1-2), 151-181.
- One Pager 11: (Choose one) What are most important dimensions in designing social robots? Or what are possible social and psychological implications of using robots in everyday life?
- **14 - 15. Final Presentation on Newly Emerging Information and Communication Technologies**
  - Appropriate topics for the term paper include (but not limited to):
    - Wireless Internet (e.g., Wi-Fi, Wi-Max)
    - Cell phones / Interfaces
    - Mobile services and applications (e.g., mobile commerce, mobile banking, mobile games) → can focus on only one part such as mobile games
    - XM Satellite Radio
    - Online games
    - Smart Cars/Car interface
    - Smart home system

- Digital music technologies (MP3, iPod, etc)
- Home robots
- RFID
- Wearable computers
- Ubiquitous computing
- Digital TV
- Good starting points
  - Negroponte Ch. 17 Digital Fables and Foibles
  - For technological details of the most of new technologies discussed above  
→ check “How stuff works? [www.howstuffworks.com](http://www.howstuffworks.com)”