Technology & Poverty: ICTs & International Development

Spring 2016 | CS 8803/4803 TD | INTA 8803/4803 NK
MW 4:30-6pm | 2 West, Library
www.technologyandpoverty.org

Instructor: Neha Kumar (neha.kumar@gatech.edu)
Office: 217 Habersham
Office Hours: TBD

Course Description

This course examines the design, deployment, adoption, and use of Information and Communication Technologies (ICTs) in the context of international development with the goal of challenging the ways in which students think about poverty, development, technology, and the interplay between them. The focus of the course will be on the roles played by individuals and societies as active agents of technology adoption and use, in the context of constrained socioeconomic conditions and development concerns.

In this course, we will begin with creating a foundation by studying the history of applying technology towards achieving development goals and poverty alleviation. We will fast forward through the years to the recent upsurge in Information and Communication Technologies (ICTs) and discuss how these have featured in the domains of health, food, education, among others. Three design workshops through the semester will aim to inculcate design thinking skills for computer and social scientists alike, so that students can leave the course with the ability to *listen* to the needs of the poor and the marginalized and to *do* something about it.

There are no prerequisites. Students with an interest in computing for development, computing, or development are invited to take the course. Please be warned that you might feel unprepared to handle this course in the first few weeks. Rest assured that you will leave feeling like champions.

Course Schedule[1]

January 11: Introductions
We will do introductions and take a brief look at course topics.

Readings:

[1] As of 12/20/15. The most up-to-date version can be accessed from the project website.

- Harry S. Truman's Inaugural Speech, delivered January 20, 1949. http://www.presidency.ucsb.edu/ws/index.php?pid=13282 – axzz1vI90QvaQ (Focus on the sentences following "Fourth, we must embark on a bold new program...")
- Friedman, T. (2005). "Chapter 1. While I was Sleeping" in The world is flat: A brief history of the globalized world in the 21st century. London: Allen Lane, 1-49.

January 13: Design Jam

Through the first of three hands-on design workshops, students will get an overview of the design thinking process to aid them in addressing the needs of under-served, under-represented, and/or under-resourced communities.

Readings: None

January 20: Poverty

Poverty is measured in ways that may or may not appropriately represent how it is experienced. We will discuss top-down and ground-up approaches to assessing poverty. There will also be an in-class exercise on poverty assessment.

Readings:

- Banerjee, A. & Duflo, E. (2011). "Think again, again" in Poor economics: A radical rethinking of the way to fight global poverty. PublicAffairs. Browse the book's website http://pooreconomics.com
- Gates, B. (2013). "GDP is a terrible way to measure a country's economy and it hinders our ability to help the poor." In Slate: http://www.slate.com/articles/business/project_syndicate/2013/05/bill_gates_on_helping_the_poor_gdp_is_a_terrible_measurement.single.html

January 25: Development

This class will focus on the dominant discourses around the notion of development - when these began and how they have evolved.

Readings:

- Thomas, A. (2000). "Meanings and Views of Development" In T. Allen and A. Thomas (Eds) Poverty and Development into the 21st Century, 23-51. Oxford University Press.
- Sen, A. (2001). "What is Development About?" In Meier, G. and J. Stiglitz (Eds) Frontiers of Development Economics: The Future in Perspective, 506-513. Oxford University Press.
- Arora, P., & Rangaswamy, N. (2013). Digital leisure for development: reframing new media practice in the global South. Media, Culture & Society, 35(7), 898-905.

January 27: Technology

In the context of poverty and development, how has technology played a role? We will discuss the interplay between technology and society.

Readings:

- Winner, L. (1980). "Do artifacts have politics?" Daedalus, 121-136.
- Bijker, W. E. (1997). Of bicycles, bakelites, and bulbs: Toward a theory of sociotechnical change. MIT press.
- Dourish, P., & Mainwaring, S. D. (2012). Ubicomp's colonial impulse. In Proceedings of the 2012 ACM Conference on Ubiquitous Computing (pp. 133-142). ACM.

February 1: Thinking Big - Do dams have politics?
Using the example of the Akosombo Dam, we will discuss top-down approaches to development.

Readings:
- Smillie, I. (2000). "Chapter 3: The Best of the West: Thinking Big." In Mastering the Machine Revisited: Poverty, Aid and Technology, 35-48. Verlag.
- Mitchell, T. (1991). "America's Egypt: Discourse in the Development Industry." Middle East Report, 169, 18-36.

February 3: Thinking Big - Green Revolution or agricultural disaster?
Using the example of the Green Revolution, we will discuss top-down approaches to development. This will also include an in-class debate where student teams will argue for or against the Green Revolution.

Readings:
- Parayil, G. (1992). "The Green Revolution in India: A Case Study of Technological Change." Technology and Culture, 737–756.
- Shiva, V. (1991). "The Green Revolution in Punjab." The Ecologist, 21(2).

February 8: Thinking Small - Small is Beautiful
We will discuss what development means bottom-up, with a focus on appropriate technology.

Readings:
- Bilger, B. (2009). "Hearth Surgery. The Quest for a Stove that Can Save the World." The New Yorker, December 21.
- Atkinson, A. (2004). Appropriate technologies in a globalising world. Journées scientifiques de la coopération: Coopération scientifique Nord-Sud: Entre exigences sociales et défis technologiques, EPFL, 12-13.

February 10: Thinking Small - Building Up
We will discuss what development means bottom-up, with a focus on participatory approaches.

Readings:
- Chambers, R. (1995). Poverty and livelihoods: whose reality counts? *Environment and urbanization*, 7(1), 173-204.

- Rosling, H. (2007). "New Insights on Poverty" TedTalks http://www.ted.com/talks/hans_rosling_reveals_new_insights_on_poverty.html

February 17: Technology, Development, and Poverty - Across the Years
We will fast-forward across the information age to discuss what access, appropriation, and the 'digital divide' mean in today's world. Students will debate and discuss Facebook's Internet.org initiative.

Readings:
- Keniston, K. (2004). "Introduction: The Four Digital Divides." in K. Keniston and R. Kumar (Eds) Experience in India: Bridging the Digital Divide, Sage Publications, 11-36.
- [The Logical Indian]

February 22: Design Workshop II
Through the second of three hands-on design workshops, students will continue to build their design acumen towards addressing the needs of under-served, under-represented, and/or under-resourced communities.

Readings: None

February 24: Project Pitches
We will discuss what the final deliverables for this class will entail. Students will pitch ideas, form interdisciplinary teams based on interest areas, and decide how they would like to proceed towards their final papers and projects.

Readings: None

February 29: Guest Lecture by Dr. Ellen Zegura
We'll hear from Tech's very own Dr. Ellen Zegura and her experiences with fieldwork and computing for good.

Readings: TBD

March 2: No Class

March 7: Design and the Field
We will look at how ICTD scholars address the challenges of designing in the field.

Readings:
- Irani, L., Vertesi, J., Dourish, P., Philip, K., and Grinter, R. E. (2010). Postcolonial computing: a lens on design and development. In *Human Factors in Computing Systems*, 1311–1320.

- Kam, M., Mathur, A., Kumar, A., and Canny, J. (2009). Designing digital games for rural children: a study of traditional village games in India. In *Human Factors in Computing Systems*, 31–40.

March 9: Project Checkpoint
Project teams will get 90 minutes to make progress on their project ideas.

Readings: None

March 14: Food
This class will entail a 30-40 minute interactive lecture delivered by a student team and a 40-50 minute class discussion led by the instructor.

Readings: TBD (Teams will decide)

March 16: Health
This class will entail a 30-40 minute interactive lecture delivered by a student team and a 40-50 minute class discussion led by the instructor.

Readings: TBD (Teams will decide)

March 21: No Class

March 23: No Class

March 28: Education
This class will entail a 30-40 minute interactive lecture delivered by a student team and a 40-50 minute class discussion led by the instructor.

Readings: TBD (Teams will decide)

March 30: Money
This class will entail a 30-40 minute interactive lecture delivered by a student team and a 40-50 minute class discussion led by the instructor.

Readings: TBD (Teams will decide)

April 4: Entertainment
This class will entail a 30-40 minute interactive lecture delivered by a student team and a 40-50 minute class discussion led by the instructor.

Readings: TBD (Teams will decide)

April 6: TBD
This class will entail a 30-40 minute interactive lecture delivered by a student team and a 40-50 minute class discussion led by the instructor. Students will decide the theme of this class based on a vote.

Readings: TBD (Teams will decide)

April 11: Design Workshop III
Through the last of our three hands-on design workshops, students will review their design skills before heading out in the world to address the needs of under-served, under-represented, and/or under-resourced communities.

Readings: None

April 13: Piecing Together the Puzzle
We will have an in-class exercise that will focus on what makes for good ICTD research. Teams will choose different 'pieces of this puzzle' and do short presentations to summarize for the class what we learned about ICTD. Each team will pick a different piece, out of 'design', 'fieldwork', 'methodology', etc.

Readings:
- Burrell, J. & Toyama, K. (2009). What Constitutes Good ICTD Research?
- Dell, N., Vaidyanathan, V., Medhi, I., Cutrell, E., & Thies, W. (2012). Yours is better!: Participant response bias in HCI. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 1321-1330). ACM.

April 18: Jeopardy!
We will have our final course review in the format of Jeopardy (or something like it). No preparation required, but you do get brownie points (that is, extra credit) for a good memory.

Readings: Everything so far!

April 20: Final Presentations
What we've been waiting for all semester - final presentations of papers/projects. Time will be short, so teams should focus on what they'd like most feedback on as they write up their final reports.

Readings: None

Grading

1. Reading Responses (25%)

Questions will be posted on assigned readings and you will have one week to submit your responses – short answers (2-3 sentences) – to the questions. There will be a total of 5 reading responses due.

2. Student Teaching (20%)

You will experience first-hand what it's like to teach a specific topic and try to engage the class in learning. Each of you will choose a topic to explore from this list: food, money, education, health, voice, and entertainment. You will team up with other students interested in the same topic and your group will be in charge of creating a 30-40 minute lecture for the class. You will get points for creativity!

3. Final Project (40%)

You will have the option of producing a final paper or final project. You can choose to do this individually or in teams of 2-4 people. For this project, you will have three deliverables: a 1-page proposal that outlines what you will study or design (5%), a final presentation – with room to incorporate feedback (15%), and the end-product – a final report (20%).

4. Class Participation (15%)

You will be expected to do the readings *before* coming to class. Please be ready to discuss them, ask questions, and engage in conversations on specific topics. We will have guest speakers, and you will be expected to come prepared for their talks and have questions for them. In addition, we will have in-class exercises, which will count for a total of 10% of your grade.

Attendance

Regular attendance is required and essential for you to succeed in this course. If for any reason you are unable to attend class, you must inform me in advance. Absences without legitimate excuses will negatively affect your class participation grade.

Canvas

Class-related announcements will be posted on Canvas, as will assignments, grading rubrics, slides from lectures, and grades. Students are welcome to discuss topics from class on Canvas.

Use of Technology in the Classroom

You are welcome to use your laptop, tablet, or cell phone in class, and will be trusted to be doing so in connection with class-related discussions. Use common sense, and make sure your device use doesn't distract you or your classmates from participation.

Students with Disabilities

Please notify the instructor if you have any disabilities with which you need special assistance or consideration. The campus disability assistance program can be contacted through ADAPTS: http://www.adapts.gatech.edu

Honor Code Statement

Students are expected to adhere to the Georgia Tech Honor Code: honor.gatech.edu.

Relevant Readings

Access:

- Sambasivan, N., Cutrell, E., Toyama, K., & Nardi, B. (2010). Intermediated technology use in developing communities. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 2583-2592). ACM.
- Oreglia, E., & Kaye, J. J. (2012). A gift from the city: mobile phones in rural China. In Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work (pp. 137-146). ACM.
- Burrell, J. (2010). "Evaluating Shared Access: social equality and the circulation of mobile phones in rural Uganda." Journal of Computer–Mediated Communication, 15(2), 230-250.
- Medhi, I., Sagar, A., & Toyama, K. (2006). Text-free user interfaces for illiterate and semi-literate users. In Information and Communication Technologies and Development, (pp. 72-82). IEEE.

Voice:

- D'Silva, K., Marathe, M., Vashistha, A., Borriello, G., & Thies, W. (2014). A Mobile Application for Interactive Voice Forums: Design and Pilot Deployment in Rural India. In Proceedings of the Fifth ACM Symposium on Computing for Development (pp. 121-122). ACM.
- Mudliar, P., Donner, J., & Thies, W. (2012). Emergent practices around CGNet Swara, voice forum for citizen journalism in rural India. In Proceedings of the Fifth International Conference on Information and Communication Technologies and Development (pp. 159-168). ACM.
- Koradia, Z., Aggarwal, P., Seth, A., & Luthra, G. (2013). Gurgaon idol: a singing competition over community radio and IVRS. In Proceedings of the 3rd ACM Symposium on Computing for Development (p. 6). ACM.
- Marathe, M., O'Neill, J., Pain, P., & Thies, W. (2015). Revisiting CGNet Swara and its impact in rural India. In Proceedings of the Seventh International Conference on Information and Communication Technologies and Development (p. 21). ACM.

Health:

- Borriello, G. (2011). Open Data Kit: creating an open source community for mobile data collection. In Proceedings of the 3rd ACM international workshop on MobiArch (pp. 1-2). ACM.
- DeRenzi, B., Lesh, N., Parikh, T., Sims, C., Maokla, W., Chemba, M., ... & Borriello, G. (2008). E-IMCI: Improving pediatric health care in low-income countries. In Proceedings of the SIGCHI conference on human factors in computing systems (pp. 753-762). ACM.
- Natarajan, M., & Parikh, T. (2013). Understanding barriers to information access and disclosure for HIV+ women. In Proceedings of the Sixth International Conference on Information and Communication Technologies and Development: Full Papers-Volume 1 (pp. 143-152). ACM.
- Ramachandran, D., Goswami, V., & Canny, J. (2010). Research and reality: using mobile messages to promote maternal health in rural India. In Proceedings of the 4th ACM/IEEE International Conference on Information and Communication Technologies and Development (p. 35). ACM.
- Kumar, N., Perrier, T., Desmond, M., Israel-Ballard, K., Kumar, V., Mahapatra, S., ... & Anderson, R. (2015). Projecting health: community-led video education for maternal health. In Proceedings of the Seventh International Conference on Information and Communication Technologies and Development (p. 17). ACM.

Education:

- Warschauer, M., & Ames, M. (2010). Can One Laptop per Child save the world's poor?. Journal of International Affairs, 64(1), 33.
- Ames, M. (2015). Charismatic Technology. Proceedings of the 5th Decennial Conference on Critical Computing, Aarhus, Denmark. 109-120.

Entertainment:

- Liang, L. (2010). "Access Beyond Developmentalism: Technology and the Intellectual Life of the Poor." *Information Technology and International Development* Vol. 6.
- Smyth, T., Kumar, S., Medhi, I., & Toyama, K. (2010). Where there's a will there's a way: Mobile media sharing in urban India. In Proceedings of the ACM International Conference on Human Factors in Computing Systems.
- Kumar, N., and Rangaswamy, N. (2013). The Mobile Media Actor-network in Urban India. In Proceedings of the ACM International Conference on Human Factors in Computing Systems.

Money:

- "What Makes a Successful Mobile Money Implementation? Learnings from M-Pesa in Kenya and Tanzania." Mobile Money for the Unbanked.
- Rutherford, S. (1999). "The Poor and Their Money: An Essay about Financial Services for Poor People." Institute for Development Policy and Management, University of Manchester.
- Blumenstock, J. E., Callen, M., Ghani, T., & Koepke, L. (2015). Promises and pitfalls of mobile money in Afghanistan: evidence from a randomized control trial. In Proceedings of the Seventh International Conference on Information and Communication Technologies and Development (p. 15). ACM.

Markets:

- Jensen, R. (2007). The digital provide: Information (technology), market performance, and welfare in the South Indian fisheries sector. The quarterly journal of economics, 879-924.
- Srinivasan, J., & Burrell, J. (2013). Revisiting the fishers of Kerala, India. In Proceedings of the Sixth International Conference on Information and Communication Technologies and Development: Full Papers-Volume 1 (pp. 56-66). ACM.

Food:

- Patel, N., Chittamuru, D., Jain, A., Dave, P., & Parikh, T. S. (2010). Avaaj otalo: a field study of an interactive voice forum for small farmers in rural india. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 733-742). ACM.
- Oreglia, E. (2013). When technology doesn't fit: information sharing practices among farmers in rural China. In Proceedings of the Sixth International Conference on Information and Communication Technologies and Development: Full Papers-Volume 1 (pp. 165-176). ACM.

ICTD:

- Dell, N. & Kumar, N. (2016). The Ins and Outs of HCI for Development. In the Proceedings of ACM CHI 2016. To appear.
- Dell, N., Perrier, T., Kumar, N., Lee, M., Powers, R., & Borriello, G. (2015). Paper-Digital Workflows in Global Development Organizations. In Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (pp. 1659-1669). ACM.

- Ghosh, I., Chen, J., Ming, J., & Abouzied, A. (2015). The persistence of paper: a case study in microfinance from Ghana. In Proceedings of the Seventh International Conference on Information and Communication Technologies and Development (p. 13). ACM.