

INFO 4505: Computing and Global Development: Fall 2022

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Course Details

Description

To date, most computing technologies have primarily benefited urban, affluent, and literate people in developed regions by empowering them with more information, resources, and agency. These technologies currently exclude billions of people worldwide, such as rural residents, people with disabilities, and indigenous communities, who are too poor to afford modern devices, too remote to be connected, or too low-literate to navigate the mostly text-driven Internet. In recent years, researchers and practitioners have examined how computing technologies can be designed or appropriated to empower such underserved communities. This course introduces students to the field of Information and Communication Technologies and Development (ICTD). Through discussions of case studies from the Global South, students will study how computing technologies are used in different global development domains, such as agriculture, finance, health, social justice, and education. They will gain understanding of socio-economic, cultural, and political forces that impact technology adoption in low-resource environments and will learn to design, build, and evaluate inclusive technologies to empower marginalized people.

Learning Outcomes

- Students will learn to unpack terms like “development” and “poverty”, and the role that technology has played in both, through recent decades.
- Students will learn how specific technologies have played out in key domains of global development, such as education, health, etc.
- Students will learn to identify and critically examine approaches to the design of technology in the context of global development.
- Students will learn to put the approaches they learn into practice, and/or learn to analyze how other initiatives do the same.

Teaching Team

Instructor

[Aditya Vashistha](#)

Assistant Professor

Computing and Information Science

adityav@cornell.edu | Gates 243

Teaching Assistants

Farhana Shahid

PhD Student

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Tuan-he Lee

PhD Student

tl566@cornell.edu

Miyuki Goay

BS Student

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Jae Kim

BS Student

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Timings

Lectures

Tuesdays and Thursdays 1-2:15pm, Hollister Hall B14

Office hours

Mondays: Tuan-he Lee 1-2pm, [Zoom](#)

Tuesdays: Farhana Shahid 11-noon, Rhodes 574

Wednesdays: Jae Kim 3-4pm, Rhodes 504

Thursdays: Miyuki Goay 4:15-5:15pm, Upson 102 or [Zoom](#)

Fridays: Aditya Vashistha 3-4pm, Gates 243 or [Zoom](#) (by appointment)

Communication

Please use the [Slack workspace](#) for all course related communications and **Canvas** for quizzes, activities, and project deliverables. Please email us only when absolutely essential. Students are also requested to give at least one full business day for a response. Join Slack workspace using [this link](#) and use your full name. Students are already added to the Canvas course site.

Schedule

Theme	Date	Topic	Readings
Introduction to Computing and Global Development <i>Week 1-3</i>	8/23	Welcome	No Readings
	8/25	Poverty and Development	Toyama (2010): Can Technology End Poverty?
	8/30	Poverty and Development II	Brewer et al. (2006): The Challenges of Technology Research for Developing Regions
	9/1	Unconditional Cash Transfer Guest: Paul Niehaus	Banerjee et al. (2019): Universal Basic Income
	9/6	Poverty and Development III	No Readings
	9/8	Data & People Guest: Trevor Perrier	Perrier et al. (2015): USSD: The Third Universal App
Global Development Domains: Successes and Failures <i>Week 4-8</i>	9/13	Health Guest: Bill Thies	Cross et al. (2019): 99DOTS: A low-cost approach to monitoring and improving medication adherence
	9/15	Smartphone and Apps Guest: Waylon Brunette	Brunette et al. (2017): Open Data Kit 2.0: A Services-Based Application Framework for Disconnected Data Management

	9/20	Livelihood Guest: Rajesh Veeraraghavan	Veeraraghavn et al. (2022): Patching Development: Information Politics and Social Change in India
	9/22	Conservation Guest: Milind Tambe	Ziegler et al. (2020): Can Phones Build Relationships? A Case Study of a Kenyan Wildlife Conservancy's Community Development
	9/27	Project Proposal Workshop	
	9/29		
	10/4	Finance Guest: Kanwaljit Singh	Digital Financial Services for All
	10/6	Agriculture	Gandhi et al. (2007): Digital Green: Participatory Video for Agricultural Extension
	10/11	No Class – Fall Break	
Internet and Social Media <i>Week 9-11</i>	10/13	Connectivity	Heimerl et al. (2013): Local, Sustainable, Small-scale Cellular Networks
	10/18	Social Media I	Raza et al. (2013): Job opportunities through entertainment: Virally spread speech-based services for low-literate users
	10/20	Social Media II	Dye et al. (2017): El Paquete Semanal: The Week's Internet in Havana

	10/25	Online Abuse	Sambasivan et al. (2019): "They Don't Leave Us Alone Anywhere We Go": Gender and Digital Abuse in South Asia
	10/27	No Class – Wellness Break	
Designing for the Next Few Billions Week 12-15	11/1	Gender Guest: Sharifa Sultana	Sultana et al. (2018): Design Within a Patriarchal Society: Opportunities and Challenges in Designing for Rural Women in Bangladesh
	11/3	Security and Privacy	Ahmed et al. (2017): Digital Privacy Challenges with Shared Mobile Phone Use in Bangladesh
	11/8	Mid-term Project Presentations	
	11/10		
	11/15	Languages Guest: Kalika Bali	Ioshi et al. (2020): The State and Fate of Linguistic Diversity and Inclusion in the NLP World
	11/17	Ethics	Dearden and Kleine (2019): Minimum Ethical Standards in ICTD/ICT4D Research: A Co-Produced Document
	11/22	Evaluation	Dell et al. (2012): "Yours is Better!" Participant Response Bias in HCI
	11/25	No Class – Thanksgiving Break	

	11/29	Community Handover and Lessons	Taylor et al. (2013): Leaving the Wild: Lessons from community technology handovers
	12/1	Workshop with Project Mentors	

Grading

Students will be graded on **quizzes and attendance (30%), activities (30%), and projects (40%)**. The grading will not be on a curve. MPS students will be assigned two extra activities and will need to exhibit a higher level of mastery of course materials when doing projects.

Quizzes and Attendance (30%)

Before each class, students are required to carefully read the assigned paper. In each class, they will answer a quiz based on the assigned readings. Each quiz will be graded anywhere from 5 to 10 points. In addition, students are also expected to attend all lectures. The attendance will be taken randomly using Poll Everywhere. Please see the attendance policy for more information.

Activities (30%)

In small working groups, students will collaborate with each other to complete group activities and mini-assignments. These will be due at 1pm on Mondays/Wednesdays/Fridays. Each activity will be graded on 10 points. While all students are expected to actively participate in the class discussions, each MPS student will need to sign-up as a discussion leader for two lectures. For the lectures they will lead the discussion, they need to Slack three discussion points to me before the lecture and raise those points during the lecture.

Projects (40%)

Students will work in small groups (4 students) on a course project. All projects should engage with an **underserved or marginalized community** in some way. While students are not expected to produce publishable research, the expectation is that you will work on an important societal issue. It is up to you to define what will be the topic of your course project, who you will work with, and what you hope to accomplish. You are encouraged to align your project with other projects/goals outside this course. However, this course should enable a new perspective on any existing projects and allow you to accomplish something you might not otherwise be able to achieve without this class. Students will have full support of the teaching team and will have regular check-ins throughout the semester to ensure that their project is aligned well with the learning objectives of this course.

A wide range of projects are acceptable for this course. For example, students might choose to:

- Design and implement a new piece of technology.
- Design and execute an appropriately compelling study with research implications.
- Perform a feasibility analysis or pilot study to inform future research plans.
- Replicate an existing study or technology.

- Execute a sufficiently interesting design problem.
- Conduct meta-review or literature survey.

Examples of past projects are:

- [FoodForGood: Technological impact on Homelessness and Food Insecurity](#)
- [The Use of SMS-based Technologies in Promoting Financial Literacy and Management](#)
- [How Transportation Inequity Affects Access to Early Childhood Development Resources in Underserved Communities in Ithaca](#)
- [Improving the Gender Digital Divide in ICT: A Closer Look at Ghana, South Africa, and India](#)
- [A Technological Approach to Addressing Food Insecurity on College Campuses](#)
- [Investigating the Use of Assistive Technologies in Students with Disabilities](#)

Projects will have three milestones: proposal workshop, mid-term check-in, and finals. More details about the project milestones and deliverables are [here](#).

Attendance and Late Days

Students must attend all lectures. If there are extenuating circumstances, then you can miss up to two lectures without informing the teaching team. The lowest two scores of quizzes as well as participation grades of Poll Everywhere will be dropped. If you need to be absent for more classes, please discuss this with the teaching staff at the earliest. In addition, all students will be given two late days, which can be used for late submissions to quizzes and activities. For equity and fairness, no extensions will be given on course project deadlines without penalties.

Academic Integrity

Each student in this course is expected to abide by the [Cornell University Code of Academic Integrity](#). Any work submitted by a student in this course for academic credit will be the student's own work. You are encouraged to study together and to discuss information and concepts covered in class with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an email, an email attachment file, a soft copy, or a hard copy. If you have questions about what is, or is not, permissible, please come and ask.

Students with Disabilities

We have designed the course to be ADA compliant. Please reach out to the teaching staff if parts of the course are inaccessible. Please give me your Student Disability Services (SDS) accommodation letter early in the semester so that we have adequate time to arrange your approved accommodations. If you need an immediate

accommodation for equal access, please speak with me after class or send an email/slack message to me and/or SDS at sds_cu@cornell.edu. If the need arises for additional accommodations during the semester, please do not hesitate to contact me and SDS.

Masking

Masks are encouraged but not required in classrooms for Fall 22, according to university policy. However, the university strongly endorses compliance with requests to mask from students, staff, or faculty who are health compromised. If you are immunocompromised and would like me to request that the class be masked, please send me an email or Slack message with any rationale that you are comfortable with me sharing. I do not need to identify you unless you would prefer that I do.

Quarantine Policy

Zoom recordings of lectures are not available for absences, including absences due to illness. If you are a close contact with someone who is diagnosed with COVID19, even if you do not experience symptoms, you should test yourself and be masked for five days after exposure regardless of the outcome. If you have symptoms of COVID19 and have not been tested:

- **Do not come to class.**
- Email me before class starts to let me know that you are not coming.
- Get an antigen test.
- If the test is negative, you may return to the next class. Please wear a mask until your symptoms are gone, even if you test negative.
- If your antigen test is positive, you must immediately upload the result to [Daily Check](#). This action will trigger instructions and a letter of temporary accommodation. You must forward the temporary accommodations email to me to receive an accommodation. (The system will not send it for you.) Once I receive the letter, we will provide guidance on how you should keep up with material for the next 5 days.
- You may return to class on day 6 provided you are asymptomatic. You must wear a mask through the end of day 10 from your first onset of symptoms.

Mental Health and Well-being

Your health and wellbeing are important to me. There are services and resources at Cornell designed specifically to bolster undergraduate, graduate, and professional student mental health and well-being. Remember, your mental health and emotional well-being are just as important as your physical health. If you or a friend are struggling emotionally or feeling stressed, fatigued, or burned out, there is a continuum of [campus resources](#) available to you. Help is also available any time day or night through Cornell's 24/7 phone consultation (607-255-5155). You can also reach out to me, your college student services office, your resident advisor, or Cornell Health for support.