# CSE 599: Computing for Social Good

**Spring 2020**
**Time:** MW 1:30-2:50pm
**Instructor:** Kurtis Heimerl <kheimerl@cs.washington.edu>
**Instructor Office Hours:** By Appointment
**TA:** Esther Jang <infrared@cs.washington.edu>
**TA Office Hours:** Wed 10:30-11:20 AM PDT
**Communications:** Canvas
**Location:** See canvas calendar
Hedged from (https://docs.google.com/document/d/1gIclRPED-CHztyWpoZWjdK6iE-T2r9arsAOOSPYsdfE/edit?usp=sharing and https://raghavan.usc.edu/2019-spring-computing-for-social-good/)

## Introduction:

As the role of technology has grown, from mainframes to laptops to mobile phones and pervasive AI, so has the desire to leverage these advances for the good of society. This class will explore the broad, ongoing themes around *Computing for Social Good*, inclusive of advances in HCI, computer networks, artificial intelligence, and sustainability. We will read about national- and global-scale challenges and more specific subproblems, and relevant technology projects. While we will examine some conventional engineering ethics topics, our aim is much broader: we will start with fundamental social and ecological challenges and then consider what role, if any, technology should play in responding to them. One of our aims will be to differentiate between nice-sounding-but-ineffective tech-for-good solutions, nice-sounding-but-actually-quite-harmful tech-for-good-solutions, and answers that have a chance for real impact. As a result, we will take a systems perspective -- to trace root causes and find the right place(s) to make lasting change.

While a working knowledge of critical technology theory is important to doing good work, this is a class for builders and designers. All students will complete a project and end up with an artifact; potentially a tool (designed and/or built) for solving a real-world problem that they bring to the class or a fictional narrative elucidating the potentials and dangers of new ongoing advances.

This is a graduate-level computer science class but particularly motivated and experienced students (including undergrads) from other disciplines can reach out if they'd like to participate.

## Grading:

50% Final Project: Projects of 1-3 students that address some pressing social need. All will eventually need to produce an artifact: a program, model, or design for a solution to a problem.

35% Structured Writing and Presentations: There will be a number of short writing and oral presentation exercises throughout the quarter (cumulatively 7-12 pages) varying from short essays practicing ethical argumentation to speculative fiction, where each person must imagine a world where their research or class project leads to both utopian and dystopian outcomes.

10% Reading Writeups: A one-paragraph writeup of *each* reading with what you, as a reader, found interesting about this work. This means you'll post all writeups on our message board here under the thread corresponding to the class date, by 9 am that morning: https://canvas.uw.edu/courses/1389229/discussion_topics .
This will be used to give direction to presenters. Late policy: 50% deducted for all late submissions unless permission is granted beforehand.

5% In-class participation (leading discussions on papers): Each student will be asked to present (as a group) a topic. The sections labeled "areas" below are the ones available. The scheduling of these should be done by April 8th. Sign-up for your lecture TBD.

## Final Project:

**Initial project ideas (0.5-1 pg) are due (via email to Esther and me) by April 10th. You are strongly encouraged to think about possible project ideas before the start of classes!**
1) Who is on your team? (Include any relevant outside community partners or resources.)
2) What is the problem you are trying to solve?
3) What are some existing solutions (lightweight related work)?
4) What is your design/solution?

**More detailed project proposals are due by April 24th.**
The general format is a 2-4 page paper in academic format (2 column) detailing any updates on your initial proposal:
1) Who is on your team?
2) What is the problem you are trying to solve?
3) What are some existing solutions (related work)?
4) What is your design/solution?
5) What technologies are you leveraging to build your design/solution?
6) How do you plan (or hope) to evaluate your design/solution?
7) A general timeline for tasks over the next two months to the deadline of June 5th.

After the initial proposal stage, Esther and I will be scheduling meetings to discuss them.

**Final Project Presentations:**
Your projects are due Friday, June 5th at 11PM. Projects will be presented in class June 8th.

1. A 6-10 page writeup of the work in two-column CHI format (http://www.sigchi.org/publications/chipubform/sigchi-paper-format-2016/view). This should look very similar to the Computer Science papers you've read throughout the class: Abstract, Introduction, Related Work, Content, Discussion, Conclusion. Those of you from Computer Science will be graded *much* more hardly on formatting; part of the goal of this exercise is to practice paper writing as well.
2. A 7-minute presentation on your team's project and progress throughout the quarter. A robust 1-minute discussion of the project, inclusive of the perspectives shared in the class, will then follow.

## Presentations:

As you make materials for class, please make them accessible: Please see this video on making presentations accessible.

## Course Schedule:

**March 30:**
Introductions to the field and to each other. Before the class please come prepared with an example of a technology or technical intervention from any sector (public, NGO, social entrepreneurship, corporate social responsibility, etc.) that you believe to have mainly positive social impacts, and an example of one that you believe to have mainly negative social impacts.
Prior Reading: None

**April 1:**
Project proposals: What do you want to work on this quarter and why should people join you?
Small breakout groups for project brainstorming
Prior Reading: None

**April 6:**
(Wicked) Problems
Readings:

- Dilemmas in a General Theory of Planning, Rittel and Webber
- Technology is Not the Answer, Toyama

**April 8:**
Theories of social change, "leverage points," systems thinking.
Readings:

- Leverage Points: Places to Intervene in a System, Meadows
- Do Artifacts Have Politics?, Winner

**April 13:**
Mechanism Design
Lecture: Rediet Abebe
Reading:

- Roles for Computing in Social Change, Abebe
- Subsidy Allocation in the Presence of Income Shocks, Abebe (Have to do it) ~~(Optional)~~

**April 15:**
Critical Mechanism Design
Due: Speculative Fiction Stories Round 1
Swap and share of speculative fiction stories. Discussion of readings.
Reading:

- Bill Gates, GDP is a terrible way to measure a country's economy
- **(Optional)** Tara Cookson, Unjust Conditions: Women's Work and the Hidden Cost of Cash Transfer Programs- Chapter 7 (Conclusion)

**April 20:**
Techno-optimist ICTD
Lecture: Kurtis Heimerl
Readings:

- The Case for Technology in Developing Regions, Brewer et al.
- The Fortune at the Bottom of the Pyramid by C.K. Prahalad and Stuart L. Hart

**April 22:**
Critical ICTD:
Post-colonial computing
Lecture: Neha Kumar
Readings:

- Postcolonial computing: a lens on design and development. Irani, L., Vertesi, J., Dourish, P., Philip, K., and Grinter, R. E.
- Feminist HCI: Taking Stock and Outlining an Agenda for Design, Barzdell

**April 27:**
Data Science for Social Good
Lecture: Tim Althoff
Data science for social good
Reading:

- Worldwide activity inequality, Althoff (@UW CSE)
- Discovering Suicide Ideation, De Choudhury, MSR

**April 29:** Critical DSSG
Reading:

- The High Cost of Free Services: Problems with Surveillance Capitalism and Possible Alternatives for IT Infrastructure by Marvin Landwehr, Alan Borning, and Volker Wulf.
- Publisher's website for the book (includes an online version of the first part of the introduction- read the excerpt, also copied here)

**May 4:** ICTD- Education and Health
Lecture: Richard Anderson
Readings:

- Digital Study Hall technical report
- Projecting Health
- (Optional) Digital Study Hall- ICTD 2012 update
- All in this folder

**May 6:** Limits
Lecture: Barath
Readings:

- Exponential Economist meets Finite Physicist, Murphy 2012
- Information Systems for the Age of Consequences, Silberman 2015

**May 11:** Computing for Conservation
Lecture: Matt Ziegler (2nd year ICTD PhD)
Reading:

- Digital Rebound (Coroama and Mattern)
- Lions at the Gates (Weise et. al.)
- (Optional) Sustainable HCI (DiSalvo et. al.)

**May 13:** ICTD and its Discontents
Lecture: Tapan Parikh
Reading:

1. Marx at 193 (John Lanchester)
2. The Fetish of Technology: Causes and Consequences (David Harvey)

**(Optional)** Three Medium blog articles:

- Computing Researchers of the World, Unite!
- Much AI About Nothing
- Liberate the Internet and its Core Applications

**May 18:** Activities
Due: Short oral presentations (2 minutes).
Due: Speculative Fiction Stories Round 2
Swap and share of edited or expanded speculative fiction stories.

Reading: None

**May 20:** Anne Ross (5th year PhD)- Accessibility and ASSETS
Reading:
Disability studies as a source of critical inquiry for the field of assistive technology. Jennifer Mankoff, Gillian R. Hayes, & Deva Kasnitz. ASSETS 2010
Epidemiology as a Framework for Large-Scale Mobile Application Accessibility Assessment. Anne Spencer Ross, Xioayi Zhang, James Fogarty, and Jacob O. Wobbrock. Assets 2017.

**May 25:** MEMORIAL DAY - NO CLASS
Due: 1-2 sentence feedback (email preferred) of how the course is going and whether you would like to see something different.
Reading: None

**May 27:** Anna Waldman-Brown - Makers and Appropriate design
Reading:
1. Democratising Technology: The confluence of makers and grassroot innovators
2. Excerpt from Small is Beautiful by EF Schumacher

**June 1:** Kurtis Heimerl - Community
Reading:
The Third Pillar by Raghuram Rajan- Introduction (pg 80-161, don't worry the font size is very large)
Governing the Commons by Elinor Ostrom- Pgs 30-33 (Chapter 2 subsection "CPRs and Resource Units") and Chapter 3 (all- I know it's long; focus on 88-102 if you're strapped for time)

**June 3:** Blog share and feedback, class review
Due: Short blog post analyzing the impact of a real technology or technical intervention on ethical grounds, directed at a lay audience (imagine public policy makers). May use computational or statistical reasoning, publicly available datasets, etc.
Reading: None

**June 8th (2:30-4:20PM): Project Presentations**
Due: Project Reports