Social Implications & Responsibilities of Computing

Working Group Charge & Work Process

Group Charge
Examine ways to integrate scholarship on the social implications and responsibilities of computing into the fabric of the college

Topics Explored
• Topic 1: Curricular design for undergraduate and graduate students
• Topic 2: Foster collaborative research and community building to introduce and sustain dialog on social implications and responsibilities

Goals for the Report
Aim to provide options, assessments, benchmarking, & structures/processes for execution
Opportunity

Key Ideas

• Currently at a crossroads—similar to MIT’s creation of the field of engineering science in the 1950’s
• Refashion computing:
  • developing and advancing research into fundamental issues of computation
  • training students to analyze and articulate the challenges that computing creates and/or influences
  • designing and building the policy and technical solutions of the future

Constituencies

• Employers eager for graduates with robust “language” to evaluate societal consequences of technological choices
• Policymakers, regulators and public interest groups look to us to develop next stage computation, and to train future policymakers and fill the current gap in policy research, guidance, and leadership.
• Researchers across disciplines, including many of our own students, are very excited about new areas of research within computing, including questions regarding accountability and explainability that cross disciplines.
• MIT faculty and students are excited about the broad commitment to ethics and societal challenges
Guiding Principles

Habits of Mind and Action
- rigorous methodologies from the liberal arts, humanities, social sciences, and other disciplines

Integrating Ethical, Social, and Policy Analysis to Construct Solutions
- integrating consideration of these issues with the development of new computing technologies

Reach Everyone: Ecology of Diverse Courses and Learning Opportunities to Inspire
- culture and spirit of experimentation

Prioritization of Collaborative Spaces
- physical and intellectual
Defining Terms

Ethics
- Drawing on moral philosophy, ethics guides us in determining what is the right or just course of action for individuals, groups, organizations, or society at large.

Societal Implications
- Drawing on fields of social science—from history of technology, to sociology and anthropology, to economics and political science, others—to illuminate the past and potential effects of computing technology on individuals, organizations, and society.

Policy
- Take policy needs into account when designing systems
- Contribute to the development of well-informed policy frameworks that govern plans, rules, laws, and methods of computing
- Develop new techniques enabling systems to meet society’s requirements as expressed in law and policy
Guiding Organizational Principles

Drawing from MIT’s Strengths to Operationalize the College of Computing’s Interdisciplinary Intent

**Societal**
- How might we best identify and address society’s most prevalent inequalities?
- Ex.) Lack of inclusion, racism, diversity, privacy, mkt failures, biases, transparency, discrimination
- How can we ensure systems are sensitive and responsive to the complex social domains in which they are applied?

**Ethical**
- How might we “instinctual-ize” ethical considerations into the College’s fabric?
- How can we ensure that solutions intersecting technology & society consider their future influence/implications?
- Ex.) Our values, culture, laws, & humanity

**Policy**
- How can we couple the varying design, development, & implementation cycles of emergent technologies with policy creation to achieve systems suited to the needs of society?

**Technical**
- How can we expand the technical approach to reflect broader aspirations?
  - Incorporating social and ethical implications, along with engineered policy solutions
  - What interdisciplinary methods might best encourage students and researchers to critically examine the designs they build?

**CofC Ecosystem**

**Analyze + Articulate**
Societal & Ethical Challenges

**Design + Build**
Policy & Technical Solutions

**CofC Catalyst**
External Benchmarking Analysis

Illustrative Example: How External Programs Would Align Based on MIT’s Interdisciplinary Organizational Structure

**Societal**
- NYU: AI Research Institute; AI Now Institute
- Oxford: Future of Humanity Institute; Social Data Science
- Berkeley Center for New Media
- Michigan School: Center for Responsible Media
- Stanford: Human-Centered AI Initiative
- Princeton: Center for Human Values
- Santa Clara: Markkula Center for Applied Ethics
- UCSD Halicioğlu Data Science Institute
- Toronto: Human-Centered Data Science
- Harvard: Berkman Klein Center for Internet & Society

**Policy**
- Berkeley Center for Law and Technology; Center for Technology, Society, & Policy
- Duke Law: Center for Innovation Policy
- Innovation & Technology Policy Lab
- GT: The Tech Policy Assessment Center
- Harvard Kennedy Shorenstein Center
- Texas A&M: Institute for Science, Tech, & Public Policy
- RIT: Science, Technology and Public Policy
- Stanford: Science and Technology Policy
- Princeton: Center for Information Technology Policy
- CMU: Engineering Policy Program

**Ethical**
- CMU: K&L Gates Endowment for Ethics and Computational Technologies
- Harvard: Embedded EthicS Teaching Lab
- Georgia Tech: Ethics and Philosophy of S&T
- Washington: Diversity and Inclusion
- UT Austin: Adding ethics to CS curriculum
- Cornell: Adding ethics to CS curriculum
- GT: Ethics & Philosophy of Science & Technology
- Berkeley iSchool: Center for Long-Term Cybersecurity

**Technical**
- Carnegie Mellon: school of Computer Science, Undergrad AI degree (BSAI), EPP
- Stanford: Computer Science, AI Laboratory
- Berkeley: EECS, AI Laboratory, iSchool
- Harvard: SEAS
- Yale: Center for Computational Vision and Control, AI Lab
- U of Wash: VSD
- Cornell Tech: iSchool, Dept of Computer Science
- U of Texas: School of CS, iSchool
- Michigan: AI Lab, CSE

**Design + Build**
*Policy & Technical Solutions*

**Analyze + Articulate**
*Societal & Ethical Challenges*

**CofC Ecosystem**

**CofC Catalyst**
Internal MIT Efforts

**Internal MIT Efforts**

**CofC Ecosystem**

**Analyze + Articulate**
- Societal
  - MAS.533: AI for Impact (Health & Sustainability)
  - 6.UAT: Effective Oral Communication
  - 6.419: Statistics, Computation and Applications
  - Civic Media: Collaborative Design Studio
  - Human-Machine Collaboration in Art Making
  - AI & The Future of Work (Nov 19th)
  - IDSS – SMART Series
  - Morison Lecture & Prize - Science, Tech, & Society

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**Ethical**
- MAS.S64: Applied Ethical & Governance Challenges
- 2.900/6.904: Ethics for Engineers
- AI & Ethics Reading Group
- Arthur Miller Lecture on Science & Ethics
- Jain Family Institute Workshop on Ethics of Technology (Fall 2019)
- Ethics and Computing Speaker Series (2019)
- Assembly Program on Ethics and Governance of AI

**Technical**
- 6.034/6.5899: Artificial Intelligence
- 6.883: Module in Advanced Topics in AI
- 6.867: Module in Machine Learning
- HST.956: Module in Machine Learning for Healthcare
- 6.894: Module in Advanced Topics in Graphics and Human-Computer Interfaces
- 6.033: Module in Computer Systems Engineering

**Policy**
- 6.805/STS.085: Foundations of Internet Policy
- 6.5978: Privacy Legislation – Law & Technology
- 17.309/STS.082: Science, Technology, & Public Policy
- AI Policy Congress
- AI & Governance Symposium

**Design + Build**
- Policy & Technical Solutions

**CofC Catalyst**
# Themes & Topics Covered

## Considerations

### MISSION, VISION, & GOALS
- Vision that represents, and is accessible to, the communities intended to serve
- Live field of study prioritized as critical to MIT’s values structure
- Plurality of approaches – various practices & disciplines
- Communities intended to serve include: students & researchers; law & policy spheres; research community; industry; gov’t; foundations; professional orgs; public

### ORGANIZATIONAL STRUCTURES
- Integrated approach that ensures ethical, policy, & societal considerations are woven into the conception of engineering of computing technologies
- Institutional commitment, alignment, & prioritization
- Embedded in faculty staffing/hiring and development
- Collaborative space to foster ongoing collaboration

### CURRICULAR INVESTMENT
- Financial commitment and systematic support of new, interdisciplinary methods of teach, research, and scholarship
- Diverse courses & learning opportunities → emphasizing “spirit of experimentation”
- Innovative cross-disciplinary fellowships, programs, and extracurricular learnings
- Methods to “instinctual-lize” into fabric

### RESEARCH METHODS
- Expansion of technical problems to include responsibility to incorporate policy, ethical, and societal implications
- Cross-disciplinary projects (faculty + students)
- Continuum methods/approaches
- Inclusion of various disciplines: ex.) Technology, Philosophy, Econ, Policy, Design, Socio-political, Psychology, etc.

### BENCHMARKING ANALYSIS
- Extrapolate external learnings/insights to inform approach
- Leverage MIT’s strengths to create a world-leading experience
- MIT to serve as catalyst in facilitating complete, interdisciplinary interactions

## Potential Examples

### MISSION, VISION, & GOALS

### ORGANIZATIONAL STRUCTURES

### CURRICULAR INVESTMENT

### RESEARCH METHODS

### BENCHMARKING ANALYSIS
Key Considerations: Structures

- **Dedicated unit centered on ethical, societal, and policy considerations** that brings together internal and external scholars, practitioners from industry and public interest organizations to collaborate on real-world issues.

- **Long-term public engagement** constructs with numerous constituencies; consider a funded center with government, industry, broader civil society, etc.

- **Incubator to empower groups of faculty and students from diverse disciplines to engage** on topics with unknown lifespans (5–10 years) prior to establishing a new unit in the SCoC. Example: Data Science Commons at UC Berkeley.

- Entity with researchers and faculty from multiple disciplines to provide quick-cycle feedback, advice, and guidance to students, postdocs, and faculty on new research proposals - personalized framework, grounded in their specific research. Ensure support is available including faculty, staff, research assistants, etc.
Curricular Investment: Potential Pathways

- Catalyze and sustain **undergraduate classes with embedded ethics & societal considerations** – there exists no systematic source of support for this work

- **First-year big-idea classes**

- SHASS and SCOC **concentrations, certificate programs**

- **UROPs** with emphasis on ethical, social implications

- **Expand graduate student experience** to include mandatory components on topics of interest, RA fellowships

- new collaborative **courses and research projects conducted jointly with peer institutions** such as law schools (e.g., in the model of current joint courses with Georgetown Law School).

- **Develop innovative ways to scale in education and research**: stable research staff with course-load, cross-disciplinary fellowships/TA-ships