

Who should apply?

Students in the COS Ph.D. program come from industry, government, or directly from undergraduate programs. They all share an intense desire to explore computational problems within complex real-world systems of people, organizations, and policies. You are encouraged to apply if you are interested in doing interdisciplinary research at the confluence of computer science and a combination of management, social science, law, and policy; you have a driving desire to do research combining computational and social science and to generate advances in understanding, predicting and providing computational services to society; or you are interested in designing and evaluating computing applications that require in-depth understanding of both computer science and the social/organizational/policy sciences.

COS Ph.D. students are pioneers who are unsatisfied with traditional degree programs and have a strong interest in interdisciplinary research incorporating sophisticated computational approaches

Minimum Requirements

- ◆ Evidence of proficiency in programming, statistics, and social science at an undergraduate level with emphasis on computational reasoning.
- ◆ Solid exposure to computation, math/science, elementary statistics, and one or more of the social, organizational, managerial or policy sciences. Exposure and experience can be job or course related.
- ◆ An undergraduate and/or masters level degree in a mathematics, computer science, computational social science, physics, information science/technology, biology, or a mathematical/computational government or policy program.

- ◆ Evidence of intellectual ability to succeed in a rigorous, high-quality doctoral program, primarily demonstrated through transcripts, standardized test scores, and previous research activity.

Finances

Students are funded through grants and contracts. A few students are self funded. The COS PhD program is committed to facilitating full tuition and stipend support for the academic year, for each full-time student, for a period of 5 years. Summer funding is generally available and the student should consult their COS advisor. Research opportunities are constrained by funding availability. The program's funding commitment assumes that the student is making satisfactory progress, as reported to the student at the end of each academic term. Students are strongly encouraged to compete for outside fellowships and other sources of financial support. COS may supplement these outside awards.

How to apply

Please make applications to the Ph.D. program in Computation, Organizations and Society (COS) through the admissions process at the School of Computer Science (SCS). Applicants must submit a Ph.D. application form, a statement of purpose, a resume, transcripts, GRE scores, and three letters of recommendation. Non-native speakers of English are also required to take the TOEFL examination. The application deadline is in mid December for admission consideration for the following fall semester. Application instructions are available at <http://cos.cs.cmu.edu/apply.html>.

Ph.D. Program in Computation, Organizations and Society

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Ph.D. Program in Computation, Organizations & Society

**Carnegie Mellon
SCHOOL OF COMPUTER SCIENCE**

Computing About and For Society

A unique interdisciplinary Ph.D. program in designing, using, and evaluating computational technology to address complex social, political, legal, business and organizational issues

<http://cos.cs.cmu.edu/>



**institute for
SOFTWARE
RESEARCH**

Overview

The Ph.D. program in Computation, Organizations and Society (COS) prepares students to be tomorrow's leaders in designing, constructing and assessing software that will transform and is accountable to society, business, policy, and law or can be used to computationally reason about these complex socio-computational transformations. Students engage in designing, evaluating and understanding the implications of computing technology with respect to real-world social, corporate, legal or policy concerns.

The Ph.D. program in COS prepares students to be leading researchers in this heavily sought area by providing students with in-depth training in computation, statistical and network methods, and the fundamental theories and findings from the group, organizational, management, law, or policy perspective. It exposes students to traditional tenets of computer science weaved with inter- and multi-disciplinary coursework, hands-on applications and cutting-edge research.

The program is designed to:

- ◆ Provide students with a unique multi-disciplinary curriculum, rooted heavily in computer science, and taught by experts from the variety of COS-related disciplines;
- ◆ Expose students to the latest computer science and social/managerial science research results and technology in COS;
- ◆ Enable students to work with world experts in a wide range of areas such as privacy, dynamic social networks, link analysis, computer simulation, bio-surveillance, sustainability, electronic voting and supply chain management; and
- ◆ Provide practical hands-on experience with computer science problems related to emerging technologies and their associated social, political, legal, business, and organizational conflicts.

COS students are tomorrow's leaders in designing, building and evaluating socially sophisticated software that reshapes the way we live, work and govern ourselves

Degree Requirements

Each COS Ph.D. student is expected to:

- ◆ Participate in directed research under the supervision of a COS research advisor from the first day of enrollment in the program. While fulfilling course requirements, students are expected to devote at least 50% of their time to supervised COS research
- ◆ Complete 96 units of graduate courses at CMU (with a B or better in each course). This includes 3 electives (36 units) and 5 star courses (60 units) in: Artificial Intelligence; Algorithms; Probability and Statistics; Dynamic Networks; Computation, Organizations and Society (COS) Lab
- ◆ Attend the COS Ph.D. seminar series each semester while in residence, minimum of two years and 4 presentations, engage in discussion and present research regularly in this seminar
- ◆ Serve as a teaching assistant for at least two full-semester equivalent COS courses at CMU
- ◆ Write a set of conference- and journal-quality papers with their COS advisor, approximately 1 per semester
- ◆ Demonstrate communication skills
- ◆ Demonstrate computational ability
- ◆ Write and defend a thesis describing a significant piece of original research work

Minimum full time requirement is 1 year

COS Affiliated Centers and Labs:

- ◆ Center for Computational Analysis of Social and Organizational Systems (CASOS)
- ◆ Open Source Management Lab
- ◆ Data Privacy Lab
- ◆ The Mobile Commerce Lab
- ◆ The e-Supply Chain Management Lab
- ◆ CMU Usable Privacy and Security (CUPS) Laboratory

Core Faculty



Kathleen M. Carley – COS Director - computational social and organization theory, dynamic social networks, multi-agent models, complexity, information diffusion, machine learning, adaptive agents



Lorrie Cranor – privacy enhancing software, policy specification languages, electronic voting, usable privacy and security, technology policy



David Farber – distributed computing, security, telecommunications and networks, software systems and programming languages, technology policy



Jim Herbsleb – collaboration in software engineering, open source, computer-supported cooperative work, organization design, team performance



Norman Sadeh – COS co-director - web commerce, security and privacy; adaptive trading; mobile and pervasive computing; policy-aware web; computational game theory; artificial intelligence and machine learning



Michael Shamos – digital libraries, language identification, electronic voting, electronic negotiation, Internet law and policy, computation in service of society



Latanya Sweeney – COS co-director - data privacy, privacy technology, bioterrorism and video surveillance, biomedical informatics, intelligent tutoring systems, machine learning



Rahul Tongia – digital divide, information and communications technology (ICT) for sustainable development, smart power grids, infrastructure development, technology in service of global change