Panel on “Large-Scale Humanistic Studies and Discoveries with Computing Facilitators”:

From Digital Humanities to Computational Humanities: A Framework Integrated with Computational Social Science

The 6th International Conference of Digital Archives and Digital Humanities 2015: Focusing on East Asia, National Taiwan University Taipei, Taiwan

November 30-December 2, 2015

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AI-Econ Research Center
Department of Economics
National Chengchi University
Taipei, Taiwan

http://www.aiecon.org/
Outline

- The Current State of NCCU on Digital Humanities
- Current Skeleton

2015 DADH
Digital Humanities

61 NCCU Faculty Members, 7 Colleges

Digital Lab for Data Prism
Lab for Future Shapers
Digital Footprint Exploration Lab
Digital Democratic Governance Lab
Lab for Data Science and Analytics
Computational/Behavioral Social Science Lab
Big Data Lab for Attitude and Decision Making
Digital Humanities Laboratory for History and Thoughts
Lab for Language and Cognition
Innovative and Mobile Financial Service Technologies
Asia-Pacific Spatio-Temporal Institute

Liber Arts
Foreign Languages
Sciences
Communication
Education
Social Sciences
Commerce

2015 DADH
數位人文工作坊: 方法與觀點

地點：互動式講堂

2015.09.07 ~ 09.09

主辦單位：政大數位人文團隊計畫
Data Revolution

Beyond just digitalization, e.g., unconventional computing

ICT

Humanities

Social Sciences

2015 DADH
computer based analysis of digital repositories using advanced computational and algorithmic methods

creation, dissemination, and use of digital repositories
H-Type Data May Be Useful for Social Scientists

- For example, if an economic historian wants to examine how moral, behavioral, psychological, and sociological dialogues in economics appeared, disappeared and reappeared, the so-called “back to classical”, he/she may find that there is a new tool available and he or she can learn this tool from computational linguistic or digital humanities.

- In fact, hence, the DH impact is not limited to social sciences, but sciences as well, for example, the history of sciences.
The digital society has now reshaped and reorganized our incentives.

For example, streaming music has not only dramatically changed the way how music is distributed but also how music is produced toward less in quantity and better in quality.

Humanists must be sensitive to the ecology of modern humanities under the digital society.
Universe of Data → Digital Library → Digital Society

Search Robots

Platform (Cloud)

Keywords, Key terms

Information Processing Robots (Artificial Readers)

Decision Making Robots

Parsing, Segmentation, Text Mining, Semantics, Sentiments, Opinions, Intentions, GIS

End Users

2015 DADH
Computational Social Science, PhD

Banner Code: KR-PHD-CSS

The core objective of the computational social science (CSS) PhD program is to train graduate students to be professional computational social scientists in academia, government, or business. The program offers a unique and innovative interdisciplinary academic environment for systematically exploring, discovering, and developing skills to successfully follow careers in one of the areas of computational social science.

For policies governing all graduate degrees, see the Academic Policies chapter of the catalog.

Admission Requirements

Applicants should have as background a bachelor’s degree in one of the social sciences; computer science,
Life in the network: the coming age of computational social science

David Lazer,
Harvard University
Alex (Sandy) Pentland,
MIT
Lada Adamic,
University of Michigan
Sinan Aral,
NYU
Albert Laszlo Barabasi,
Northeastern University
Denis Bovet,
Interdisciplinary Scientific Research
Nicholas Christakis,
Harvard University
Noshir Contractor,
Northwestern University
James Fowler,
UCSD
Myron Gutmann,
University of Michigan
Tony Jebara,
Columbia University
Gary King,
Harvard University
Michael Macy,
Cornell University
Deb Roy, and
MIT
Marshall Van Alstyne
Boston University

We live life in the network. When we wake up in the morning, we check our e-mail, make a quick phone call, walk outside (our movements captured by a high definition video camera), get on the bus (swiping our RFID mass transit cards) or drive (using a transponder to zip through the tolls). We arrive at the airport, making sure to purchase a sandwich with a credit card before boarding the plane, and check our BlackBerrys shortly before takeoff. Or we visit the doctor or the car mechanic, generating digital records of what our medical or automotive problems are. We post blog entries confiding to the world our thoughts and feelings, or maintain personal
New course offerings at Stanford!

- CME 193 - Intro to scientific Python
- CME 194 - Intro to MPI
- CME 195 - Intro to R
- CME 211 - Intro to programming for scientists & engineers
- CME 212 - Advanced programming for scientists & engineers

And more!!

Search Stanford courses in Computational and Mathematical Engineering.

News

Stanford's 4th Conference on Computational Social Science

Registration now open! Stanford’s 4th Conference on Computational Social Science on Friday, April 11, 2014 at McCaw Hall. Conference talks from 8:30am-5:30pm. Reception to follow. Lunch provided for all confirmed attendees. Register now!

Program Spotlight: CSLI

The Stanford Center for the Study of Language and Information (CSLI) is celebrating its 30th anniversary this year.
About Us

About the Center for Computational Social Science

As Internet and computer usage expands, so will the availability of large-scale, digitized information on social phenomena. The capacity to manage and analyze this information is increasingly important to multiple social domains and institutions in society. Computer science affords a variety of techniques to collect, manage and analyze this vast array of information, while the social sciences afford a variety of theories and understandings that can guide computational analysis. On their own, computer science can create new and useful technologies and social scientists can address important social problems and issues, but together they can apply computational techniques to analyze and explain incredibly vast and detailed information on social phenomena – in a theoretically informed way – which we could not imagine possible in the prior decade. We call this interdisciplinary field "Computational Social Science" (CSS).

Director

In order to serve this demand, the Institute for Research in the Social Sciences has launched a new program in computational social science, under the leadership of Professor Dan McFarland.

Dr. McFarland is an Associate Professor in the Stanford Graduate School of Education. He studies the social dynamics that surround and constitute educational systems. He characterizes these dynamics as having identifiable structures or patterns, and argues it is through an understanding of these features that there can be increased leverage for intervention and change.

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Computational Social Science: Big Data - Lipari Summerschool 2013

**Location:**
Lipari Island, Italy

**Date:**
Saturday, 2013, July 20 - 9:00am to Saturday, 2013, July 27 - 6:00pm

The Social Sciences are undergoing deep changes in terms of research style, data availability, underlying knowledge, and methods. Today, the availability of social "big data" cannot be overlooked by social scientists. Big data utilization and management will be an integral part of the future of Computational Social Science. The 2013 edition of the Lipari Summer School on Computational Social Science will bring together world-class experts in the fields of quantitative social science and big data analysis to provide a lecture and workshop series to an interdisciplinary international audience. The goal of the 2013 edition is to expose social science researchers to tools and methods for analyzing big datasets of socially relevant information.
From Digital Humanities to Computational Humanities

- Computational humanities is an emerging field that bridges the sciences and humanities with the goal of creating accurate computer simulations of historical, social, cultural, and religious events. (Cruz-Neira (2003), p. 10)

- The former is the creation, dissemination, and use of digital repositories, and the latter is the computer based analysis of digital repositories using advanced computational and algorithmic methods.

2015 DADH

Carolina Cruz-Neira

Gerhard Heyer (2014)
The basic issue to be broached here is whether we can learn from computer simulation (historical simulation) about the past, about the history.

To facilitate the discussion, I would like to draw audience’s attention on the existing literature of using agent-based simulation to study not just the past, but the long past, the pre-historical period.

One famous example is artificial Anasazi (Dean et al., 2000; Gumernan et al. 2003)

A general discussion of historical simulation using agent-based modeling approach is given in Garvin (2014), who used agent-based models to simulate the history of book in UK over 200 years long.
A more ambitious project on agent-based simulation of human history is Epstein and Axtell (1996), which has a comprehensive coverage of many aspects of history.

If we want to have a focus on East Asia, then one may be interested in the agent-based simulation of the civil service examination in Chinese History (Kurahashi and Terano, 2008; Yang et al., 2009).

It can be expected that when documents-based research facilitated by digital humanities gets matured, the research on historical simulation through agent-based modeling will be further motivated.
Emergent Social Complexity

Macrosopic: Simulations with Software Agents

Microscopic: Cognitive, Psychological, Neural, and Cultural Factors

Experiments with Human Agents

interactions
Thomas C. Schelling, 1921-

Micromotives and Macrobehavior

Thomas C. Schelling
Artificial Anasazi

Digital People Farm a Computerized Landscape in Prehistoric Arizona

2015 DADH
Agent-Based Modeling in Archaeology

Tim Kohler
Anthropology/Washington State University
Crow Canyon Archaeological Center
Santa Fe Institute

Agent-Based Models for Spatial Systems in Social Sciences & Economic Science with Heterogeneous Interacting Agents
Agelonde, La Londe les Maures, Var, France
September 2007
Historical Simulation

DHQ: Digital Humanities Quarterly
2014
Volume 8 Number

Agent-Based Modeling and Historical Simulation

Michael Gavin <mgavin_at_mailbox_dot_sc_dot_edu>, University of South Carolina

Abstract

This essay discusses agent-based modeling (ABM) and its potential as a technique for studying history, including literary history. How can a computer simulation tell us anything about the past? This essay has three distinct goals. The first is simply to introduce agent-based modeling as a computational practice to an audience of digital humanists, for whom it remains largely unfamiliar despite signs of increasing interest. Second, to introduce one possible application for social simulation by comparing it to conventional, print-based models of the history of book publishing. Third, and most importantly, I'll sketch out a theory and preliminary method for incorporating social simulation into an on-going program of humanities research.
Figure 6. "Annual Totals 1475-1700." *The Cambridge History of the Book in Britain*: vol. 4.
Figure 8. *Print Marketplace*. Model created and screen capture by Michael Gavin, March 2014.
Sugarscape

- Trade
- Migration
- Disease
- Distribution of Wealth
- Social Networks
- Sexual Reproduction
- Cultural Processes
- Combat

- Sugarscape growback
- Agent movement
- Agent trade
- Agent replacement
- Agent mating
- Agent combat
- Pollution diffusion
- Disease Transmission
明代進士籍貫之歷史變化
Historical Simulation

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