mediaX

at Stanford University

mediaX 2013 CONFERENCE

01.08.13

media✕

at Stanford University

mediaX connects businesses with Stanford University's world-renowned faculty to study new ways for people and technology to intersect.

We are the industry-affiliate program to Stanford's H-STAR Institute. We help our members explore how the thoughtful use of technology can impact a range of fields, from entertainment to learning to commerce. Together, we're researching innovative ways for people to collaborate, communicate and interact with the information, products, and industries of tomorrow.

mediaX 2013 CONFERENCE

Stanford University
January 7-8, 2013

mediaX
at Stanford University

Cordura Hall
210 Panamá Street, Stanford, CA 94305
mediaX.stanford.edu

WELCOME

Discover how we harness industry's drive and Stanford's genius to change the world.

We are in a period of unprecedented and exponential change.

You can witness this when you watch a two-year old child navigate a smart phone, when your car's nav system alerts you that your driving speed may result in an increase in insurance premiums, or when the personal monitoring system on your wrist (or in your pocket) suggests a deep breath to reduce stress. In ten fast years, the rules of engagement have changed from politeness to context awareness. Users now participate in creating the content they use. Health and productivity are individually defined. Personalized data is the new gold rush. Communication technologies have accelerated globalization. And courses from the world's most prestigious universities are now available online, anytime and free.

mediaX research themes tap Stanford researchers to virtually construct networks of thought leaders who have been thinking about a problem longer than a company could hope to have groups doing the same things. Our research is inspired by our corporate partners. Today we will hear from a handful of the 97 Stanford thought leaders in 16 departments that comprise the research network of mediaX. Their expertise bridges deep knowledge in both human sciences and information technologies. It is defining new intellectual frontiers. It is generating insights for the transformation of business, entertainment and education.

mediaX is a member-supported organization – an agile, dynamic network of researchers who share an intense curiosity about how people and information technologies interact. High impact is our goal. To all current and previous members of mediaX, I extend a warm THANK YOU. We are achieving results, together, that none of us could achieve alone.

Enormous challenges await us in the 21st Century, and we look forward to your continued collaboration.
Welcome to mediaX at Stanford University.
Martha G Russell, Executive Director

THANK YOU

The mediaX impact is reciprocal. It extends across the entire University – and beyond.

Stanford University's mediaX program focuses on how the relationship between people and technology can be enhanced, augmented and improved. As the industry-partners program of the HSTAR Institute, mediaX is built on our belief in the power of collaboration – between academic researchers on campus and around the world. mediaX takes its strength from Stanford's academic programs — the faculty members, the courses, the research programs that receive support from federal agencies and private foundations, and importantly, the talented young students and researchers who come to Stanford for study. At Stanford, we are able to go deeper and wider than is practical for most companies.

In trusted relationships, aligned on questions that are important for the future, mediaX collaborations challenge what we know now and stretch intellectual resources to gain new insights relevant to both academic and business collaborators. The combination of Silicon Valley's entrepreneurial culture, actively engaged industry partners, Stanford thought leadership, and the energetic creativity of bright, motivated graduate students infuses mediaX research with unique opportunities to capitalize on the full intellectual, technological and cultural resources at Stanford University.

The generous contributions of strategic partners such as Cisco, Dai Nippon Printing, Konica Minolta, IBM, Nokia, NTT, Omron, Philips, Scottish Enterprise, and Time Warner have enabled MediaX research themes. Global perspectives from new member companies such as Savantas in Hong Kong, Sabia Experience in Brazil, Edelman worldwide and spinoffs such as Persuasion.api in the Netherlands and SIPX, Inc. in Palo Alto energize the mediaX discovery network with relationship capital.

Roy Pea, mediaX, Faculty Director
Byron Reeves, mediaX Faculty Director Emeritus
Keith Devlin, H-STAR Institute, Executive Director

mediaX PARTNERS & MEMBERS

We celebrate mediaX Affiliate and Associate Members and mediaX Strategic Partners.

AARP
Accel Partners
ACERP
Advanced Telecommunications
    Research
Apollo Group
Boeing
Best Buy
BP
British Telecom
Charles Schwab & Co.
Center for Knowledge &
    Information
Cisco Systems
Connected Action
Cox Communications
Dai Nippon Printing
Danish Innovation
Deutche Telecom
Edelman
EDF
Edify
Electricité de France
Epson
e-ZUKA
Forterra
France Telecom
Fuji Xerox
Futton, Inc.
fxPAL
GlaxoSmithKline
Hallmark
Hewlett Packard

Hong Kong University of Science
    and Technology
IBM
Innovations in Learning
Intel
Iizuka
Intuit
KDDI
Kenesis Survey
Konica Minolta Laboratory
    U.S.A., Inc.
Learning.com
Macromedia
Marketing Sciences Institute
Mattel/Fisher-Price
Microsoft
Mitani Sangyo
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Motorola
NBC Universal
NACS
NCast
NHK
Nissan
Nokia
NTT
Omron
Orange at Venables Bell & Partners
PARC
Pearson
Philips
ProfessorQ
Qwaq Forums

Reuters
Rio Tinto
Sábia Experience
Sabre
Samsung
SAP Labs
Savantas
Scottish Enterprise/University of
    Edinburgh
Sesame Workshop
Singularity University
SRI, International
State Farm
StatOil
Steelcase
Sun Microsystems
Swivel Media

TEKES
Teknowledge
Teleplace
Terapac
Time Warner
Trondheim University of
    Technology
Toyota
Unisys UK
US Bank
University of Hong Kong
Valley Breeze Consulting
VINOVA
Visa
Wallenberg Global Learning
    Network
Xerox
Yamatake Corporation

Credit: Linda Cicero from Stanford News Service

SCHEDULE OF EVENTS

What you're in for.

mediaX 2013 MEMBER APPRECIATION

Monday, January 7, 2013
Location: Mayfield, Restaurant, Palo Alto, CA

6:00pm **COCKTAILS AND SPECIAL EXHIBITS**

Exhibit: Graphical Representation of Electric Vehicle Interface Data

Martin Steinert, Mechanical Engineering

This exhibit shows a project that aims to identify, understand and if possible mitigate the emotional relationship between the car and the driver. Based on the unique new challenges posed by the introduction of all-electric vehicles (EV), we try to show experimentally the range anxiety in EVs, and to mitigate it, with the goal to increase the adoption success of EVs. The exhibit includes a car with the latest test setup, experimental dashboard and cognitive load measurement.

6:30pm **WELCOME**

Thanks, and Recognition of Founders, Former Executive Directors and Stanford Researchers

Martha Russell, mediaX at Stanford University

Varied legends trace the origins of mediaX at Stanford University. Many people have played important roles in its origin and its continuation. The underlying truth is that a catalyst organization must continually reinvent itself. Everyone who participates in the mediaX community contributes to its strength and its character.

Free Online Courses – An Instructor's Perspective

Keith Devlin, H-STAR Institute

Last fall, Keith Devlin gave his first massively-open online course (MOOC) on Coursera. This course, "Introduction to Mathematical Thinking," drew over 64,000 students from around the world, making it one of the three largest courses to date on the Coursera platform. What are the challenges and rewards of giving such a course? How do MOOCs compare to traditional courses? Will anyone make money from them? Will the arrival of MOOCs be the tsunami that Stanford president John Hennessy says is about to hit higher education, or are MOOCs just an over-hyped ripple in the water?

6:50pm   **DINNER**

7:45pm   **mediaX MEMBER APPRECIATION**

8:00pm   **KEYNOTE**

Partnering with Stanford for BOLD Innovation
Shoei Yamana, Konica Minolta Business Technologies

The Konica Minolta Group is a Tokyo-based, global organization operating directly in over seventy countries with 38,000 employees. Our core technology portfolio is focused on material science, precision optics, imaging and nano-fabrication. As we innovate the transition in business philosophy from information to knowledge to shared value, Konica Minolta leverages relationships through mediaX at Stanford University to think beyond what we know today, challenge conventional thought and collaborate on new ideas. In our view, this means to enable society to become more prosperous, to deliver value to human creativity, to give people a better quality of work life, and ultimately to contribute to a better quality society.

8:30pm   **DESSERT, NETWORKING AND ADJOURN**

Credit: QT Luong

SCHEDULE OF EVENTS

What you're in for.

mediaX 2013 CONFERENCE
Tuesday, January 8, 2013
Location: Oberndorf, Knight Management Center

8:15am   **REGISTRATION AND COFFEE**

8:45am   **WELCOME**

Martha Russell, mediaX at Stanford University

In trusted relationships, aligned with questions that are important for the future, mediaX collaborations challenge what we know now and stretch intellectual resources to develop new insights relevant to both academic and business collaborators. Welcome to a celebration of ten years of interdisciplinary research at the intersection of people and information technologies.

8:50am   **COLLABORATIONS FOR DISCOVERY**

Claude Steele, Stanford Graduate School of Education

mediaX plays a key role as a catalyst at Stanford, identifying opportunities for discovery collaborations on people and technology with the business community. Through these collaborations, Stanford researchers and mediaX member companies achieve results, together, that neither could achieve independently.

9:00am   **RESEARCH BRIEFINGS**

Dancing with Ambiguity: Making Sense of the Media in Design Thinking Research

Larry Leifer, Mechanical Engineering Design, Center for
Design Research

The Center for Design Research's **designX-lab** focuses on understanding the path to radical innovation taken by technical design teams. We assert that the shortest path to better design innovation is better designers. Our guiding question is "What are designers doing when they design?" Given research insights, we intend to intervene and re-design team dynamics. In this briefing, I will share seven key findings.

Draft In, Galley Out (DIGO): Finally, A Completely Automatic Scholarly Article Parsing and Markup Solution

John Willinsky, Stanford Graduate School of Education

For over a decade, publishers, text miners. and everyone in between have lamented the sorry state of applying XML in document workflows. A recent uptake of open rich-text editors, such as Markdown, has been seen among well-financed medical publishers, allowing for great advances in document workflows. However, this has been largely untenable for smaller open-access publishers.

Any publisher's workflow that accepts Microsoft Word submissions (i.e. almost every publisher's workflow) must employ some degree of manual labor to produce syntactically and semantically sound XML tagged documents. By leveraging and advancing the best piecemeal solutions available for "fuzzy" parsing on various components of scholarly texts, such as their citations, we present DIGO (ambitiously named and subject to change.)

DIGO is a complete, two-click solution that can start with the most miserable, proprietary, unformatted source and produce publication-ready texts that adhere to the formatting conventions of a journal. DIGO is currently in very early development, but the workflow pipeline - as presented - is largely complete.
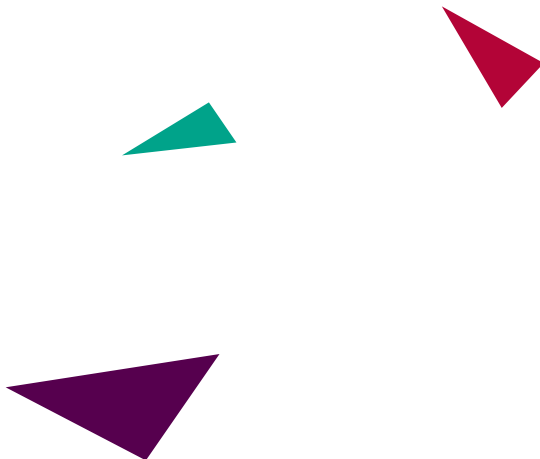
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What you're in for.

The Engineer as Economist: The Design of Online Market Platforms

Ramesh Johari, Management Science and Engineering

Markets are an ancient institution for matching those willing to provide a good or service with those who want it. Physical markets were typically slow to evolve, with simple institutions governing trade and trading partners generally facing a daunting challenge in finding the "right" partner.

Online marketplaces dramatically disrupt this tradition. Such markets---from eBay, to Google's sponsored search auction, to online labor markets such as oDesk and TaskRabbit---can rapidly respond to evolving market trends and fine-grain "engineer" the interactions of their participants with the platform. Further, the traditional difficulty of "finding" even one trading partner has been replaced with a new difficulty: how to narrow a plethora of choices?

Motivated by this new landscape, this briefing will highlight some of the challenges engineers face in designing and implementing emerging online marketplaces. I will describe recent work in studying the market for mobile apps.

Global Teamwork 3.0

Renate Fruchter, Civil & Environmental Engineering, Project Based Learning Lab

Globalization, mobility, collaboration, digital media, interactivity, distributed learning and work, and the convergence of physical, virtual and social spaces, are key drivers in today's communication-intensive workplace. The past two decades have seen a journey of content and people from "connected to" in Web 1.0, "connected through" in Web 2.0, to "connected within" in Web 3.0 immersive, 3D, collaborative-cloud solutions. Opportunities and challenges are emerging for distributed teamwork in the context of Web 3.0 transformative global-learning and -work environments. In this briefing, I will present:

- 10 Key Characteristics for Next-Generation Collaboration EcoSystems
- 10 Transformations of Mixed-Media/Mixed-Reality Remote Collaboration

Brain Patterns and the Mind
Anthony Wagner, Psychology and Neuroscience

Recent advances in functional brain imaging, combined with machine-learning analytic techniques, provide an unprecedented window into how the brain supports human thought. In this briefing, I will introduce how our laboratory analyzes patterns of brain activity to understand human memory, focusing on how we represent places (spatial coding) and how we remember previously encountered people (mnemonic coding).

9:45am   BREAK, EXHIBITS & NETWORKING

Credit: Wikimedia

SCHEDULE OF EVENTS

What you're in for.

mediaX 2013 CONFERENCE
Tuesday, January 8, 2013
Location: CEMEX Auditorium

10:10am **INTRODUCTION**

Martha Russell, mediaX at Stanford University

10:15am **EMERGING OPPORTUNITIES IN K-12 LEARNING ANALYTICS FOR PERSONALIZED LEARNING AT SCALE**

Roy Pea, Stanford Graduate School of Edudcation, Education & Learning Sciences

Recently I have been leading a cross-sector project to engage academic, industry, government, and philanthropic leaders in "Building the Field of K-12 Learning Analytics for Personalized Learning at Scale." The project is intended to accelerate the emergence of an organized community of data scientists devoted to education data and learning analytics, as learning goes 'deeply digital':

What are the critical questions for this interdisciplinary field?
What new tools and approaches are in development?
How can this work build on the sciences of learning?
What policy and ethical challenges are at issue?
What human capital is needed to move this vision forward?

10:45am **CREATIVITY AND (NATIONAL) CULTURE: UNDERSTANDING TEAM CREATIVITY AND WHAT FOSTERS IT**

Pamela Hinds, Management Science and Engineering

Global collaboration depends increasingly on the creative performance of teams, but little is yet known about how practices intended to support creativity operate differently in different cultural contexts. In a series of experimental studies, we set out to better understand how national culture affects team creative performance, how particular "practices" stimulate team creativity across cultures, and what accounts for these differences. Specifically, we examine

the practice of iterative prototyping, a technique meant to unleash creative performance by introducing more concepts and enabling faster learning about opportunities and constraints. Our findings suggest that, depending on how it was operationalized, iterative prototyping sometimes benefitted teams of Westerners more and other times benefitted teams of Easterners more. We examine the mechanisms underlying these differences and propose directions for further study.

11:15am   IDENTITY, ACCURACY, AND APOLOGIES– GETTING SOCIAL ROLES RIGHT IN DIGITAL INTERACTION

Clifford Nass, Communication

Digital interfaces and systems acquire social roles in both personal and shared environments. Great user experiences depend on socially-intelligent interfaces that harmonize the digital persona with the individual to facilitate communication. The digital persona informs the social signaling mechanisms.

Adapting is the single most powerful thing a person can do socially. Some technology interfaces, such as a computer mouse, deliver 100% accuracy; a mouse would be unacceptable if it only delivered 95% accuracy. Many user interfaces, on the other hand, have low accuracy. The misunderstandings that result frustrate users, often causing defection. Over the past decade, research in the CHIMe Lab has provided insights to inform the design of interfaces with persuasive, ambient and emotionally appropriate responses. Current research is generating insights that will inspire the next generation of user interfaces to empower individuals with personalization, learn through iterative interactions and build trust, with predictable accuracy and honest exchange. Socially intelligent interfaces require continuous improvement principles.

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What you're in for.

11:45am   LUNCH

SYSTEMS HEALTH CARE

Hiroshi Nakajima, Omron

Lifestyle diseases are strongly associated with cardiovascular events that account for increasing long-term nursing care. Because of their strong impact, they have been increasingly recognized as a serious social problem in the aging nations. In response to the problem, Systems Health Care has been proposed and developed to support health care, focusing on lifestyle improvement. The philosophy of Systems Health Care and the network health-care system are introduced. Applications for health-care devices and services will be reported, using examples of a blood-pressure monitor, sleep monitor and weight-loss program.

1:15pm   FILLING IN THE "H" IN CHI

Terry Winograd, Computer Science

Over the decades since the original framing of HCI as dealing with the "human information processor," we have seen an ongoing expansion of the field's perspective on the human side of the interaction. The human is physically embodied, non-rational, emotional and social. An individual human's activity is part of collective and interactive groups. Every human is enmeshed in a specific economic and political environment, as well as a global environment. Each time we broaden our view, we raise new challenges and opportunities for designing interactions with computers and information devices. I will reflect on how the field has introduced new dimensions of humanness and how that has shaped the research agenda and the kinds of design we create. I will speculate on where this may go and how we might expect to see HCI evolve.

1:45pm   **SOLVING BUSINESS PROBLEMS USING THE ENGAGEMENT OF MULTIPLAYER GAMES**

Byron Reeves, Communication

The engagement of people at work has acquired increased importance as we learn that engagement increases productivity yet is often in short supply. Social media, and a general consumer sensibility to information work, offer new ideas about how to design work that maximizes engagement. This presentation will review new engagement technologies and psychological research that are the basis for new solutions, with emphasis on the most popular form of new media -- multiplayer games. How can we leverage this psychologically powerful genre to change the nature of work? The presentation will include recent case studies about serious uses of games to change behavior in consumer retail sales, financial services, home energy use, and health care.

2:15pm   **SPINNING OUT AND SCALING UP**

Cameron Teitlebaum, StartX

StartX is a community of Stanford's best startup founders; it has been designed, built and run by Stanford founders to provide structured access to the information, resources and networks that propel startup founders. The organization's mission is to accelerate the development of the highest-potential Stanford founders through collective intelligence and experiential education. As a partner of many Stanford programs and the Stanford student government, StartX represents and aims to support all Stanford founders from undergraduates to Ph.D.s, post-doctoral students and professors in any discipline. StartX is a partner of Stanford Student Enterprises (SSE), the financial arm of the Stanford student government, which represents every student on campus, including all undergraduate and graduate students. In less than two years, StartX has received applications from over 2,000 Stanford founders, comprising 900+ companies. Of these, 170 founders and 60 companies have gone through the program.

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What you're in for.

Panel:

Reid Senescu, CloudLeaps

The **CloudLeaps** platform automatically discovers the relationships between information flows by capturing how teams read and edit their files. A spinout of multi-disciplinary research between Stanford's mediaX, the Center for Integrated Facility Engineering and the Center for Design Research, our patent-pending technology reveals this collaboration in real time through cloud-based dashboards.

The InfoFlow Dashboard enables users to interact with team files as nodes in a flowchart, regardless of where the files are stored in the cloud or on Windows servers. The Collaboration Analytics Dashboard identifies workflow bottlenecks and predicts project outcomes (e.g., profit, schedule conformance). This effortless integration of information with workflows addresses two frustrations Reid experienced working on large projects in the construction industry. With CloudLeaps: (1) users no longer perform rework due to inconsistent information across files; (2) managers can instantly assess a project's current workflows to compare with past projects and predict outcomes.

Relly Brandman, Coursera

Coursera is a social-entrepreneurship company that partners with the world's leading universities to offer courses online for anyone to take, free. The company envisions a future in which the leading universities are educating not only thousands of students, but millions. Coursera's technology enables the best professors to teach tens or hundreds of thousands of students. Through this, the organization hopes to give everyone access to world-class education that has so far been available only to a select few. Coursera seeks to empower people with education that will improve their lives, the lives of their families and the communities they live in.

Jay de Groot, PersuasionAPI, Science Rockstars

PersuasionAPI was founded by Science Rockstars based on the belief that good science leads to great business. It is aimed at building a safe haven for scientists who understand business and business people who see the immense potential of science in providing better solutions to business problems.

Emilio Lopez, Premonit

Premonit is a social platform in which users predict the outcomes of future events. Users can predict who is more likely to win a sports game, where political candidates will stand in the polls, how much an upcoming blockbuster film will gross on opening weekend, etc.

2:45pm **BREAK, EXHIBITS & NETWORKING**

3:15pm **INSIGHT AND INNOVATION FROM CALM**

Neema Moraveji, Calming Technology Lab

We often look only to processes and tools to facilitate insight and innovation. What about our state of mind and body? In this session, I will create an environment for experiential learning in how to leverage calm in your life and work.

3:25pm **FROM TECHNOLOGY DEVELOPMENT TOWARDS SOCIAL INNOVATION**

Boris De Ruyter, Philips Research

PHILIPS

More than ten years ago it was understood that technology development alone would not ensure continuous market innovation. The vision of Ambient Intelligence was conceptualized to emphasize applications of technology that create enticing user experiences. Recently this vision has taken up the challenge not only to create user experiences but also to have an impact on people's lives and society at large. I will give an overview of this transition and provide examples of projects at Philips Research that aim to enhance people's lives. I will describe how mediaX Industry Visiting Scholars from Philips Research contributed to this objective.

What you're in for.

Comments by mediaX Industry Visiting Scholars

Tracey Wilen-Daugenti, Apollo Research Institute

Apollo Research Institute investigates the value, importance and future of education, studying issues critically important to educators, employers and policymakers. Collaborating with academic and corporate research partners, we apply our research expertise across diverse industries. Through rigorous data collection, analysis and evaluation, we develop research-based recommendations to help leaders promote an educated workforce for today and tomorrow. Founded in 2010, Apollo Research Institute is a non-partisan research division of Apollo Group, Inc., a leading provider of educational services worldwide.

Haisong Gu, Konica Minolta

Konica Minolta Laboratory U.S.A. Inc., is a R&D company in US, wholly owned by Konica Minolta Holding, Inc. The company develops software and core technologies, as well as researches and analyzes potential research themes from US universities and research institutes. The company serves as a liaison with US-based third-party developers and plays a critical role in establishing and maintaining Konica Minolta's technology standards and quality control protocols/procedures with third-party developers.

3:55pm   CROWD-POWERED SYSTEMS

Michael Bernstein, Computer Science

Crowd-powered systems combine computation with human intelligence, drawn from large groups of people connecting and coordinating online. These hybrid systems enable applications and experiences that neither crowds nor computation could support alone. Unfortunately, crowd work is error-prone and slow, making it difficult to incorporate crowds as first-order building blocks in software systems. I introduce computational techniques that decompose complex tasks into simpler, verifiable steps to improve quality and optimize work, to return results in seconds. These techniques advance crowdsourcing into a platform that is reliable and responsive, to the point where crowds can be used in interactive systems. I will present two crowd-powered systems

to illustrate these ideas. The first, Soylent, is a word processor that uses paid micro-contributions to aid writing tasks such as text shortening and proofreading. Using Soylent is like having access to an entire editorial staff as you write. The second system, Adrenaline, is a camera that uses crowds to help amateur photographers capture the exact right moment for a photo. It finds the best smile and catches subjects in mid-air jumps, all in real time. These systems point to a future where social and crowd intelligence are central elements of interaction, software and computation.

4:25pm   DIGITAL FOOTPRINTS - MINE, YOURS AND OURS

Jeremy Bailenson, Communication

Virtual human interactions are mediated by advanced computing systems that capture and use information about users to create services for individuals, teams and communities. My decade of research on digital footprints has been enabled by sensor technologies, visualization applications and computational analysis that allow ultra-rapid iteration of track-capture-compute-render sequences. We now have the tools to statistically describe and predict human interaction in immersive environments and to deeply explore the social psychology of people's interaction with their digital selves and with others. The insights from research in the VHIL Lab help us understand human behavior and help us develop computational systems that enhance people's perceptions of themselves and their communication with others.

4:55pm   LOOKING AHEAD

Martha Russell, mediaX at Stanford University

5:00pm   RECEPTION, NETWORKING

SCHEDULE OF EVENTS

What you're in for.

CAMPUS-WIDE KEYNOTE
Tuesday, January 8, 2013
Location: CEMEX Auditorium

ROOTSTRIKERS

WWW.ROOTSTRIKERS.ORG
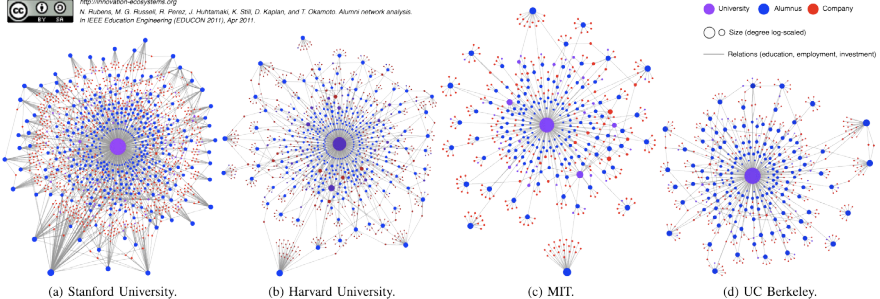
5:30pm   **FORBIDDEN PROBLEMS**

Larry Lessig, Harvard Law School

Is the Net the infrastructure for political change? We have all assumed that the Internet plays the role of more traditional media in politics, but less expensively, and more targeted. I address a character of the Internet that may question that assumption. The intersection between technology and political change is complicated and mediated. The challenge is whether we can build an essential feature of politics — confronting ideas one doesn't agree with — into the code.

7:00pm   **ADJOURN**

● University   ● Alumnus   ● Company

○ ○ Size (degree log-scaled)

Relations (education, employment, investment)

(a) Stanford University.   (b) Harvard University.   (c) MIT.   (d) UC Berkeley.

"Alumni Entrepreneur Networks," as presented by Dr. Subra Suresh, Director of the National Science Foundation, 2011 AAAS Forum on Science and Technology Policy, July 2011.

BIOS

It's all about who you know.

JEREMY BAILENSON

Jeremy Bailenson is founding Director of Stanford University's Virtual Human Interaction Lab and Associate Professor in the Department of Communication at Stanford. He earned a B.A. cum laude from the University of Michigan in 1994 and a Ph.D. in cognitive psychology from Northwestern University in 1999. After receiving his doctorate, he spent four years at the Research Center for Virtual Environments and Behavior at the University of California, Santa Barbara as a Post-Doctoral Fellow and then as an Assistant Research Professor. Bailenson's main area of interest is the phenomenon of digital human representation, especially in the context of immersive virtual reality. He explores the manner in which people can represent themselves when the physical constraints of body and veridically-rendered behaviors are removed. Furthermore, he designs and studies collaborative virtual-reality systems that allow physically remote individuals to meet in virtual space, and he explores the manner in which these systems change the nature of verbal and non-verbal interaction. His findings have been published in over 70 academic papers in the fields of communication, computer science, education, law, political science, and psychology. His work has been consistently funded by the National Science Foundation for over a decade, and he also receives grants from various Silicon Valley and international corporations. Bailenson consults regularly for government agencies including the U.S. Army and Air Force, the Department of Defense, the Department of Energy, the National Research Council, and the National Institute of Health on policy issues surrounding virtual reality. His book, *Infinite Reality*, co-authored with Jim Blascovich, was recently quoted by the Supreme Court, outlining the effects of immersive media.

BIOS

It's all about who you know.

MICHAEL BERNSTEIN

Michael Bernstein is Assistant Professor of Computer Science at Stanford University. His research in human-computer interaction focuses on the design of crowdsourcing and social-computing systems. This work has received Best Paper awards and nominations at premier venues in human-computer interaction and social computing (ACM UIST, ACM CHI, ACM CSCW, AAAI ISWSM), and it has appeared in media venues such as the *New York Times, Slate, CNN* and *The Atlantic*. Bernstein has been awarded an NSF graduate research fellowship, a Microsoft Research Ph.D. fellowship, and the George M. Sprowls Award for best doctoral thesis in Computer Science at MIT. He holds a B.S. in Symbolic Systems from Stanford University, where MediaX supported travel for his first academic-paper presentation, and M.Sc. and Ph.D. degrees in Computer Science from MIT.

PAULO BLIKSTEIN

Paulo Blikstein is Assistant Professor at the School of Education and (by courtesy) at the Computer Science department. Blikstein's research focuses on how new technologies can transform the learning of science, engineering, and mathematics. He creates and researches cutting-edge technologies, such as computer modeling, robotics and rapid prototyping, for use in inner-city schools. Through these technologies, he is creating constructionist learning environments in which children learn science and mathematics by building sophisticated projects and devices. A recipient of the prestigious NSF Early Career Award (2010) and the Google Faculty Award (2010 and 2012), Blikstein holds a Ph.D. from Northwestern University, an M.Sc. from the MIT Media Lab, an M.Eng. in Electronic Systems Engineering, and a B.S. in Metallurgical Engineering, both from the University of São Paulo.

BORIS DE RUYTER

Boris De Ruyter graduated as an experimental psychologist from the University of Ghent in Belgium and obtained his Ph.D. at the University of Technology in Eindhoven. Since 1994 he has been with Philips Research where he is Principal Scientist. Besides his research on user-system interaction, De Ruyter has played a central role in developing the Ambient Intelligence vision and related research facilities such as HomeLab. He is the author of multiple international publications and owns numerous patents. He was the co-chair of the European Symposium on Ambient Intelligence and is active in several program committees of scientific events such as the SIGCHI, AVI and MobileHCI conferences.

KEITH DEVLIN

Keith Devlin is Co-founder and Executive Director of Stanford University's H-STAR institute, Co-founder of mediaX at Stanford University, and a Senior Researcher at CSLI. He is a World Economic Forum Fellow and a Fellow of the American Association for the Advancement of Science. His current research is focused on using various media to teach and communicate mathematics to diverse audiences. He also works on designing information/reasoning systems for intelligence analysis. Other research interests include: theory of information, models of reasoning, applications of mathematical techniques in the study of communication and mathematical cognition. Devlin has written 32 books and over 80 published research articles and is recipient of the Pythagoras Prize, the Peano Prize, the Carl Sagan Award and the Joint Policy Board for Mathematics Communications Award. In 2003, he was recognized by the California State Assembly for his "innovative work and longtime service in the field of mathematics and its relation to logic and linguistics." He is "The Math Guy" on National Public Radio.

BIOS

It's all about who you know.

MARTIN FISCHER

Martin Fischer is Professor of Civil and Environmental Engineering and of Computer Science by courtesy at Stanford University. He is Director of the Center for Integrated Facility Engineering and Senior Fellow at the Precourt Institute for Energy. Fischer coordinates the Building Energy Efficiency Research of the Precourt Energy Efficiency Center and is an Affiliate Faculty member of the Woods Institute for the Environment and of the Emmett Interdisciplinary Program in Environment and Resources. Fischer's research formalizes construction-management tools to allow project managers create and updates schedules rapidly and to integrate the temporal and spatial aspects of a schedule as 4D models.

RENATE FRUCHTER

Renate Fruchter is the founding Director of Stanford's Project Based Learning Laboratory established in 1993. Her research focuses on collaboration technologies for cross-disciplinary, geographically distributed teamwork and e-Learning, such as: team building; knowledge capture, sharing and re-use; project memory; corporate memory; mobile solutions; interactive workspaces; interaction sensors; and mixed-media/mixed-reality environments for remote collaboration. Her research team also studies the impact of technology on learning, knowledge-work productivity, team dynamics and assessment. She is the leader and developer of the innovative "Computer Integrated Architecture, Engineering, Construction (AEC) Global Teamwork" course launched in 1993 at Stanford, which engages university and industry partners from the U.S., Europe and Asia.

ANN GRIMES

Ann Grimes is Director of the Stanford Graduate Program in Journalism and Lorry I. Lokey Professor of the Practice. Grimes is a former staff writer and editor for The Wall Street Journal, where she covered technology and business. As Deputy Bureau Chief in San Francisco, she oversaw the newspaper's coverage of Silicon Valley during the 1990's dot-com boom and bust. While at Dow Jones & Co., she also worked on developing new-media strategy. Earlier, Grimes was on the editorial staff of The Washington Post. As the Deputy National Editor responsible for coverage of the federal government, she ran a national news section that covered the political spectrum. Starting out, she wrote about social issues in Chicago and contributed regularly to The New York Times. Grimes teaches classes in technology reporting, digital media and entrepreneurship. She has a B.A. in English Literature from Georgetown University and an M.A. in Humanities from the University of Chicago. She was a 1997-1998 John S. Knight Fellow at Stanford University.

HAISONG GU

Haisong Gu is Division Manager of the IT Research Division at Konica Minolta Laboratory USA, Inc. Gu obtained his Ph.D. from Osaka University in Japan in 1994. Since then, he has been working with several companies and universities in both Japan and the U.S., including Panasonic and USC. Gu's research includes sensing technology, pattern recognition and machine intelligence. For his achievement in pioneering a stereo vision-based robot system in the field of factory automation, he received the "Automation Technology Award" in Japan. He is the first author of more than 30 research papers and owns numerous patents. Most recently, he has been exploring advanced IT solutions for higher education, healthcare and productivity improvement for individuals and groups.

BIOS

It's all about who you know.

JEFFREY HEER

Jeff Heer is Assistant Professor in the Department of Computer Science at Stanford University, where he works on human-computer interaction, visualization and social computing. His research investigates the perceptual, cognitive and social factors involved in making sense of large data collections, resulting in new interactive systems for visual analysis and communication. The visualization tools developed by Heer's lab (Prefuse, Flare, Protovis & D3) are used by researchers, corporations and thousands of data workers worldwide. His group has received Best Paper and/or Honorable Mention awards at the premier venues in Human-Computer Interaction and Information Visualization (ACM CHI, ACM UIST, IEEE InfoVis). In 2009 Jeff was named to MIT *Technology Review*'s TR35; in 2012 he was named a Sloan Foundation Research Fellow. He holds B.S., M.S. and Ph.D. degrees in Computer Science from the University of California, Berkeley.

PAMELA J. HINDS

Pamela Hinds is Associate Professor in the Department of Management Science & Engineering, Stanford University. She is Co-director of the Center for Work, Technology & Organization and is affiliated with the Stanford d.school. Hinds studies the effect of technology on groups and has conducted extensive research on the dynamics of geographically distributed work teams, particularly those spanning national boundaries. She explores issues of culture, language, identity and conflict, and the role of site visits in promoting knowledge-sharing and collaboration. Most recently, she has been exploring the relationship between national culture and work practices, particularly the work practices of designers. Hinds has also been exploring the relationship between national culture and technology use and is especially interested in the design of collaborative technologies for use across national boundaries. Hinds is co-editor with Sara Kiesler of the book, *Distributed Work* (MIT Press). Her research has appeared in journals

such as *Organization Science, Research in Organizational Behavior, Academy of Management Journal, Academy of Management Annals, Human-Computer Interaction, Journal of Applied Psychology, Journal of Experimental Psychology: Applied, and Organizational Behavior and Human Decision Processes*. She is on the editorial boards of *Organization Science* and *Organizational Behavior and Human Decision Processes*. Hinds hold a Ph.D. in Organizational Science and Management from Carnegie Mellon University.

RAMESH JOHARI

Ramesh Johari is Associate Professor at Stanford University and the Cisco Faculty Scholar in the School of Engineering, with a full-time appointment in the Department of Management Science and Engineering (MS&E) and courtesy appointments in the Departments of Computer Science (CS) and Electrical Engineering (EE). He is a member of the Operations Research group in MS&E, the Information Systems Laboratory in EE and the Institute for Computational and Mathematical Engineering. He received an A.B. in Mathematics from Harvard (1998), a Certificate of Advanced Study in Mathematics from Cambridge (1999), and a Ph.D. in Electrical Engineering and Computer Science from MIT (2004). He is currently on sabbatical at oDesk, Inc. Johari's research is currently focusing on the design, management, operation and analysis of online market platforms that manage both the search for and matching of buyers and sellers, ranging from marketplaces such as eBay to online labor markets such as oDesk and TaskRabbit.

BIOS

It's all about who you know.

SCOTT KLEMMER

Scott Klemmer is Associate Professor, Computer Science at Stanford University. He co-directs the Human-Computer Interaction Group and holds the Bredt Faculty Scholar development chair. Organizations worldwide use his lab's open-source design tools and curricula. His group's research tools harvest and synthesize examples to empower users to design interactive systems, learners to acquire new skills, experts to be more creative and programmers to engage in more design thinking. While creating new tools, his group studies the psychological and social ingredients of design excellence, focusing on the role of alternatives and prototyping. Demonstrating the power of examples beyond design, we create mobile interfaces for example-based expertise sharing and goal achievement. This research shapes project-based design teaching, which emphasizes creating and comparing diverse alternatives. Klemmer helped introduce peer assessment to open online education and taught the first peer-assessed online course.

KINCHO H. LAW

Kincho Law is Professor of Civil and Environmental Engineering at Stanford University. He obtained his B.S. in Civil Engineering and B.A. in Mathematics from University of Hawaii in 1976, and his M.S. and Ph.D., both in Civil Engineering, in 1979 and 1981, respectively, from Carnegie Mellon University. Law's professional and research interests have been focused in Engineering Informatics. For the past 30 years his work has dealt with various aspects of high-performance computing, computational science and engineering, computer-aided design, engineering and legal information management, e-government services, engineering enterprise integration, internet computing, wireless sensing and control. Law has been invited as keynote speaker in various international conferences on the applications of ICT in Civil Engineering. He has authored and co-authored over 350 articles in journals and conference proceedings. Law is the recipient of the 2011 ASCE Computing in Civil Engineering

LARRY LEIFER

Larry Leifer is Professor of Mechanical Engineering Design and founding Director of the Center for Design Research(CDR) at Stanford University, where he has been a member of the faculty since 1976. His teaching laboratory is the graduate course ME310: Industry Project Based Engineering Design, Innovation, and Development. Leifer's research themes include: 1) creating collaborative engineering design environments for distributed product innovation teams; 2) instrumenting that environment for design knowledge capture, indexing, reuse, and performance assessment; and 3) design-for-sustainable-wellbeing. His top R&D priorities at the moment include the Hasso Plattner Design-Thinking-Research Program, d.swiss, and the notion of a pan-disciplinary PhD program in Design.

LAWRENCE LESSIG

Larry Lessig is the Roy L. Furman Professor of Law and Leadership at Harvard Law School, director of the Edmond J. Safra Center for Ethics at Harvard University and founder of Rootstrikers, a network of activists leading the fight against government corruption. He has authored numerous books, including *Republic, Lost: How Money Corrupts Our Congress—and aPlan to Stop It and One Way Forward: The Outsider's Guide to Fixing the Republic*. Lessig serves on the Board of Creative Commons, MapLight, Brave New Film Foundation, The American Academy, Berlin, AXA Research Fund and iCommons.org, and on the advisory board of the Sunlight Foundation. He is a Member of the American Academy of Arts and Sciences and the American Philosophical Association, and he has received numerous awards, including the Free Software Foundation's Freedom Award, Fastcase 50 Award and being named one of *Scientific American*'s Top 50 Visionaries. Lessig holds a B.A. in economics and a B.S. in management from the University of Pennsylvania, an M.A. in philosophy from Cambridge and a J.D. from Yale. Prior to rejoining the Harvard faculty, Lessig was a professor at

Stanford Law School, where he founded the School's Center for Internet and Society, and at the University of Chicago. He clerked for Judge Richard Posner on the 7th Circuit Court of Appeals and Justice Antonin Scalia on the United States Supreme Court.

NEEMA MORAVEJI

Neema Moraveji is Director of the Stanford Calming Technology Lab, studying how interactive products can mitigate the effects of stress on our physical and mental health, cognition, attention, relationships, productivity and life purpose. Earlier, Moraveji was a researcher with Microsoft Research Asia in Beijing, where he invented Microsoft Mouse Mischief. He studied Computer Science at the University of Maryland HCI Lab (B.S.) and at the HCI Institute at Carnegie Mellon University (M.S.). He defended his Ph.D. dissertation, "Augmented Self-Regulation," at Stanford University in 2011.

HIROSHI NAKAJIMA

Hiroshi Nakajima received a B.Eng. degree in System Engineering from Kobe University, Japan, in 1985 and Ph.D. degree in Systems Information Science from Kumamoto University, Japan, in 2004. He is currently Senior Technology Specialist at Omron Corporation. In addition to a long-term career in industry, Nakajima has also been a Distinguished Lecturer for IEEE SMC, a part-time lecturer at Kyoto Saga University of Arts, and a Graduate School of Science GP Fellow and Affiliate Professor at Osaka Prefecture University. Nakajima has applied sensory inspection and computational intelligence to focus on general solutions for improving health in humans, machines and energy consumption. He has published over 70 journal and conference papers. He received the Best Paper Award from Interaction'99 in 1999, the Best Author Award from Information Processing Society of Japan in 2000, the Industrial Outstanding Application Award from International Fuzzy Systems Association in 2007,

the Best Paper Award from Japan Society for Fuzzy Theory and Intelligent Informatics in 2009, and the Biomedical Wellness Award from SPIE in 2011.

CLIFFORD NASS

Cliff Nass is the Thomas M. Storke Professor of Communication, with courtesy appointments in Computer Science; Education: Law: Science, Technology, and Society; and Symbolic Systems. Nass directs the Communication between Humans and Interactive Media (CHIMe) Lab (which focuses on the psychology and design of how people interact with technology) and the Revs Project at Stanford University (which focuses on a trans-disciplinary approach to the past, present and future of the automobile). Nass co-authored with Byron Reeves *The Media Equation: How People Treat Computers, Television, and New Media Like Real People and Place*; he has written *Wired for Speech: How Voice Activates and Advances the Human-Computer Relationship*, with Scott Brave and *The Man Who Lied to His Laptop: What Computers Teach Us about Human Relationships,* with Corina Yen. Nass has published over 125 papers on the experimental psychology of technology. He has consulted on the design of over 250 interactive products and services for leading technology and consumer-electronics companies.

ANDREW NG

Andrew Ng is Associate Professor at Stanford University in the Department of Computer Science and (by courtesy) in the Department of Electrical Engineering, and Director of the Stanford Artificial Intelligence Lab. With Daphne Koller, he co-founded Coursera, an online educational platform. Ng conducts research in artificial intelligence, machine learning, "unsupervised feature learning and deep learning," and neuroscience-informed AI. His early work includes the Stanford Autonomous Helicopter project, which developed one of the most capable autonomous helicopters in the

world and the STanford Artificial Intelligence Robot (STAIR) project, which resulted in ROS, a widely used open-source robotics software platform. Ng is also the author or co-author of over 100 published papers in machine learning, robotics and related fields. His work in computer vision has been featured in a series of press releases and reviews. In 2008, he was named to the MIT *Technology Review* TR35 as one of the top 35 innovators in the world under the age of 35. In 2007, Ng was awarded a Sloan Fellowship. For his work in Artificial Intelligence, he is also a recipient of the Computers and Thought Award.

ROY PEA

Roy Pea is the David Jacks Professor of Education & Learning Sciences at Stanford's Graduate School of Education and (by courtesy) the Department of Computer Science. He is Co-founder and Director of the H-STAR Institute and Faculty Director of mediaX at Stanford University. His work in the learning sciences focuses on advancing theories, findings, tools and practices of technology-enhanced learning of complex domains. Pea co-authored the 2010 National Education Technology Plan for the U.S. Department of Education, co-edited *Video Research in the Learning Sciences* (2007), and co-authored the National Academy of Sciences book: *How People Learn* (2000). He is a Fellow of the National Academy of Education, the Association for Psychological Science and the American Educational Research Association; and he has been an IBM Faculty Fellow (2006). In 2004-2005, Pea was President of the International Society for the Learning Sciences. He also served from 1999-2009 as a Co-Founder and Director for Teachscape, a teacher professional development services company. He holds five patents, which establish innovations in interactive and panoramic video, and mobile learning. He is a co-founding Director of Kogeto.

FRIEDRICH PRINZ

Fritz Prinz is the Robert Bosch Chair of Mechanical Engineering and the Finmeccanica Professor in the School of Engineering at Stanford University, teaching in the departments of Mechanical Engineering and Materials Science and Engineering. He obtained his Ph.D. in Physics at the University of Vienna, Austria. His students model and prototype nano-scale structures to understand the physics of electrical energy conversion and storage. Prinz' students are exploring the relation between the size, composition, and kinetics of charge transfer. They are also interested in learning from nature, in particular by studying the electron transport chain in plant cells. The Prinz team employs a wide range of nano-fabrication technologies to build and evaluate prototype structures. Such technologies include atomic-layer deposition, scanning-probe microscopy and impedance spectroscopy. In addition, the group uses molecular-scale modeling to gain insights into the nature of charge separation and recombination processes.

BYRON REEVES

Byron Reeves is the Paul C. Edwards Professor of Communication at Stanford University and Co-Founder and Faculty Director Emeritus of mediaX at Stanford University. He has published extensively on the psychological processing of interactive technology with an emphasis on emotional responses to media. He is the author with Leighton Read of *Total Engagement: Using Games and Virtual Worlds to Change the Way People Work and Businesses Compete* and the co-author with Clifford Nass of *The Media Equation: How People Treat Computers, Television and New Media Like Real People and Places*. Reeves has worked extensively with industry, including two years at Microsoft Research, working on early designs that leveraged social responses to media in enterprise applications. Reeves is Co-founder of Stanford's H-STAR Institute and is Co-founder and currently

working with Seriosity, Inc., a company-building enterprise software that uses the successful ingredients of engaging games to change how people work.

MARTHA G. RUSSELL

Martha Russell is Executive Director of mediaX at Stanford University and Senior Research Scholar at Stanford's Human Sciences and Technology Advanced Research (H-STAR) Institute and a Senior Fellow at IC2 (Institute for Innovation, Creativity & Capital) at The University of Texas at Austin. Russell is an organizational-interface activist, specializing in technology transfer between academic and industry researchers. She has established collaborative research initiatives in technology leadership and information sciences for national science agencies, technology companies, cross-sector initiatives and technology innovation for regional development. Russell studies innovation ecosystems using data-driven visualization methods for systems analysis. Her current research focuses on network analysis of inter-firm relationships to identify patterns in emerging business sectors, investor networks and global business development. She founded the Innovation Ecosystems Network, which has won Best Paper Awards from the Society of Professional Innovation Managers and the International Conference on Mobile Business. Russell serves on the editorial boards of the Journal of Interactive Advertising and the Journal of Technology Innovation and Social Change.

CLAUDE M. STEELE

Claude M. Steele is the I. James Quillen Dean for the School of Education at Stanford University. Previously, he served as the 21st Provost of Columbia University, as well as a professor of psychology. He is recognized as a leader in the field of social psychology and for his commitment to the systematic application of social science to problems of major societal significance. Steele's research focuses on the psychological experience of the individual and, particularly, on the experience of threats to the self and the consequences of

those threats. He has published articles in numerous scholarly journals, including the *American Psychologist*, the *Journal of Applied Social Psychology*, the *Journal of Experimental Social Psychology*, the *Journal of Personality and Social Psychology*, and the *Personality and Social Psychology Bulletin*. His recent book, *Whistling Vivaldi: And Other Clues to How Stereotypes Affect Us and What We Can Do*, was published in 2010.

MARTIN STEINERT

Martin Steinert is Acting Assistant Professor in the Department of Mechanical Engineering and Deputy Director of the Center for Design Research, the d.research program and the Design Research Industry Affiliate Program at Stanford University. His research focuses on: (1) disruptive technology analyses, including acceptance and adoption research, make/buy decisions and their impact on business ecosystems; his goal is to understand the underlying, generally applicable industry dynamics of innovations; (2) fuzzy front-end of innovations with particular interest in the intersection of engineering design, largely driven by creativity and design thinking, and new product development with its stage-gate models and the open-innovation funnel approach. His goal is to bridge the two distinct perspectives and cultures, to increase effectiveness and efficiency within the innovation process.

ANTHONY WAGNER

Anthony Wagner is Professor of Psychology and Neuroscience at Stanford University, where he directs the Stanford Memory Laboratory and is Co-director of the Stanford Center for Cognitive and Neurobiological Imaging. His research focuses on the psychology and neurobiology of learning, memory and executive function in healthy individuals and, through collaboration, in clinical populations (schizophrenia; Alzheimer's disease). His lab uses various imaging techniques, including functional MRI and electroencephalography, to understand how the brain builds and retrieves memories and to examine the processes that enable goal-directed behavior. Wagner received his Ph.D. from Stanford in 1997,

was a post-doctoral fellow at Harvard University and at the Massachusetts General Hospital's brain-imaging facility and was on the faculty at MIT from 2000-2003. In 2003, he returned to Stanford's Psychology Department, as well as the Neurosciences Program, the Symbolic Systems Program, and the Stanford Center for Longevity. In addition to his basic science and translational research, he examines the implications of neuroscience for the law, as a member of the MacArthur Foundation's Law and Neuroscience Project.

TRACEY WILEN-DAUGENTI

Tracey Wilen-Daugenti is a leading authority on the convergence of education, technology and work and is Vice President and Managing Director of Apollo Research Institute, where she guides the Institute's study of career and workforce issues that are critically important to employers, educators and policymakers. A former Silicon Valley executive, Wilen-Daugenti has held leadership positions at Apple, HP and Cisco. She is a visiting scholar at Stanford University's mediaX program, studying the impact of technology on society. In her latest book, *Women Lead: Career Perspectives from Workplace Leaders* (January 2013), she examined women's contributions to the workplace and the economy. In her forward-looking book, *Society 3.0: How Technology Is Reshaping Education, Work, and Society* (2012), Wilen-Daugenti explored the impact of rapid societal change on how Americans learn, work and connect. Wilen-Daugenti was named San Francisco Woman of the Year in 2002 and was honored by the San Francisco Business Times as a 2012 Most Influential Woman in Bay Area Business.

JOHN WILLINSKY

John Willinsky is the Khosla Family Professor of Education at Stanford University and Professor (Limited Term) in the Publishing Program at Simon Fraser University. He directs the Public Knowledge Project, which is dedicated to conducting

research and developing software that extends the public and scholarly quality of academic publishing. His books include the *Empire of Words*: the *Reign of the OED* (Princeton, 1994), *Learning to Divide the World: Education at Empire's End* (Minnesota, 1998), *Technologies of Knowing* (Beacon 2000), and *The Access Principle: The Case for Open Access to Research and Scholarship* (MIT Press, 2006).

TERRY WINOGRAD

Terry Winograd is Professor of Computer Science at Stanford University, a founding faculty member and directs the teaching of Stanford's Hasso Plattner Institute of Design (the "d.school"), which recently celebrated its 20th anniversary. He is also on the faculty of the Center on Democracy, Development and the Rule of Law. Winograd's focus is on human-computer interaction design and the design of technologies for development. Winograd is a founding member and past president of Computer Professionals for Social Responsibility. He is on a number of journal editorial boards, including *Human Computer Interaction, ACM Transactions on Computer Human Interaction,* and *Informatica*. He has advised a number of companies started by his students, including Google. In 2011 he received the ACM SIGCHI Lifetime Research Award.

SHOEI YAMANA

Shoei Yamana is President & CEO of Konica Minolta Business Technologies, Inc., and Senior Executive Officer and Board member of Konica Minolta Holdings, Inc. He is Senior Vice President of JBMIA (Japan Business Machine and Information System Industries Association). In 1977, He joined Minolta Camera Co., Ltd., having graduated from Waseda University. He has worked in Hong Kong, the UK and the U.S. After the merger of Konica and Minolta, he became Senior Executive Officer. He was the head of Sales &Marketing and Corporate Strategy.

EXHIBITS

Share our experiences.

CALMING TECHNOLOGY LAB

The Stanford Calming Technology Lab is an interdisciplinary group of scholars, designers, and builders who are inventing and evaluating technologies that create states of calm. We draw on Stanford's research groups in human-computer interaction, persuasive design, the psychophysiology of stress, the science of compassion and social cognitive psychology. We further the global conversation around repurposing technologies to mitigate stress. We publish scholarly articles that contain the design and evaluation of interactive prototypes as well as theoretical frameworks for evaluating and inventing those prototypes. We conduct rapid prototyping techniques to experiment with ideas and get user feedback.

Faculty Sponsor: **Roy Pea**

Exhibit: **Breathwear: Sensing And Guiding Your Moment-to-Moment Experience Of Life**

Breathwear is a novel sensor that tracks the wearer's breathing patterns in realtime, sending them to the user's mobile phone and guiding his or her psychophysiological state.

Exhibitors:

Karen Everett is an ethnographic researcher, business analyst and interaction designer, leveraging technology to better the human condition. Her passion lies in design planning and strategy, user experience design, service design and media experimentation to develop new and interesting ways to communicate ideas. She focuses on how digitally mediated actions further affect social change in areas of health and wellness, sustainability, education and social justice. She studied Law and Society (B.A.) at the University of California, Santa Barbara and Design and Technology at Parsons The New School for Design (M.F.A.). At Stanford University, Everett's role is UX Design Lead/Sr. Digital Strategist.

Abhishek Sharma is a Graduate Student at Stanford, currently working on the Breathwear project and also part of the low-cost tangibles group at the Transformative Learning Technologies Lab. His interests lie in the areas of machine vision and embedded systems, and he is fascinated by the idea of giving a machine the ability to "see" the world.

CHIME LAB

The project-based course, COMM 368: Experimental Research In Advanced User Interfaces, involves small (3-4-person) teams going through all parts of the experimental process: question generation, experiment design, implementation, and data analysis. Each team creates an original, publishable project that represents a contribution to the research and practicum literatures. All experiments involve interaction between people and technology, including cars, mobile phones, websites, etc.

Faculty Sponsor: **Clifford Nass**

Exhibit: **PersuasionAPI**

PersuasionAPI was founded by Science Rockstars with the belief that good science leads to great business. It is aimed at building a safe haven for scientists who understand business and business people who see the immense potential of science in providing better solutions to business problems.

Exhibitors:

Mauritz Kaptein is Chief Science Officer at PersuasionAPI and Assistant Professor of Statistics at the University of Tilburg (The Netherlands). Kaptein previously worked for the Technical University of Eindhoven (The Netherlands), the Aalto School of Economics (Helsinki, Finland), and both Vodafone and Philips Research Labs. He received his M.Sc. in Economic Psychology from the University of Tilburg and completed the post-master User System Interaction program at the Technical University of Eindhoven. Next, he completed his Ph.D. with honors at the Eindhoven University of Technology. While at Philips, Kaptein was a mediaX Visiting Scholar, working with Professor Cliff Nass. In his research, Kaptein explores the size and stability of heterogeneity, as well as possible applications of such heterogeneity, in people's responses to influence strategies.

Jay de Groot, Chief Executive Officer at PersuasionAIP, is "the guy you need to have around." His sense of humor and business insights come from broad experience in building companies and successful projects. He ensures that PersuasionAPI's product is not only "cool" but also practical for clients to use. As chief strategist and business leader, he asks the world to embrace PersuasionAPI's technology and practices. As former General Manager, Vice President EMEA for Blast Radius and Senior Vice President, Global Business & Corporate Development, for Backbase, Jay brings a wealth of business insights to the challenge of building successful companies.

EXHIBITS

Share our experiences.

Exhibit: **How Social Interaction With Mechatronic Media Affects Learning**

> We are developing the theory and principles necessary to design new physical media that can take an active social role in learning. We are comparing learning experiences using a mechatronic media component that exhibits social back-channeling behavior to learning experiences with standard non-social media components.

Exhibitor:

> **Malte Jung** is a post-doctoral scholar at the Center for Work, Technology, and Organization in the Department for Management Science and Engineering at Stanford University. He completed his Ph.D. in Mechanical Engineering with a Ph.D. Minor in Psychology at Stanford in October, 2011. Jung is interested in exploring how engineering-team performance is related to the affective quality of interactions in the team. Utilizing methods originally developed to predict divorce in married couples, he showed in his dissertation that the same methods could predict performance in engineering teams. His post-doctoral research extends his previous work by studying how interactive technology, such as robots, can shape the affective quality of team interactions and, ultimately, team performance.

CLOUDLEAPS   CloudLeaps

The CloudLeaps platform automatically discovers the relationships between information by capturing how teams read and edit their files. A spinout of multi-disciplinary research between Stanford's mediaX, the Center for Integrated Facility Engineering and the Center for Design Research, our patent-pending technology reveals this collaboration in real-time through cloud-based dashboards.

The InfoFlow Dashboard enables users to interact with team files as nodes in a flowchart, regardless of where the files are stored in the cloud or on Windows servers. The Collaboration Analytics Dashboard identifies workflow bottlenecks and predicts project outcomes (e.g., profit, schedule conformance).

This effortless integration of information with workflows addresses two frustrations Reid experienced working on large projects in the construction industry. With CloudLeaps: (1) users no longer perform rework due to inconsistent information across files; (2) managers can instantly assess a project's current workflows to compare with past projects and predict outcomes.

Faculty Sponsor: **Martin Fischer**

Exhibit: **I.Am.Performance:
(Info flow Analytics and Metric-based Performance)**

Exhibitors:

Reid Senescu, Ph.D., P.E., received his Ph.D. from Stanford University in 2011 and continued work on his dissertation topic as a post-doctoral researcher. Senescu is Chief Executive Officer, CloudLeaps, Inc., bringing to this role over three years of experience in collaborating with Autodesk to implement technology at Arup. Having worked on teams responsible for $1B+ in construction, he has deep understanding of information management and collaboration needs.

Alex Kalinin, Chief Technology Officer, CloudLeaps, Inc., has developed Internet and Windows applications for enterprises and consumers for 10 years. At Kaplan, he managed a team of engineers to develop an award-winning learning platform (a CODiE award for the Best Student Test Prep application).

CONTENT ON THE GO

Faculty Sponsor: **Ramesh Johari**

Exhibit: **Content On The Go: The Economics Of The Market For Mobile Apps**

The growth of mobile applications on smartphones and tablets ("apps") ranks as one of the most astonishing technological developments in recent past. Over 600,000 apps, free or paid, are available for immediate download from designated app markets (e.g., App Store and Google Play). These app marketplaces represent a significant disruptive change in how content is created and consumed.

On the demand side, the marketplaces offer users rich content, utilizing the functionality of their mobile devices, grabbing their attention from legacy media (e.g., print) and even modern media (e.g., web browsing on a desktop).

On the supply side, these platforms provide content creators direct, instantaneous and highly popular distribution systems where they can implement their own marketing and pricing policies, cutting out middlemen. However, a content creator making sensible business decisions must understand the economics underlying this market, including competition, features of the market platform, and pricing.

Taking a combined data-driven and structural-analysis approach, this project studies various aspects of the market that will empower individual content creators by offering strategic guidance on how to leverage marketplaces' flexibility. Particular emphasis is given to the choice of revenue model and to pricing decisions. To illustrate, we are currently studying the relationship between pricing decisions and visibility. The market platforms feature top-ranked charts that list apps by popularity to help users choose what to download from among the plethora of apps.

A high position in these charts generates a remarkable boost in demand, according to industry sources and empirical research. This introduces an indirect effect of price on demand: a lower price increases demand, in accordance with consumers' price sensitivity, resulting in a higher top-ranked position that in itself attracts more consumers. Designing effective pricing policies for these marketplaces requires a detailed understanding of this mechanism, which we will acquire as we pursue this project.

Exhibitor:

Bar Ifrach is a post-doctoral Research Fellow in Management Science and Engineering at Stanford University. Prior to that he received his Ph.D. from the Decision, Risk and Operations division at Columbia Business School in 2012 and a B.A. in economics Cum Laude from Tel Aviv University in 2007. His research lies at the interface of economics and operations management, with a specific focus on studying the impact of dynamic, strategic interactions between many agents (consumers or competitors) on firms' operational decisions. Bar has extensive expertise in the modeling and analysis of pricing for online services. In particular, he has studied optimal pricing policies that account for social learning and for consumers' social network structure. He has also studied social learning in which consumers engage in word-of-mouth to learn about the quality of new products. In addition, he has developed a new and computationally tractable equilibrium concept for a significant class of models of dynamic oligopoly competition.

COURSERA coursera

Faculty Sponsor: **Andrew Ng**

Exhibit: **Coursera**

Coursera is a social-entrepreneurship company that partners with the world's leading universities to offer courses online for anyone to take, free. The company envisions a future in which the leading universities are educating not only thousands of students, but millions. Coursera's technology enables the best professors to teach tens or hundreds of thousands of students. Through this initiative, the organization hopes to give everyone access to the world-class education that has so far been available only to a select few. Coursera seeks to empower people with education that will improve their lives, the lives of their families, and the communities they live in.

Exhibitor:

Relly Brandman is a senior member of the Course Operations team at Coursera. She works with universities worldwide to produce high-impact and engaging classes. Before coming to Coursera, Brandman got her Ph.D. at Stanford University as part of the Folding@Home team and did her post-doctoral studies at UCSF, building computational models of critical tuberculosis enzymes. She is an author on 10 scientific papers and a licensed patent. She has years of teaching experience in chemistry and computational biology, including curriculum design, hands-on workshops and coaching teachers. She is excited about her new adventure being part of a team bringing free, high quality education to anybody with an Internet connection.

DATA VISUALIZATION

Visualization provides a way to combat information overload: well designed visual encoding can supplant cognitive calculations with simpler perceptual inferences and improve comprehension, memory and decision making. Furthermore, visual representations may help engage more diverse audiences in analytic thinking. The CSS 448: Data Visualization class explores techniques and algorithms for creating effective visualizations, based on principles from graphic design, visual art, perceptual psychology and cognitive science. The course is targeted towards students interested in using visualization in their own work, as well as those interested in building better visualization tools and systems.

EXHIBITS

Share our experiences.

Faculty Sponsor: **Jeffrey Heer**

Exhibit: **Visualizing Climate Change**
(http://stanford.edu/~charupg/448b/final1/)

Every day, news organizations and scientific publications worldwide discuss the far-reaching impacts of climate change. However, little work has been done to index and present climate-change data in a manner that is objective, unbiased and easy to understand for the layperson. To aid researchers and web users in exploring climate-change data, we have developed on our website a system to visualize a multitude of neutral data sources, organized by local and world effects. Using data-visualization techniques, we have created a set of tools for the average web user to filter, compare and explore the effects of climate in individual countries, as well as globally. The objective of this project is to devise an interactive and narrative visualization to let users explore data related to climate change, and the effects of climate change on their lives. We do this by splitting the narrative into three main distinctions:

1. Billion Dollar Disasters: this visualization utilizes a timeline to depict all the recent natural disasters that have cost the United States more than a billion dollars each, with summary statistics and news coverage of each;

2. Climate Negotiations Summary and Carbon Emissions Data by Country: this interactive visualization allows users to explore various carbon emission metrics and current international climate negotiation status by country;

3. Sea Level Rise Map: this interactive visualization overlays a map showing projected sea-level rise of 15 feet over a map of present coastlines.

Exhibitors:

Maruti Didwania is a Ph.D. student in Bioengineering, taking Prof. Jeffrey Heer's data-visualization class with a keen interest in d3js, climate change visualizations and improving the current availability of online visualization tools for scientific data analysis.

Charunethran PG is an M.Sc. student in the Electrical Engineering Department at Stanford University. Previously, he worked as a Research Associate at the Indian Institute of Technology, Madras (IITM) in the Computer Science department. He interned with Intel over the summer of 2012 and is pursuing a career in Computer Hardware Architecture.

Pranav Pai is an M.Sc. student in Electrical Engineering at Stanford University. He focuses on statistical analysis, energy studies and mechatronics. His interests center on the integration of technology and sustainable development. He led a Rural Solar Electrification Project in Karnataka as Head of the Indian Youth Climate Network in Bangalore, and has been interested in developmental work ever since.

Exhibit: **WhereTheNews.Be**
(http://www.wherethenews.be/)
As more people forego (or supplement) traditional news sources such as TV, newspaper and radio in favor of the Internet, news has remained significantly static with respect to its level of interaction. However, news in any medium is rarely mapped, leading to a loss of geographical context in the stories. Mapping both gives context to articles, and shows trends and hotspots for different news stories globally. Adding geographical context will provide for a richer news experience and deliver a broader comprehension of world events and how they relate to one another. All this is accomplished through WhereTheNews.be.

Exhibitors:
Daniel Bardenstein is a senior at Stanford University, majoring in Symbolic Systems, a combination of cognitive and computer sciences, with a focus on Decision Making and Rationality. Alongside his CS classes, he is fascinated by psychology, the brain and people in general. Bardenstein is also an avid musician and music enthusiast, and plays in several campus bands. Before coming to Stanford, he was born and raised in Cleveland, Ohio.

Tyler Crimm is a co-terminal student at Stanford University working on his M.S. in Computer Science with a concentration on Human-Computer Interaction. A Portland native, Crimm enjoys the rain far more than your average Californian. Beyond programming, he enjoys puns and basketball, and is a private pilot.

EXHIBITS

Share our experiences.

Luke Knepper is chipping away at a B.S. in Computer Science at Stanford University. Being from Northern Virginia, he has worked engineering internships in government / military consulting. He loves web and graphic design, hang-gliding and outdoor sports.

Bardenstein met Crimm in his freshman dorm, where Crimm was Resident Computer Consultant, and he interned with Knepper in the summer of 2012 at Palantir. Bardenstein brought the trio together to work on a final project for the Data Visualization class, and the rest was (not history) news.

Exhibit: **2012 Campaign Contribution Explorer**

Currently much politically relevant data--campaign contributions, election results, demographic information, legislative actions and polls--are siloed, making big-picture political analysis difficult. We seek to build an interactive app that can show trends in monetary flow and political developments. The influence of sectors over candidates has been shown only on a candidate-by-candidate basis, without an effective, bird's-eye visualization. We present an effective way to see trends and clusters of candidates in response to their campaign contributions. In addition, we show a visualization technique that can be used in other fields.

Exhibitors:

Karen Everett - Class of 2013 Computer Science Major, from White Plains, NY.

Gavin Kho - Class of 2013 Computer Science Major, from the Philippines.

Lorenzo Mangubat - Masters student studying Materials Science & Engineering, from Manila, Philippines.

Adam Raudonis - Class of 2014 Computer Science Major, from Los Angeles, CA.

DIGITAL MEDIA ENTREPRENEURSHIP

Primarily for graduate-journalism and computer-science students, the course, COMM 240: Digital Media Entrepreneurship, covers Silicon Valley's new media culture, digital story-telling skills and techniques, web-based skills, and entrepreneurial ventures.

Faculty Sponsor: **Ann Grimes**

Exhibit: **Premonit: Collaborative Prediction Platform**

Premonit is a social platform in which users predict the outcomes of future events. Users can predict who is more likely to win a sports game, where political candidates will stand in the polls, how much an upcoming blockbuster film will gross on opening weekend, etc.

Exhibitor:

Emilio Lopez is a Master's student in Computer Science, concentrating on Human-Computer Interaction. He is graduating from Stanford in 2013 (B.S. in Computer Science). Lopez worked at RockMelt, the social browser, for two years before starting his own company, Premonit.

EMOTION-REACTIVE CAR INTERFACES

The ME 243: Designing Emotion-Reactive Car Interfaces course engages student teams to design the next-generation car interfaces, taking into account the emotional state of the driver in the moment of driving and provide feedback based on those HCI principles.

Faculty Sponsor: **Friedrich Prinz / Martin Steinert**

Exhibit: **Graphical Representation of Electric Vehicle Interface Data**

This project aims to identify, understand and if possible mitigate the emotional relationship between the car and the driver. Based on the new and unique challenges posed by introducing all-electric vehicles, we try to show, experimentally, the existence of range anxiety in EVs, and to mitigate it, to increase the adoption success of EVs.

Exhibitor:
Martin Steinert

EXHIBITS

Share our experiences.

HUMAN-COMPUTER INTERACTION

This course, CSS 376: Research Topics in Human-Computer Interaction, is a broad, graduate-level introduction to HCI research. The course begins with seminal work on interactive systems and moves through current and future research areas in interaction techniques and the design, prototyping and evaluation of user interfaces. Topics include computer-supported cooperative work; audio, speech, and multi-modal interfaces; user-interface toolkits; design methods; evaluation methods; ubiquitous and context-aware computing; tangible interfaces; haptic interaction; and mobile interfaces.

Faculty Sponsor: **Scott Klemmer**

Exhibit: **TweakCorps: Retargeting Existing Web pages for Diverse Devices and Users**
Using simple heuristics, TweakCorps creates a mobile-adapted web page from a desktop-optimized web page. TweakCorps uses machine-learning analysis of cross-platform design elements to allow users to tweak a layout, to customize it and get it exactly as they want it.

Exhibitor:
Maxine Lim completed her B.S. with Honors at Stanford University, where she is now a graduate student (M.Sc. expected in 2013) majoring in Computer Science.

PROJECT BASED LEARNING LAB

The mission of the Project Based Learning Lab is to engage graduate and undergraduate students, faculty and industry practitioners in multi-disciplinary, collaborative, geographically distributed PBL activities. In conjunction with the course, CEE222/122: Architecture/Engineering/Construction Global Teamwork, PBL uses a process of teaching and learning that focuses on problem-based, project-centered activities that produce a product for a collaborating "client". Projects in the PBL are based on re-engineering processes that bring people from multiple disciplines together to develop, implement, test, deploy and assess radically new collaborative, cross-disciplinary, geographically distributed teamwork and learning.

Faculty Sponsor: **Renate Fruchter / Kincho Law**

Exhibit: **From Viewing to Experiencing**

The past two decades have taken us through a journey from "connected to" content and people in Web 1.0, "connected through" in Web 2.0, to "connected within" in Web 3.0 immersive, 3D, collaborative cloud solutions. What are the tangible outcomes of remote collaboration in mixed-media/mixed-reality environments that include physical, mobile, digital, sensor, robotic and 3D virtual worlds? Come engage behind the looking glass.

Exhibit: **eMoC: engagement Matrix of Choices**

People are wired for feedback. What kind of feedback do we need to assess, re-assess and re-align our work-environment choices to achieve high degrees of engagement and team performance? eMoC provides metrics, feedback tools and the "SixSteps for Engagement" to help knowledge workers make explicit work-environment choices. Come assess your work environment and potential degree of engagement.

PUBLIC KNOWLEDGE PROJECT

The Public Knowledge Project was founded in 1998 by John Willinsky, based on his research in education and publishing. The PKP's initial focus was on increasing access to scholarly research and output beyond traditional academic environments. PKP has developed free, open-source software for managing, publishing and indexing journals, conferences, and monographs. The PKP's suite of software includes four separate but inter-related applications to demonstrate the feasibility of open access: the Open Journal Systems, the Open Conference Systems, the PKP Open Archives Harvester and the Open Monograph Press (in development). Together with other open-source software applications, such as DSpace (for creating institutional research repositories), institutions are creating their own infrastructures for sharing research output.

Faculty Sponsor: **John Willinsky**

Exhibit: **Draft In, Galley Out (DIGO): Finally, A Completely Automatic Scholarly Article Parsing and Markup Solution**

For over a decade, publishers, text miners, and everyone in between have lamented the sorry state of applying XML in document workflows. Despite the recent uptake of open rich-text editors such as Markdown, any publisher's workflow that accepts Microsoft Word submissions (which is almost every

publisher's workflow) must employ some degree of manual labor to produce syntactically and semantically sound XML-tagged documents. This has been employed within well-financed medical publishing, allowing for significant advances, but is largely untenable for smaller open-access publishers (and unallowable by those interested in text parsing).

By leveraging and advancing the best piecemeal solutions available for "fuzzy" parsing on various components of scholarly texts – such as their citations – we present DIGO (ambitiously named and subject to change), a complete, two-click solution for getting publication-ready texts, adhering to the formatting conventions of a journal, from the most miserable, proprietary, unformatted source DIGO is currently in very early development and many semantic features are not yet present in this early stage demonstration – but the pipeline as presented is largely complete.

Exhibitor:

Alex Garnett is Data Curator and Digital Preservation Specialist at Simon Fraser University in Vancouver, BC, and a consultant in social-network data analysis and text parsing and markup.

STARTX **StartX**

StartX is a community of Stanford's best startup founders; it has been designed, built and run by Stanford founders to provide structured access to the information, resources and networks that propel startup founders. StartX is a partner of Stanford Student Enterprises (SSE), the financial arm of the Stanford student government, which represents every student on campus, including all undergraduate and graduate students. The organization's mission is to accelerate the development of the highest-potential Stanford founders through collective intelligence and experiential education. As a partner of many Stanford programs and the Stanford student government, StartX represents and aims to support all Stanford founders from undergraduate students to Ph.D.s, post-doctorate students and professors in any discipline. In less than two years, StartX has received applications from over 2,000 Stanford founders, comprising 900+ companies. Of these,170 founders and 60 companies have gone through the program.

Faculty Sponsor: **Clifford Nass**

Exhibitors:

Cameron Teitelman is the Founder and CEO of StartX. He is an alumnus of Stanford University, graduating in 2011 with a degree in Management Science and Engineering. During his Stanford studies, Teitelman was involved in both the athletic and entrepreneurship communities. He was a member of Stanford's Division I varsity wrestling team, as well as an active member of the Alpha Kappa Psi Business Fraternity. While at Stanford, he also founded and acted as the CEO of The Essential Card Group, a discount-membership company. Teitelman has previous work experience in private equity at Accelon Capital, a middle-market private equity firm in Menlo Park. He is initially from Los Angeles and has a professional background in the entertainment industry.

Tony Lai leads StartX's social innovation initiative and also coordinates with partner law firms to provide legal advice and workshops for StartX startup teams. He is a Visiting Scholar and Fellow at the Stanford Center for Legal Informatics (CodeX), the CEO and co-founder of the online legal platform, LawGives, and a graduate of the LL.M. program in Law, Science and Technology at Stanford Law School. Lai has a broad range of legal experience advising the technology, communications and media industries in Europe, Asia and Africa. Before coming to Stanford, he practiced for over four years in the London and Hong Kong offices of Herbert Smith LLP.Lai also has a Masters degree in Modern History from the University of Oxford, is fluent in Mandarin and Cantonese and, as a design-thinking alumnus of Stanford's d.school, he enjoys brainstorming and designing human-centered solutions to systemic problems in society.

mediaX RESEARCH THEMES

Research Themes are financed through gifts from Strategic Partners.

mediaX Research Themes enable researchers from member companies to collaborate with Stanford researchers on leading-edge questions that have a time horizon of three to seven years and often revolve around complex issues that are not yet well defined.

Strategic partners work with the mediaX leadership team to articulate a research challenge, which is then issued broadly throughout Stanford's research community. mediaX seeks concept-proving projects that focus on a well-defined critical question for a big idea. Proposals are reviewed, and projects are selected for funding. Graduate students studying in Stanford's open innovation and entrepreneurial environment support the faculty teams. Researchers from mediaX member companies often come to Stanford as visiting scholars to collaborate on the research projects, providing all the benefits of first-hand information.

Results of mediaX research projects are ultimately intended to contribute to journal papers. Interim results are shared with mediaX members and with visiting scholars. Sometimes the projects validate a new question or method, leading to significant funding from public or private resources, or a new lab.

The mediaX Research Theme program is distinct from internal corporate R&D initiatives. It taps the intellect of Stanford research leaders, most of whom are already well funded, on questions that have not been articulated before. The combination of Silicon Valley's entrepreneurial culture, actively engaged industry partners, Stanford thought leadership, and the energetic creativity of bright motivated graduate students and post-doctoral students infuses the mediaX Research Theme program with unique possibilities that draw upon the full technological, cultural and intellectual resources at Stanford University.

mediaX Research Themes have included:

FORM FACTORS

IMAGE, SPEECH AND LANGUAGE PROCESSING

HUMAN-MACHINE INTERACTION AND SENSING

PARTICIPATION

COLLABORATION

We welcome new Research Themes that will tackle the 21st Century's most important questions on people and technology.

Contact: martha.russell@stanford.edu

mediaX RESEARCH THEMES

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FORM FACTORS

Mobile Devices and Alternative Form Factors

This research theme seeks new understanding of mobile communication devices and services that are focused on the device itself:

- understanding the applications for that device;
- the interface employed to render that device and the service useful;
- the connectivity opportunities and needs required to make that device part of the 'connected' computing ecosystem.

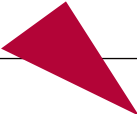Examples of question areas include:

- the single-purpose or converged device;
- where sensitive data are created, accessed and distributed;
- appropriate security models;
- possible use of multiple-modalities;
- the design challenges and implications of interfaces and interactions with the devices and their information;
- the management of devices connected to next-generation networks.

The Future of Content: Creation, Consumption and Curation

The goal of this research theme spans the creation, consumption and curation of media content in K-12 contexts, across the wide range of organizations, people and technologies involved. This research theme spans formal and informal learning environments, as well as in-school and out-of-school contexts that include teachers, administrators, students and families.
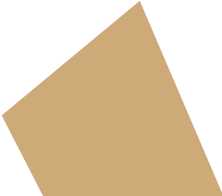
Examples of question areas include:

- characteristics of the new roles and opportunities in educational content-formal and informal hubs of influence;
- content creators and/or curators, unbundlers or rebundlers of media content ranging in length from 'snacks' to complete works;
- the new requirements for fluid administrative and pedagogical content ecosystems (multi-mode, cross-media, multi-screen and multi-owner) articulated for new tools, platforms and operating systems;

- how new technologies-sensors, scanners, visualization tools, time- based user experiences and others will transform the creation of blended, layered, augmented media;
- how users will navigate content and how consumption experiences will impact learning;
- how the multi-dimensionalflow of media objects can be enabled, tracked with usage analytics and monetized, to recognize and encourage creation, appropriate consumption and curation.

Publish on Demand

The objective of this research theme is to develop new insights necessary to optimize technologies, user experiences and business infrastructures for content in the publish-on-demand mediascape. Of particular interest are studies that explore signals of change, structural dynamics, legal implications, and user experiences in content for learning and leisure. Examples of questions include:

- how context and format for consumption influence attention, retention, and impact of content;
- how new technical, human and legal issues, including choice-based options and advertising or sponsorship, influence new analytics and pricing models in publish-on-demand systems;
- how understanding legal, technology and human issues can help to alleviate copyright and other pain points, such as orphan works, fair use and conflicting foreign regimes, inconsistencies in licensing rules, interoperability and multiple formats;
- how to better understand the fast-changing relationships and dependencies in the business ecosystem surrounding use of content in higher education;
- the impact of potential disruptors such as open publication, open education legal automation, 'unbundling' content, easy rights registration and clearance, querying languages, linking schema, convertible formats (print, PDF, HTML) for full and partial contents in single and multiple media.

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IMAGE, SPEECH AND LANGUAGE PROCESSING

Natural Language Research

This research theme focuses on basic and strategic research, training and technology transfer in speech and language processing.

Video Processing, Cataloging, Retrieval, and Reuse

The goal of this research initiative is to expand understanding about interactive technologies related to video processing, cataloging, retrieval and reuse, with a view to developing automated systems to support video libraries.

Examples include:

- computational semantics research relevant to video reuse
- content understanding by integrating analyses of audio/video information, and
- user interfaces for video libraries.

HUMAN-MACHINE INTERACTION AND SENSING

Human-Machine Interaction and Sensing

The objective of this research theme is to further the understanding of human uses and effects of new technologies that enable natural interaction with information and the physical world. The detection or sensing of human-comprehension, emotional states, gestures, or touch is of particular interest.

This might include:

- biometrics (facial recognition of age and gender, based on expressions, behavioral assessment and relationship to consumer behavior);
- sensing and sensors (including applications in acoustics, optics, visions, RF, biochemical and physiological sensors that mimic visual inspection for impurities and foreign material by humans in food and beverage processing);
- sensor networks (including models and new applications for sensor networks); and MEMS and NEMS (including RF MEMS, NEMS for novel wireless and optical devices).

Sensing and Control

The aim of this research theme is the integration of technology with the understanding of human psychology and social behavior, to create new technologies that enable the natural interaction of people with information in the physical world.

Examples of research topics include human-media interactions in:
- automobiles (navigation and control systems, or sensing driver stress);
- medical contexts (non-invasive sensing and remote reporting of medical information, interface issues related to medical information);
- entertainment devices (sensors in interactive toys, computer I/O devices);
- learning and collaborative environments (use of environment sensors of motion, presence, stress, emotion);
- speech and dialog systems (voice recognition and natural language exchanges);
- agents (embodied agents, intelligent agents, multi-agent systems).

Other areas of research include sensing and sensor networks (physiological, bio-chemical, aural, acoustic, optical, environmental, vision, RF, MEMS sensors) and biometrics.

Emotion Detection from Video Capture of Facial Expression

This research theme seeks to develop deeper understanding of high-dynamic-range environments to enable vehicles to automatically perceive driver emotions through camerainput, to determine the driver's alertness/fatigue status and provide a reliable and actionable safety index.

Earlier research has evaluated the validity, sensitivity and reliability of selected psychophysiological fatigue-detection devices and measures, including eye-closure measures, eyelid droops, two eye-blink measures, two electroencephalograph (EEG) measures, and a head-movement detector. New research builds on growing research in emotion detection using video.

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Some examples of technology use include driver safety and back-seat entertainment. Many accidents and deaths are caused by drivers who are drowsy. With face recognition and emotion detection, we envision that an automobile might be able to sense that the driver is not in a stable condition and could actuate remedial action. With face recognition and emotion detection, the automobile could recognize the back-seat passenger's emotion, then deliver media appropriate for that emotional state.

Detection of Human Comprehension, Emotion, Gesture and Touch

The objective of this research theme is basic understanding about sensing in human/computer interaction.

Examples of research areas include:

- automated- dialog systems;
- interactive social interfaces;
- machine and human learning;
- visual and auditory recognition;
- engineering and physical sciences related to environmentalsensing.

Examples of application areas include designs and technologies such as:

- an automated sales system (possibly a robot that could determine customer psychology, mood, product choices, information needs and communication style preferences) to guide a shopper through a sales process;
- an interactive publication (newspaper, textbook, or magazine) that seeks to determine reader interests and background knowledge, to present information in topic, level, and style appropriate for that reader;
- a system that captures, measures andrecords body movements and/ or touch sensations of an expert (operating a machine, sculpting clay, swinging a golf club) to reproduce the captured motion or feeling in another person, and indicates the gap between the expert and the learner.

Ambient Intelligent Environments

The vision of ambient-intelligence research is to understand how applications of technology can create enticing user experiences. This challenge is focused not only on understanding the requirements for creating compelling user experiences but also the factors that will enable new technologies for ambient-intelligent environments to enhance people's lives and society at large.

PARTICIPATION

Online Media Content

This research theme targets new insights in evaluating consumers as publishers and in establishing content ontologies. With the ongoing trends for online-content providers to let users tailor a content portal to meet their own preferences, studies are increasingly needed to explore:

- how users interact with content;
- the economics of information and how users perceive the value of the consumed content;
- how users tag and structure content (information personalization);
- how media providers tag and structure content;
- how media providers can tag and structure content to best facilitate easy mapping processes that linkprovider's categories to those defined by content users.

Research questions focus on the mechanisms that facilitate user customization and delivery by the provider of appropriate supplemental content such as targeted online advertising. Additionally, this theme seeks insights into technological, procedural and/or legal mechanisms that can facilitate consumer publication and use of material in online forums such as blogs or P2P networks, including issues of Internet law and personalization technologies. We seek knowledge that will inform mechanisms that allow for the creation, expression and use of content by consumers; they should also ensure appropriate protection for the rights of all relevant parties in their digital content.

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Learning and Training

The objective of this research theme is the integration of technology and an understanding of human psychology and social behavior, with the goal of creating innovations in learning and training for enhancing understanding and performance.

Examples of relevant research topics include, but are not limited to:
- socially engaging learning guides;
- immersive technology relevant to learning environments;
- training simulations;
- applying gaming technologies to learning and training;
- conversational interfaces related to learning environments.

Human/Machine Interfaces in Publish on Demand

The overall goal of this initiative is to improve accessibility and dissemination of scholarly works and other educational materials in academic institutionsaround the world. This research theme is aimed at solving current copyright-licensing inefficiencies with regard to educational and academic materials by understanding the software, hardware, service, legal, business and human issues that arise when artificial intelligence and data-ordering principles are applied to content-licensing transactions.

Digital Self Determination

This research theme is focused on identifying relevant questions to shape the next generation of digital services, systems and policy frameworks that can inform businesses and empower consumers to shape who we are, how we present ourselves in the digital world and how we interact with people around us - in a digital environment in which presence is technologically mediated and the designs of technologies can, to a large extent, inhibit or support our digital self-determination.

COLLABORATION

Advanced Human Communication Technologies

This research theme explores the fusion of virtual and physical worlds for advanced human communications.

It includes studies that:

- examine the interaction of objects in real space with information from the virtual world;
- define new requirements for design, prototyping and communication systems by using computer- and/or sensor-embedded objects and context-aware computing;
- focus on improved richness of detail, especially related to corporate communications, innovation and competitive resilience.

Interactive Technologies for Social Interaction and Collaboration

The aim of this research theme is greater understanding about interactive technology used for social interaction and collaboration in productivity contexts. Such technologies might include synchronous and asynchronous uses of text, graphics, voice and video, for example web and video conferencing, white-boarding, application sharing, email, IM, VOD, and speech recognition and synthesis.

We are interested in further understanding individual and organizational outcomes such as productivity, efficiency, quality, adaptiveness, comprehension, personalization, engagement, liking, demand creation, learning, credibility, trust and information integrity.

Example scenarios of technology application include:

- distance learning;
- multi-player games used in training;
- knowledge-worker collaboration;
- virtual facilitation, local versus distributed participation in meetings;
- indexing of expertise and information in a networked environment.

mediaX RESEARCH THEMES

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Use of Mobile Devices in Collaboration

This research theme seeks to deepen the understanding of mobile-device-centric interactive technology for multimedia used in collaboration by researching mobile-device-centric interactive technology used in collaboration in the context of multimedia.

Relevant technologies include synchronous and asynchronous, online and offline creation, editing, repurposing of text, pictures, audio,video and other forms of media. Connectivity methods include, but are not limited to, high-speed cellular, WiFi, Bluetooth and wireline.

Examples of research activities include:

- mobile applications for organizing and finding content (including, for example, pattern matching);
- multi-media editing and automatic multi-media annotation;
- non-textual searches of multi-media content;
- advanced mobile UIs for collaboration around multi media.

Example scenarios of technology use include:

- mobile-media blogging;
- multi-player games;
- knowledge-worker collaboration;
- collaborative applications for audiences at an event (sports, entertainment, etc.);
- use of mobile devices in education, learning, or coaching.

Possible constraints on the technological-solution space arise from the limitations of mobile devices, e.g. the need for low power consumption, available bandwidth and special needs for user interface.

Innovation Ecosystems

Through this research theme international, inter-disciplinary perspectives on novel data, tools and insights are devwelopedfor understanding how relationships and shared vision influence innovation.

Of particular interest are flows of information, talent and financial resources at the leadership level - through organizational and personal relationships.With data-driven analysis and information visualization, this research initiative aims to:

- identify success patterns among partners in academic initiatives, strategic public endeavors and private enterprises in creating sustainable business growth;
- describe the mix of local and global alliances that synergize regional business clusters;
- enhance sharing of insights among the diverse groups of people involved in technology-based business development for network orchestration and transformation;
- identify leaders, partners and potential collaborators for ecosystem development;
- facilitate value co-creation among networks/clusters/groups towards a shared vision for transformation.

Incremental and Transformational Improvement in Knowledge Worker Productivity

The objective of this research theme is to advance knowledge that will accelerate the development of tools, processes and metrics to enhance productivity for knowledge work and knowledge workers.

Projects might address questions such as:

- how an individual's knowledge-based contribution can become part of the organization's memory and how natural-language processing and semantic tools can improve this;
- how personalization, privacy, motivation and persuasion enable collaboration;
- how workers can be incentivized and rewarded for stepping outside the frame for which they were hired and in which they have excelled;
- what characterizes the highest productivity for individuals, teams, and organizations;

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- how can productivity metrics relevant for an individual be translated to metrics relevant to an organization;
- how work 'gamification' can lead to creativity, innovation and productivity;
- how on-the-job education can influence thinking, discovery, creativity, productivity;
- the most important elements for creating mutual understanding and making collaborative decisions in creative business meetings;
- which processes address 'roadblock' problems and which address 'generative' creativity;
- what balance of ambiguity and certainty is most effective for creativity.

Credit: Linda Cicero from Stanford News Service

SPECIAL THANKS

ADELAIDE DAWES

Addy Dawes is Program Manager at mediaX at Stanford University, and also supports the H-STAR Institute Directors. Dawes, originally from England, worked there with the Civil Service for 25 years. She came to California in 1999. With more than 13 years of experience at Stanford University, she supports the many events and needs of mediaX and the H-STAR Institute. She ensures that the work of the mediaX Program continues unhindered by administrative trivia, and that our company partners, researchers and faculty have all they need to build their ground-breaking research partnerships.

SUSANA MONTES

Susana Montes is Communications Manager at mediaX at Stanford University. She works on many fronts to engage the mediaX community with compelling media communications. Before coming to mediaX, Susana worked at Facebook, where she managed the API training program for the global sales organization, wrote for the Facebook Help Center and acted as an analyst on multiple projects for the Latin America team in the User Operations Department. Montes has experience in various capacities for media and technology organizations, including: *The Miami Herald*, The First Amendment Coalition, *People en Español* (Time Inc. in NY), *ABC News*, Spanish Broadcasting Systems (Mega TV in FL), *Canal 13* (Bogotá, Colombia). She has a B.A. in International Relations (with honors) and an M.A. in Media Studies/Journalism from Stanford University. Montes is interested in research and analysis of various topics including: social media, media trends, viral marketing campaigns, communication strategy, online media/video, online privacy and safety, and effective communication across cultures.

SPECIAL THANKS

Special thanks for Angela Gu, mediaX Intern, and John Joss for contributions in the preparation of this program, and to Michelle Christierson, for support in logistics for the mediaX 2013 Conference. And many thanks to our Conference volunteers!

mediaX has received many kudos on our website and videos. We celebrate the superb talent on which we rely.

Videography
MATTHEW RUTHERFORD & TEAM
RocNoir

Website and branding strategy
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NOTES

The future is right here.

media X

at Stanford University