mediaX Recap
2018/19

mediaX at Stanford University 2018/19 Recap

TABLE OF CONTENTS

AT A GLANCE

32 Members
3 Visiting Scholars and Researchers
5 Research Projects Funded
4 Day-long Multi-member Conferences
5 Member Workshops
10 Member Theme Days
5 Research Summary Reports
78 Research Briefs
58 Outreach Presentations / Visits
14 Awards

mediaX at Stanford University is the primary industry partnership program of the H-STAR Institute. It acts as a forum, an incubator of ideas, and a programmatic framework to support multi-disciplinary discovery relationships. mediaX initiatives explore how a better understanding of people can improve the design of technologies and services, particularly in education and learning, but also with relevance for wellness, entertainment and commerce.

mediaX programs explore issues at the intersection of human sciences and information technologies, issues in which media – broadly conceived – are key considerations. They connect faculty and graduate students in the Graduate School of Education, across Stanford University and in the mediaX member community – on issues, questions, methods and insights that include both people and IT.

mediaX is a self-funded program that seeds campus-wide research and coordinates industry interest and currently includes 32 industry members. The program supports and funds multidisciplinary research initiatives on societally-important domains involving people and information technologies. Since the program began in 2001, mediaX has received over 250 proposals, from faculty across all seven schools and provided more than $5.5M in support of Stanford research, allocated across over 115 Stanford faculty PIs and 140 graduate students and postdoctoral scholars.

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The Human Sciences and Technology Advanced Research Institute (H-STAR), is a Stanford interdisciplinary research institute in the Graduate School of Education. H-STAR programs focus on advancing the human sciences, often in the context of developing and applying research insights for the design and use of information technology. Research questions focus on reciprocal influences of people and information technologies. H-STAR programs conduct research at the intersection of human sciences and information technologies in the areas of learning, mobility, collaboration, entertainment, wellness, and commerce.

IMPACT

The key objective of mediaX programs is to build collaborations among researchers that will enable them to do something together than neither could do alone. mediaX programs provide opportunities for Stanford researchers to augment the impact of their research insights in the wider community. They also heighten the visibility of discovery opportunities with public organizations and the international business community.

Stanford researchers are well known for the significant impact of insights generated by their research. A fundamental pre-requisite for high impact findings is a worthy research question. Stanford researchers - new professors as well as Nobel Laureates - are continually searching for the next question that will inspire their investigations. Engineers and scientists in both established and emerging companies also continually search for insights that will inspire their strategic thinking, R&D and marketing. mediaX programs facilitate both types of discovery of these quests by convening thought-provoking dialogue and by activating concept-proving research initiatives at Stanford University. These take place in an open innovation context.

Research funding from mediaX for Stanford programs from mediaX has been in the form of seed grants to support early investigation of promising ideas that show likelihood of leading to larger projects. mediaX research funds are open to all researchers in the Stanford community, and preference is given to novel interdisciplinary and multidisciplinary collaborations. Many of these "seed" projects leverage large federal and foundation grants, bringing faculty and student research results to for societal impact through commercial diffusion. A significant number have led to new interdisciplinary proposals for federal and foundation grants that build on the mediaX seed projects. mediaX-funded research has generated insights that have inspired graduating students to establish several start-up companies. Others have stimulated ongoing collaborations with external organizations - to innovate, transfer know-how and inspire thought leadership.

In addition to the direct impact of mediaX funding and support for Stanford researchers, significant influence is created on and off campus in the dialogues orchestrated between researchers in the Stanford Graduate School of Education and researchers working on related topics in other schools/departments. Various mediaX events – theme days, conferences, and research themes – promote conversations, information sharing, learning and cross-pollination of ideas. They highlight research and contributions in settings and contexts inside the GSE and across Stanford University, including Humanities and Sciences, the College of Engineering, the Medical School, the Law School, and the Graduate School of Business. They also connect the GSE with innovative research from other universities and from industry, serving to foster a vibrant interdisciplinary community and network.

MEMBERSHIPS

mediaX is supported by its members. In 2018-2019, the program received over $1.6M from its member organizations.

mediaX members include multinational corporations, local companies, organizations that serve business clients (such as consortia, university executive programs, etc.), and selected startups with synergistic interests. 5 Affiliate, 20 Associate, 3 Institutional, and 4 Strategic Members comprise the external constituency and sponsorship of mediaX at Stanford University. *indicates new member*

Affiliate

AiTaiJi
IVOW
Monty Toole Family Foundation
Squirrel AI (Yixue)
THNK

Associate

Acario Innovation
AISIN AW
Catalia Health
Facebook
Fujitsu
Genentech
Futurewei
ITRI
JST
Konica Minolta, Laboratory, USA
Mohammed VI Polytechnic University
NASPERS
Nissan
Omron
QiTian
SESI/CNI
The Warehouse Group
Vobile
Wisdom Academy
Yindu Ogilvy

Institutional

Chinese University of Hong Kong
Hong Kong University of
Science & Technology
IBE/FGV

Strategic

QiTian Technology Co., Ltd.
SEST/SENAT of CNT
VBP Orange

THOUGHT LEADERS: STANFORD FACULTY, RESEARCHERS, AFFILIATES, VISITING SCHOLARS

mediaX is a virtual community. Scholars voluntarily affiliate with mediaX programs to interact with each other and with the mediaX membership community. A coveted prize in the academic community is the identification of a societally important research question that has the potential to generate new knowledge, often with commercial impact. mediaX programs during this period involved the following Stanford faculty members, affiliates and distinguished visitors – in idea exchanges seeking to identify the best research questions and share results of their research.

Stanford Faculty, Research Staff and Students:

- **Jeremy Bailenson**, Thomas More Storke Professor of Communication; Senior Fellow at the Woods Institute for the Environment and Professor, by courtesy, Graduate School of Education; Founder and Director, Virtual Human Interaction Lab, Stanford
- **Adam Banks**, Professor of Education, Graduate School of Education
- **Tina Hernandez Boussard**, Associate Professor (Research) of Medicine (Biomedical Informatics), Biomedical Data Science and of Surgery
- **William Paul Brown**, Adjunct Lecturer, Department of Surgery - Anatomy
- **Kim Bullock**, Clinical Professor, Department of Psychology
- **Robert Burgelman**, Edmund W. Littlefield Professor in the Graduate School of Business
- **Suzanne Burrows**, Executive Director, Center to Support Excellence in Teaching (CSET)
- **Bruce Cahan**, Lecturer, Department of Management Science and Engineering
- **Janet Carlson**, Associate Professor (Research) of Education, Graduate School of Education
- **Angélè Christin**, Assistant Professor of Communication and, by courtesy, of Sociology
- **Geoff Cohen**, James G. March Professor in Organizational Studies in Education, Graduate School of Education; Professor of Psychology; Professor, by courtesy, of Organizational Behavior at the Graduate School of Business
- **Geoffrey Cox**, Senior Associate Dean for Finance & Administration, Graduate School of Education
- **Martin Fischer**, Kumagai Professor in the School of Engineering; Senior Fellow at the Precourt Institute for Energy
- **Sean Follmer**, Assistant Professor of Mechanical Engineering, and by Courtesy, of Computer Science
- **Renate Fruchter**, Director, PBL Lab, Dept of Civil & Environmental Engineering
- **Antero Garcia**, Assistant Professor of Education, Graduate School of Education

Stanford Faculty, Research Staff and Students Cont…

- **Sharad Goel**, Assistant Professor of Management Science & Engineering, and, by courtesy, of Computer Science and of Law
- **Amir Goldberg**, Associate Professor of Organizational Behavior at the Graduate School of Business and, by courtesy, of Sociology
- **Shelley Goldman**, Associate Dean for Faculty Affairs, and for Student Affairs, and Professor (Teaching) of Education
- **Nick Haber**, Assistant Professor, Graduate School of Education
- **Jeff Hancock**, Harry and Norman Chandler Professor of Communication
- **Matt Hasel**, Technology Consultant, Dept of Surgery & Clinical Anatomy
- **Pamela Hinds**, Professor of Management Science and Engineering; Director of the Center on Work, Technology and Organization
- **Annabel Ho**, PhD Candidate, Dept of Communications, Stanford University (now graduated)
- **Daniel Ho**, William Benjamin Scott and Luna M. Scott Professor of Law; Professor of Political Science; Senior Fellow at the Stanford Institute for Economic Policy Research; Associate. Director of Development, Corporate & Foundation Relations, Stanford Law School
- **James Landay**, Anand Rajaraman and Venky Harinarayan Professor, Department of Computer Science
- **Hazel Markus**, Davis-Brack Professor in the Behavioral Sciences, Psychology Department
- **Arnold Milstein**, Professor of Medicine; Director of the Clinical Excellence Research Center
- **Juan Carlos Niebles Duque**, Senior Research Engineer, Department of Computer Science
- **Allison Okamura**, Professor, Mechanical Engineering and, by Courtesy, of Computer Science; Director of the CHARM (Collaborative Haptics and Robotics in Medicine) Lab
- **Pablo Paredes**, Instructor, Stanford Radiology/Precision Health and Integrated Diagnostics
- **Roy Pea**, David Jacks Professor of Education; Co-Founder and Faculty Director of the H-STAR Institute; Faculty Director of mediaX at Stanford University; Director of the PhD Program in Learning Sciences and Technology Design; Professor, by courtesy, of Computer Science
- **Balaji Prabhakar**, VMware Founders Professor, Professor of Electrical Engineering and, by courtesy, of Operations, Information and Technology at the Graduate School of Business
- **Chris Proctor**, PhD Candidate, Learning Sciences Technology & Design, Stanford Graduate School of Education

Stanford Faculty, Research Staff and Students Cont...

- **Ram Rajagopal**, Associate Professor of Civil and Environmental Engineering; Senior Fellow at the Precourt Institute for Energy; Professor, by courtesy, of Electrical Engineering
- **Byron Reeves**, Paul C. Edwards Professor, Communication; Senior Fellow at the Precourt Institute for Energy; Professor, by courtesy, of Graduate School of Education; Founder and Faculty Director Emeritus of mediaX at Stanford University
- **Martha Russell**, mediaX Executive Director; Senior Researcher, H-STAR Institute
- **Paul Saffo**, mediaX Distinguished Visiting Scholar; Adjunct Professor, Mechanical Engineering Dept
- **Kyoko Sato**, Associate Director, Science, Technology and Society Program; Director, STS Honors, Dept of Humanities and Sciences
- **Londa Schiebinger**, John L. Hinds Professor of the History of Science, Dept of History
- **Robert E. Siegel**, Lecturer, Stanford Graduate School of Business
- **David Sirkin**, Research Engineer; Executive Director, Interaction Design, Center for Design Research, Dept of Mechanical Engineering
- **Neeraj Sonalkar**, Lecturer and Design Performance Engineer; Executive Director, Human Innovation Design, Center for Design Research, Dept of Mechanical Engineering
- **Michael Steep**, Adjunct Professor at the Global Projects Center, Civil and Environmental Engineering Dept
- **Johan Ugander**, Assistant Professor of Management Science and Engineering
- **Melissa Valentine**, Assistant Professor of Management Science and Engineering
- **Anthony Wagner**, Lucie Stern Professor in the Social Sciences, Department of Psychology; Co-Director of the Stanford Center for Cognitive and Neurobiological Imaging; Director of the Stanford Memory Laboratory; Deputy Director of the Stanford Program in Neuroscience and Society (SPINS)
- **Greg Walton**, Associate Professor, Dept of Psychology
- **Brian Wandell**, Isaac and Madeline Stein Family Professor; Professor, by courtesy, of Electrical Engineering, Ophthalmology, and the Graduate School of Education
- **John Willinsky**, Khosla Family Professor of Education, Graduate School of Education
- **Sandra Winter**, Adjunct Lecturer and Research Associate, Stanford Prevention Research Center; Director, Well Living Laboratory, Dept of Medicine
- **James Zou**, Assistant Professor of Biomedical Data Science, and by courtesy, of Computer Science & Electrical Engineering

Stanford Affiliates:

- **Rama Akkiraju**, Director, Distinguished Engineer, Master Inventor, IBM Watson Division
- **Davar Ardalan**, Founder and Storyteller in Chief, IVOW
- **Dylan Arena**, Co-Founder, Chief Learning Scientist, KidAptive
- **Dan Bindman**, Chief Data Scientist, Yixue (Squirrel AI)
- **Tamara Carleton**, CEO & Founder, Innovation Leadership Board, LLC
- **Dave Cavander**, mediaX Distinguished Visiting Scholar; Former Principal Scientist at Adobe and Co-Founder of Marketshare Partners
- **Keith Coleman**, mediaX Distinguished Visiting Scholar; Chief Strategy Officer Emeritus at the Tesla Foundation
- **David Evans**, mediaX Distinguished Visiting Scholar; President, David A. Evans, LLC
- **Andrea Gagliano**, Data Scientist, Visual Intelligence, Getty Images
- **Walter Greenleaf**, mediaX Distinguished Visiting Scholar; Visiting Scholar at the Virtual Human Interaction Lab (VHIL); Director of Technology Strategy at the University of Colorado National Mental Health Innovation Center; Member of the Board of Directors for Brainstorm: The Stanford Laboratory for Brain Health Innovation and Entrepreneurship
- **Marsali Hancock**, mediaX Distinguished Visiting Scholar; CEO of EP3 Foundation; Commissioner for the Global Information Infrastructure Commission
- **Chuck House**, mediaX Distinguished Visiting Scholar; Former Executive Director of mediaX at Stanford University
- **Toomas Ilves**, Distinguished Visiting Fellow at Hoover Institution
- **Kimi Iwamura**, former mediaX Distinguished Visiting scholar; Founder, Valley Breeze Consulting
- **Neil Jacobstein**, mediaX Distinguished Visiting Scholar; Faculty and Chair of the Artificial Intelligence and Robotics Track at Singularity University
- **Cory Kidd**, Founder and CEO, Catalia Health
- **René Kizilcec**, Assistant Professor, Cornell Information Science; Director of the Future of Learning Lab
- **Aman Kumar**, mediaX Distinguished Visiting Scholar; Senior Product Marketing Manager, Facebook
- **Lara Lee**, Founder/CEO, Creative Renewal; Lara Lee Associates
- **Albert Boyang Li**, Senior Research Scientist, Baidu Research
- **Mariana Lin**, Consultant, Hanson Robotics
- **Ajay Madhok**, mediaX Distinguished Visiting Scholar; Founding Partner of Reboot Digital; Advisor to Playground Global
- **Mei Marker**, mediaX Distinguished Visiting Scholar
- **Peter Norvig**, mediaX Distinguished Visiting Scholar; VP of Research, Google
- **Toshiya Okamura**, CEO, Acario Innovation

Stanford Affiliates Cont…

- **John Ostrem**, Co-Founder and CEO, AvatarMind
- **Jordanne Paveo**, Production Manager, Flybits
- **Brian Pierce**, mediaX Distinguished Visiting Scholar; Former Director of DARPA Information Innovation Office
- **Elodie Mailliet Storm**, Senior Director, Strategic Development, Getty Images
- **Susan Stucky**, mediaX Distinguished Visiting Scholar
- **Hiroshi Tomita**, former mediaX Distinguished Visiting Scholar; National Institute of Informatics, Silicon Valley
- **Yangbin Wang**, Chairman and CEO, Vobile
- **Ethan Watters**, Author
- **Cathy Williams**, Co-Founder and Executive Director of youcubed.org
- **Esther Wojcicki**, mediaX Distinguished Visiting Scholar; Founder, Scholastic Journalism at Palo Alto High School; Vice-chair of Creative Commons Advisory Council; Founder, Moonshots in Education Movement

Visiting Scholars and Researchers:

- **Angela Liang**, Innovation Analyst, Acario Innovation – Defining useful applications of Artificial Intelligence for Energy
- **Elizabeth Arredondo**, Writer, Robotic Conversations, Catalia Health – Creating AI conversations
- **Karen Wang**, Co-Founder, Wisdom Academy – Innovative and cost-effective intervention to empower individuals through training of their minds

RESEARCH THEMES

mediaX Research Themes enable researchers from member companies to inspire research at Stanford University 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. Results of mediaX research projects are disseminated openly. In many cases, results validate a new question or method. They can also lead to significant research funding from public or private resources.

Research funds are awarded by mediaX as university research grants, following review by a faculty committee. They are intended as catalyst funds – to seed the trial of new collaborations, new questions and new methods.

Results of previous mediaX-funded projects have provided insights that informed continuing conversations between Stanford thought leaders and mediaX member delegates. Current mediaX research themes address the broad contexts of human sciences, information technologies and media in their most expansive contexts.

In 2018-2019 mediaX provided university research grants to Stanford faculty members through five research awards on the theme of "*Potential, Performance and Productivity*." These funds were used primarily to support graduate students.
https://mediax.stanford.edu/research/potential-performance-and-productivity

Harnessing the Psychological Power of Virtual Reality to Enhance Leadership in High Diversity Teams in STEM
PI: Geoffrey Cohen, Graduate School of Education, Psychology and Organizational Behavior
This project explored whether professional success in a virtual environment can have "spill over" effects in the real world and measured the duration and durability of these effects.

New Training Models for the Digital Workforce: The Case of Coding Bootcamps
PI: Melissa Valentine, Management Science and Engineering
This study examined the process and outcome of a bootcamp model of professional training.

Where are the Breakdowns? Surveying Successful and Failed Uses of Data Analytics Across the Organization
PI: Pamela Hinds, Management Science and Engineering
This field study employed qualitative research methods to illuminate the process and practices through which individuals from diverse professional backgrounds enact data analytics and provide essential insights into the conditions of successful and failed uses of data analytics for managerial decisions.

Research Themes Cont...

Vitae: Digital Hiring Halls for On Demand Workers
PI: Michael Bernstein, Computer Science
Co-I: Margaret Levi, Political Science
This project designed and evaluated a socio-technical system in which groups of workers could bind together into a community and trade on their collective reputation.

Coordinating Expert Flash Teams on the Biological Internet of Things
PI: Ingmar Riedel Kruse, Bioengineering
Co-PI: Michael Bernstein, Computer Science
This project investigated how a team of distributed scientists ("knowledge workers") working with distributed instruments ("Internet of Things") could be successfully coordinated and motivated to collaborate on complex and open-ended research projects.

EVENTS: CONFERENCES, WORKSHOPS, ROUNDTABLES, MEMBER THEME DAYS

mediaX events convene researchers from industry and academia for open exploration of critical issues. Topics are inspired by conversations with mediaX-affiliated laboratories at Stanford and mediaX member companies. Multidisciplinary perspectives offer new thinking models, innovative research methods and provocative insights. *See Appendix I for details*.

Conferences

Forum on AI for Culturally Relevant Interactions Conference
https://mediax.stanford.edu/event/ai-for-culturally-relevant-interactions/

Digital Communities and the Augmented Human Experience
https://mediax.stanford.edu/event/mediax2019-conference/

Disruptive Technology and Digital Cities Summit
https://mediax.stanford.edu/event/2019-disruptive-technology-digital-cities-summit/

Innovation Ecosystems for Future Communities
https://mediax.stanford.edu/event/innovation-ecosystems-for-future-communities/

Member Workshops

Enterprise Innovation
https://mediax.stanford.edu/event/enterprise-innovation-workshop/

Artificial Intelligence and Big Data for Education and Learning
https://mediax.stanford.edu/event/artificial-intelligence-and-big-data-for-education-and-learning-business/

Innovation Leadership in Highly Dynamic and Unpredictable Contexts
https://mediax.stanford.edu/event/innovation-leadership-in-highly-dynamic-and-unpredictable-contexts/

Measuring Impact That Matters
https://mediax.stanford.edu/event/measuring-impact-that-matters

Roundtable Discussions

Launching Alternative Realities and Understanding Implications – mediaX Roundtable
https://mediax.stanford.edu/event/launching-alternative-realities-and-understanding-implications-mediax-roundtable

Member Theme Days

mediaX Theme Days are in-depth brainstorming sessions with Stanford faculty and researchers from a member organization. Follow-up activities between industry affiliates and the faculty members who participate in these intimate, in-depth discussions about issues of mutual interest have led to faculty speaking engagements, hiring graduating students, expanded mediaX member relationships, and collaborative submission of proposals. During the 2018-2019 period, ten Theme Days were held for mediaX member organizations. Topics of these Theme Days reflect industry interests in results and insights from Stanford research.

Focusing on Sensing and Interaction

Research at the Intersection of Human Sciences and Information Technologies for an Aging Society

Roundtable on Trustworthy, Explainable and Ethical AI

Leading Artificial Intelligence for Sustainable Growth

Research Trends and Delighted Users

Fairness in AI

Technology Mediated Experiences for Consumer Interaction

Consumers, Decision, and the Future of Energy

Workflow Revolution and the AI Quantification of Worker Productivity

Workshop for Design Thinking Leaders

Research Exchange Meeting

OUTREACH

Corporate Presentations and Visits

mediaX gave presentations on innovations in human sciences and information technology, applied in education, commerce, wellness, and entertainment to more than 60 local, national and international organizations from industry, government and educational sectors. Some presentations were given at the home location of the organization. *See Appendix II for details.*

Media

Website
https://mediax.stanford.edu
mediaX re-launched its website in September 2018

Email Campaigns
20 email communications to members

Social Platforms
Facebook (3,300 in the community)
https://www.facebook.com/MediaXatStanford

Twitter (2,100 in the community)
https://twitter.com/mediaxstanford

Instagram (211 in the community)
https://www.instagram.com/mediaxstanford

YouTube (1,300 in the community)
https://www.youtube.com/user/mediaxstanford

AWARDS, SUMMARIES & REPORTS

Awards

- H-STAR and mediaX Faculty Director **Roy Pea** was awarded an Honorary Doctorate Degree from the Open University in the United Kingdom, for Contributions to Learning Sciences

- H-STAR and mediaX Faculty Director **Roy Pea** was elected to the American Academy of Arts & Sciences.

- mediaX Executive Director, **Martha Russell**, received the Distinguished Alumni Award from the University of Minnesota.

- •mediaX Membership Awards were given at the mediaX 2019 Conference. These awards recognized five or more years of 'Continued Support of Discovery Collaborations at mediaX

  THNK – School of Creative Leadership
  ITRI – Industrial Technology Research Institute
  Fujitsu Laboratories of America, Inc.

- The **Alexandra Jane Noble Awards**, provided through the Novim Group, were presented at the mediaX 2019 Conference. These awards honor efforts to communicate complex topics in innovative, engaging ways to stimulate higher awareness of scientific issues in the general populace. Janie Noble, a Stanford graduate and prolific writer, envisioned "epiphany" awards that served her vision of scientific contribution. See Appendix IV for details

Summaries and Reports

mediaX research grants provide modest funding for relatively short time frames. They serve as catalysts for novel research initiatives. In many cases, continued research by the project team is necessary to carry the research forward to an academically reportable conclusion. In order to provide mediaX members with a summary of progress on the research questions, mediaX works with the Stanford researchers to provide an interim summary of progress and findings for mediaX members.

UPDATES on mediaX projects for the Research Theme, "*Potential, Performance and Productivity*"

https://mediax.stanford.edu/research/potential-performance-and-productivity

Summaries and Reports Cont...

Research Briefs of mediaX-sponsored Research Projects Summaries are available for 78 of the mediaX-funded projects. *See Appendix III for details.*

APPENDIX I
EVENTS: CONFERENCES, WORKSHOPS, ROUNDTABLES, MEMBER THEME DAYS

Conferences

October 2018

AI for Culturally Relevant Interactions
https://mediax.stanford.edu/event/ai-for-culturally-relevant-interactions/

This mediaX Forum convened academia and industry thought leaders in the emerging arena of cultural and societal implcations of big data, machine learning and artificial intelligence. The conference goal was to move the human-AI relationship forward by bringing industry trailblazers together with Stanford cross-disciplinary thought leadership to examine and evolve concepts, technologies and practices used to integrate culture and identity with artificial intelligence and robots.

The practical and responsible limits of artificial intelligence are still in their early stages of development. A better understanding of the relationship between identity, culture and AI technologies can lead to dramatic improvements in how consumers, students and patients relate to information and to content, devices and services. A deeper understanding of cultural traditions, history, and relevance can have a broad and far-reaching impact on the interactive technologies of the future, particularly in conjunction with storytelling and narrative elements.

This forum included keynotes and panel presentations of horizon research, as well as the opportunity to explore challenges and opportunities through discussion between academic and industry artificial intelligence and machine learning experts, coupled with practitioners seeking new solutions for society today and in the future.

April 2019

Digital Communities and the Augmented Human Experience
https://mediax.stanford.edu/event/mediax2019-conference/

People are social by nature and they engage in many types of communal interests. No longer defined by locale or physical presence, many communities are now virtual. People interact in multiple communities, that are nested or inter-connected in complex ways. Online communities have become mainstream for business, professional education, information, interests, and pleasures.

Conferences Cont...

Whether physical or virtual, "community" implies both an individual perception and a collective sense of belonging, trust and mutual influence. This sense of a shared experience is fundamental to the human experience. People form and maintain communities to meet special needs, and communities have a significant personal impact on health and well-being play an increasingly important role in the everyday life and in the platform economy. They have become vital to education, learning and the cultivation of human resources that fuel and sustain innovation.

June 2019

Disruptive Technology and Digital Cities Summit
https://mediax.stanford.edu/event/2019-disruptive-technology-digital-cities-summit/

mediaX co-sponsored the Digital Cities Summit with the Global Projects Center. The 2-day summit brought together over 300 C-suite executives and 80 global technology experts to discuss how to transform disruptive technology into opportunities for growth.

The focus of this Conference was on "Crossing the Data Layer Through Mobility." Presentations examined how new advances in information technologies, artificial intelligence and other fields may impact people through the exchange of data in urban settings. The key goal was to learn from world experts how these innovations will affect industry and jobs and create growth.

Innovation Ecosystems for Future Communities
https://mediax.stanford.edu/event/innovation-ecosystems-for-future-communities/

This half day program filled a critical gap for innovation by focusing on relationship-based innovation networks to cross-fertilize ideas and concepts among innovation strategists and practitioners who understand the mutual dependency of people and information tech, especially in a city of the future.

Member Workshops

February 2019

Artificial Intelligence and Big Data for Education and Learning
https://mediax.stanford.edu/event/artificial-intelligence-and-big-data-for-education-and-learning-business/

The University of Helsinki, Stanford University, and Beijing Normal University have collaborated to change the global learning crisis into an opportunity to improve learning quality, both locally and globally.

Member Workshops Cont...

To emphasize the strategic importance of business input for this transformation, mediaX hosted a one-day international workshop bringing together business and academic thought leaders to identify business opportunities in the emerging agenda of research on artificial intelligence and big data for learning and education.

Discussions focused on generating questions and applying insights from researchers in the collaborating organizations in order to advance the equity and quality of learning, by developing AI tools and methods for learning and education through collaboration with industry, specifically:

- *Modeling learners' skills based on data mining and learning analytics for developing personal learning paths and adaptive learning systems.*
- *Creating intelligent tutoring and new evaluation methods for supporting learners and teachers in different learning contexts.*
- *Developing intelligent analytical methods for modeling complex and large-scale educational data storage for policy-makers and educational providers, ensuring high quality education for all.*

This Forum was made possible by mediaX members and special contributions from: Guangzhou Qitian Science and Technology Group, Business Finland Silicon Valley, and mediaX at Stanford University.

Innovation Leadership in Highly Dynamic and Unpredictable Contexts
https://mediax.stanford.edu/event/innovation-leadership-in-highly-dynamic-and-unpredictable-contexts/

The mediaX Global Innovation Leadership Program, facilitated by THNK – the School of Creative Leadership – was a 4-day immersive experience structured around a simulated situation that invited participants to zip through decades of energy transition in a few days. The program featured insights from Stanford's global thought leaders on human factors for energy change, in the context of dynamic and fast-paced experiential learning that put participants in a diverse set of roles.

This program deepened mindsets and competencies of leaders needing to innovate in fast-changing and fluid environments. Participants walked away with an enhanced understanding of the value of empathic exploration of complex situations; how to leverage personal purpose and lead from a vision; how to lead teams with a co-creative mindset; and how to design innovative business models and scaling approaches that help the organization pursue its strategy in contexts riddled with ambiguity.

Member Workshops Cont...

April 2019

Measuring Impact That Matters
https://mediax.stanford.edu/event/measuring-impact-that-matters/

Everything we do today makes a difference for the future we want to create. Current actions link to long term impacts, and long-term visions can be realized through conscientious attention to measurable outcomes and their ecosystemic relationships.

This workshop was conducted for leaders and influencers from mediaX member organizations. It explored how business goals can be linked to outcomes that yield BOTH productivity for the company and positive outcomes for humankind. It provided an opportunity for discussion and networking around models and tools for leveraging technology-based innovation to achieve positive outcomes for people.

July 2019

Strategic Leadership for Corporate Longevity in Dynamic Environments
A CEO Forum, held in Sao Paulo, Brazil, in collaboration with IBE/FGV
> **Robert Burgelman**, Edmund W. Littlefield Professor in the Graduate School of Business
> **Martha Russell**, Executive Director, mediaX at Stanford University
> **Jason Wilmot**, Director Communications and Events, mediaX at Stanford University

October 2019

Enterprise Innovation
https://mediax.stanford.edu/event/enterprise-innovation-workshop/

mediaX held a day-long workshop for mediaX members, on enterprise innovation. The workshop focused on strategies for enterprises to leverage foundational assets with startup energy and ingenuity.

The workshop was held at Playground Global, a startup incubator in Silicon Valley. **Ajay Madhok**, mediaX Distinguished Visiting Scholar, led the workshop, supported with startup analyses by **Neil Rubens** of SectorMap.net, former mediaX Visiting Scholar.

The workshop process was activated with two case studies that focused on interaction between the individual and the algorithm: one in the industry 4.0 context, one in the

Member Workshops Cont...

learning analytics context. The workshop process involved team-based activities: framing the question, identifying related startups (their competitive and collaborative potential), generating ideas, discovering opportunities, making ideas tangible, and re-imagining business. The hands-on workshop activities demonstrated process models for both identifying the product that future customers want and imagining how it can be delivered through a purpose-built startup backed by enterprise interests.

Through this experience, participants learned and experienced a mindset and took away a toolkit to explore new markets, create experiments, and convert ideas into products, and products into businesses.

Roundtables

February & June 2019

Launching Alternative Realities and Understanding Implications – mediaX Roundtables
https://mediax.stanford.edu/event/launching-alternative-realities-and-understanding-implications-mediax-roundtable/

The questions that are studied in the next 2 years will significantly impact new opportunities in content, usability, standards, and business models for virtual and augmented reality - across application areas in health, business, entertainment, and education. This roundtable offered a time-critical point for a multi-disciplinary, cross-industry exploration of the best questions for research – in companies and in Stanford labs.

Roundtable Attendees:

Jeremy Bailenson, Thomas More Storke Professor of Communication; Senior Fellow at the Woods Institute for the Environment and Professor, by courtesy, Graduate School of Education; Founder and Director, Virtual Human Interaction Lab
Roy Pea, David Jacks Professor of Education, Graduate School of Education; Co-Founder and Faculty Director of the H-STAR Institute and mediaX at Stanford University; Director of the PhD Program in Learning Sciences and Technology Design; Professor, by courtesy, of Computer Science
Joyce Farrell, Senior Research Engineer, Electrical Engineering
Renate Fruchter, Director, PBL Lab, Dept of Civil & Environmental Engineering
Walter Greenleaf, Distinguished Visiting Scholar, mediaX at Stanford University
David Sirkin, Research Engineer, Executive Director, Interaction Design, Center for Design Research, Dept of Mechanical Engineering
Kim Bullock, Clinical Professor, Psychiatry and Psychology
Elizabeth Wilsey, Director of Community Relations, mediaX at Stanford University

Roundtables Cont...

Martha Russell, Executive Director, mediaX at Stanford University

Also, Researchers from:
Google, Hi-Fidelity, HP, HTC, Intel, Magic Leap, Samsung, Tripp, Acario Innovation, AISIN AW, Cognotion, Konica Minolta, Mindmaze, Oculus, Facebook and Vobile

March 2019

Visit and Workshop with President Carlos Alvarado of Costa Rica, and delegation

President Carlos Alvarado of Costa Rica and his trade delegation were welcomed to the Stanford Campus by the Dean of the Graduate School of Education, **Daniel Schwartz**. The purpose of visit was to explore uses, benefits and potential of virtual reality technologies and visit the VHIL Lab, founded and directed by Professor Jeremy Bailenson. The Lab visit was followed by a Roundtable Discussion including researchers from Stanford and companies with interests in the VR field.

Jeremy Bailenson, Thomas More Storke Professor of Communication; Senior Fellow at the Woods Institute for the Environment and Professor, by courtesy, Graduate School of Education; Founder and Director, Virtual Human Interaction Lab
Talia Weiss, Lab Manager VHIL
Roy Pea, David Jacks Professor of Education, Graduate School of Education; Co-Founder and Faculty Director of the H-STAR Institute and mediaX at Stanford University; Director of the PhD Program in Learning Sciences and Technology Design; Professor, by courtesy, of Computer Science
Walter Greenleaf, Distinguished Visiting Scholar, mediaX at Stanford University
Elizabeth Wilsey, Director of Community Relations, mediaX at Stanford University
Martha Russell, Executive Director, mediaX at Stanford University

Also, Researchers from:
Google, Samsung, Oculus, Facebook and HTC Vive

APPENDIX II
OUTREACH: CORPORATE PRESENTATIONS & VISITS

During the period September 2018 to August 2019, 58 outreach presentations/visits were held. *indicates visit to corporate location*

September 2018

ITRI, Taiwan
Peking University Post EMBA Program, China
Baidu, China
Business Finland, Finland
IPal, USA
Steelcase, USA
Digital Promise, USA
Flybits
Mohammed VI Polytechnic University, Morocco

October 2018

Tesla Foundation, USA
IBM, USA
Naspers, The Netherlands
Yixue, China
Osaka University, Japan
Getty Images, USA

November 2018

Wallpaper, China
SESI-SC, Brazil
Business Reactor, USA
Duke Energy, USA
Wisdom Academy, China
Genentech, USA
Steelcase, USA
Sapiens Science Park, Brazil
Spotify, USA
Nytro Marketing, Mexico
Daydream/Google, USA
Fujitsu, Japan
Omron, Japan
Konica Minolta, Japan

Outreach: Corporate Presentations & Visits Cont...

Agora JST, Japan
Asahi Shinbum, Japan
Softbank Robotics, Japan

December 2018

Adobe, USA
Business Reactor, USA
Dot Children Focus, China
AP News, USA
Hearst TV, USA
Millennium Project, USA
Hospital Oswaldo Alamao Cruz, Brazil
Oculus/Facebook, USA
Magic Leap, USA
Baidu, China
Samsung, South Korea
Softbank Robotics, Japan
HTC, USA

January 2019

MAD, USA
Peking University – Post EMBA, China
Nissan, Japan
Playground Global, USA

February 2019

SESI-SEUM, Brazil
Yintai, China
Embraer, Brazil
Simon Fraser University/Digital Health, Canada

March 2019

Boeing, USA
AP News, USA

Outreach: Corporate Presentations & Visits Cont...

April 2019

Nytro, Mexico
Tsumori Japanese Press, Japan

June 2019

Oulu University, Finland
Mohammed VI Polytechnic University

July 2019

Big Bonsai, Brazil
Oespidale, Brazil
SESI-SENAI-SEUM, Brazil
FIESC, Brazil
SESI-SC, Brazil
SENAT, Brazil

APPENDIX III
RESEARCH BRIEFS

Research Briefs of mediaX-sponsored Research Projects

Summaries for 78 mediaX funded projects are available on the mediaX website, on the Research Theme pages.

Smart Office Workflows

Michael Bernstein: *Dream Team: Computational Techniques for Adaptive Teams*

Larry Leifer: *Real Time Knowledge Capture and Feedback in Design Workspaces*

Larry Leifer: *Making Noise Intentional: Capturing and Designing Robotic Sonic Expression*

Allison Okamura: *Haptic Tether for Human Robot Communication*

Potential, Performance and Productivity

Michael Bernstein & Margaret Levi: *Vitae: Digital Hiring Halls for On Demand Workers*

Geoffrey Cohen: *Harnessing the Psychological Power of Virtual Reality to Enhance Leadership in High Diversity Teams in STEM*

Pamela Hinds: *Where are the Breakdowns? Surveying Unsuccessful and Failed Uses of Data*

Ingmar Riedel-Kruse & Michael Bernstein: *Coordinating Expert Flash Teams on the Biological Internet of Things*

Melissa Valentine & Stephen Barley: *New Training Models for the Digital Workforce: The Case of Coding Bootcamps*

Contextual Futures for Smart Personal Devices

Paulo Blikstein: *The Contextual Future of Situated Schools*

Kincho Law: *The Interaction Archetypes in Global Teamwork*

Larry Leifer: The Enabling Impromptu Interaction Through a Robotic Water Cooler

Research Briefs of mediaX-sponsored Research Projects Cont...

Human Machine Interaction and Sensing
Jeremy Bailenson: *Detection of Comprehension and Emotion from Real-time Video Capture of Facial Expressions During Learning*

Andrea Goldsmith: *Smart Home Care Network Using Distributed Vision-Based Reasoning*

Scott Klemmer: *Designing Sensor Based Interactions by Example*

Amy Ladd & Jessica Rose: *Human Machine Interaction and Sensing of the Golf Swing*

The Late Cliff Nass: *Revealing and Using Emotion Detection*

Andrew Ng: *Gestures, Speech and Vision–Towards a Multi-Modal Augmented Reality Human-Robot Interface*

Memory, Estates & Legacies in the Digital Age
Maneesh Agrawala: *Designing an Interactive, Browsable Archive of Video-based Digital Estates*

Nicholas Jenkins: Kindred Britain 2.0 – Can We Walk the Past's Streets

Wendy Ju: *Voyage of Discovery: Capturing and Considering Multimedia Journey Narratives*

Byron Reeves: *Digital Estate and Identity in the New Landscape of Work*

Digital Learning
Paulo Blikstein: *Real-Time Social Communications Environments for Online Class Engagement and Peer to Peer Learning*

Jo Boaler & Keith Devlin: Developing Written and Game-based Assessment Tools to Measure the Effectiveness of Math Video Games

Bryan Brown: *Language, Race & Cognition Using Digital Text*

Thomas Dee: *The Labor Market Effects of Digital Learning: Evidence from a Field Experiment*

Carol Dweck: *Developing a Diagnostic of Mindset Promoting Practices*

Research Briefs of mediaX-sponsored Research Projects Cont...

Amir Eschel & Candace Thille: *Lacuna Stories*

Roy Pea, Fiorenza Micheli & Jeremy Bailenson: *Assessing Learning in a Virtual Reality Field Trip*

Publish on Demand

Jeffrey Heer: *Transparent Social Footprints*

Ramesh Johari: *Content on the GO; the Economics of the Market for Mobile Apps*

Scott Klemmer: *TweakCorps: Retargeting Existing Webpages for Diverse Devices and Users*

Robert Laughlin: *Decision Products and Their Long Term Integrity*

John Willinsky: *Smarter Scholarly Texts*

Sam Wineburg: *Recasting the Textbook*

Knowledge Worker Productivity

Jeremy Bailenson: *Detecting States of Mind Through Non-verbal Behavior Using the Microsoft Kinect*

Rhiju Das: *EteRNA: Accelerating Knowledge Creation for RNA Bioengineering through Internet-Scale Gaming*

Carol Dweck: *Supporting Self Regulation for Online Course Students*

Martin Fischer: *Leveraging Team Information Interactions to Reveal Project Workflows*

Pamela Hinds: *Creativity and Culture: Understanding Team Creativity and What Fosters It*

Kincho Law: *A Journey from Islands of Knowledge to Mutual Understanding in Global Business Meetings*

Larry Leifer: *Interaction Using Situated Spatial Gestures*

The Late Clifford Nass: *Designing Technologies that Mediate Human Social Interaction: Strategies for Effective Cooperation and Collaboration*

Research Briefs of mediaX-sponsored Research Projects Cont...

Roy Pea: *The Utility of Calming Technologies in Integrative Productivity*

Allan Reiss: *Finding Behavioral and Neural Signatures for Collective Creativity in Groups*

Future of Content

Brigid Barron: *Contests as a Catalyst for Content Creation: Contrasting Cases to Advance Theory and Practice*

Paulo Blikstein: *A New Generation of Hybrid Tangible Interfaces for Learning*

The Late Cliff Nass: *Physical Media as Active Social Learning Agents*

Sakti Srivastava: *The Stanford Clinical Anatomy (SCAnS) Library*

Advanced Human Communication Technologies

Jeremy Bailenson: *Real Time Tracking, Detecting and Correcting of Motion*

Diane Bailey: *Exploring the Virtual in the Physical and the Physical in the Virtual*

Pat Hanrahan: *Virtual Sensor Networks*

Kincho Law: *ShowMeTellMe: Multimodal Learning Experience Mediated by the Future Interactive Paper TextBook*

Lawrence Lessig: *Virtual Jurisdictions*

Jeffrey T. Schnapp: *SPEEDLimits*

John Perry: *Pragmatics of Computer Assisted Communication and Communication about Virtual Worlds*

Byron Reeves & Anthony Wagner: *Learning in the Digital World: The Impact of Social Belief on the Neurophysiology of Memory*

Social and Computing Sciences

Johan van Benthem: *Communication, Computers and Cognition*

Abby King & B.J. Fogg: *Persuasion through Mobile Devices and Operant Conditioning via Interactive Technology*

Research Briefs of mediaX-sponsored Research Projects Cont...

Christopher Manning: *Rich and Dynamic Treebank for Head-driven Phrase Structure Grammar (HPSG)*

Dan Schwartz: *The Willful Pupil Project*

Barbara Tversky: *Spacial Meaning Constraints in Visual Language Reading*

Sensing and Computing

Larry Leifer: *Blind Navigator*

Larry Leifer and Mark Bolas: *Force Input Device for Graphical Environment Tweaking*

Marc Levoy: *High Speed 3D Shape Digitization Using Projected Light Patterns*

Roy Pea: *Marking SENS: Science Education Networks for Sensors*

Brian Wandell: *High Dynamic Range Image Capture and Display*

Mobile & Alternative Form Factor Devices

Ramesh Johari: *Harnessing Positive Externalities in Network Services*

Terry Winograd: *Eye Tracking as an Augmented Input*

Online Media Content

Ashish Goel: *Trust, Reputation, and Anonymity in Peer to Peer Publishing and Content*

The Late Cliff Nass: *Interacting with Integrated Information*

Roy Pea: *DIVER ROMP*

Margaret Jane Radin: *Law, Science and Technology Proposal*

Terry Winograd: *Online Media Bookmark Manager*

Research Briefs of mediaX-sponsored Research Projects Cont...

Learning and Training
Chris Chafe: *What's the Delay? Audio Latency and Its Effect on Networked Musical Performance*

BJ Fogg: *Persuasive Narratives Delivered via Mobile Devices: Investigating How Computer Supported Stories Can Change People*

Daniel Schwartz: *A Teachable Agent for Strategy Learning in Management Training*

Thomas Wasow: *Learning English via Robust Conversation*

APPENDIX IV
AWARDS

The Alexandra Jane Noble Awards, provided through the Novim Group and overseen by **Chuck House**, mediaX Distinguished Visiting Scholar, honor efforts to communicate complex topics in innovative, engaging ways to stimulate higher awareness of scientific issues in the general populace. Janie Noble, a Stanford graduate and prolific writer, envisioned "epiphany" awards that served her vision of scientific contribution, "conveying the excitement and thrill of science to lay audiences, especially youngsters, and particularly young women". In 2019 the Awards were given in four categories, with two winners in each, plus a Lifetime Achievement Award.

•**Science Awareness**:
Film - Photographer James Balog and Director Matthew Testa for their film "The Human Element" which explored wildfires, hurricanes, sea level rise, a struggling coal mining community and our changing air supply. The documentary film highlights Americans who are on the frontlines of climate change.

Book - Author Marcia Bartusiak for her book "Dispatches from Planet 3". Marcia has authored seven award-winning books covering the fields of astronomy and physics in a career spanning four decades.

•**Science Courage**:
For Publishing Credibility - Sara Miller McCune, Publishing Founder and Executive Chair of SAGE Publishing (accompanied by President & CEO Blaise Simqu and Senior VP of Global Journals Bob Howard). SAGE Publishing has more than 1000 scholarly journals and is committed to the highest standards of quality review, taking swift and comprehensive action to improve the research process. The company's culture was set in place by Ms McCune, who is a Stanford University graduate.

For Television Coverage - Ayah Bdeir, CEO of littleBits, for the televised piece "Speaking Out – An Insider's Look at Why Women End Up on the Cutting Room Floor", the story of how Bdeir's company was pushed aside in favor of a male spokesperson, despite the promise that the segment was about her company and their work in getting girls into STEM.

•**Science Inspiration**:
Organization - Science Translator's Showcase, accepted by Brie Lindsey, Senior Program Associate, California Council of Science and Technology (CCST). The Science Translator's Showcase was initiated as a California-wide competition by CCST in February 2018. The Showcase brings a handful of students and early-career scientists to the Capitol each year to discuss their research in a

conversational setting with legislators, agency leaders and their staff. There have been three Showcases to date, with 39 students from California's public and private research Universities.

Historical Preservation - James Pelkey, for "Computers and Communications: 1968-1988 Pioneers". The basis for the collection is 88 oral interviews across 31 pioneering networking companies and organizations. During the formative years of the Internet the work of the historian conflated with that of the businessman and venture capitalist, inspiring a new genre fo historical research and perspective.

•Science and Society:
Film - Richard Sergay of Rebel Media who produced and directed the film "Citizenship in a Networked Age", seeking answers to questions such as 'How will Artificial Intelligence influence our decision-making landscape?' The film is part of the University of Oxford's human flourishing project, and tackles topics like Russian hacking in the 2016 election and features interviews with internet pioneer Dr Vint Cerf, Director of Faith Outreach for President Obama Michael Wear, and President and CEO of the Center for Democracy and Technology Nuala O'Connor. Richard Sergay is a JS Knight Fellow at Stanford University.

Documentary Sponsorship - Sharon Anderson Morris, CEO of FiReFilms. SNS FiReFilms is a membership-based organization supporting scientifically based documentaries to educate, inspire, and transform humanity, from conception through distribution. Anderson Morris' passion is to use her global connections in technology to benefit humanity and our world.

•The Alexandra Jane Noble Prize
Lifetime Achievement Award – John and Tashia Morgridge, who established the Wisconsin Technology Initiative in December 2010 to help make 21st century instructional technology more accessible to forward-thinking school districts, amongst a lifetime of outstanding initiatives and achievements. John Morgridge currently teaches management at Stanford University's Graduate School of Business and serves on its Advisory Council and is on the Board of Stanford Hospitals and Clinics.