A YEAR OF IMPACT.

2018 IN REVIEW

MIT INITIATIVE ON THE DIGITAL ECONOMY
In 2018, we expanded our global reach and collaborated with visionaries who are making a mark on the digital age—and the future.

In 2019, we will redouble our efforts to examine and solve the opportunities and challenges posed by the digital economy.

MAKING GLOBAL IMPACT

News headlines from 2018 were rife with warnings of AI and platform disruption. The mounting challenges of globalization, false news, and the future of work dominated the narrative.

The MIT Initiative on the Digital Economy (IDE) expanded its work exploring the tremors that digital technologies have sent throughout the global economy and society with its hallmark determination and focus.

Our research helped guide leading businesses and policy makers, and our Inclusive Innovation Challenge (IIC) accelerated and promoted the future of work entrepreneurial ecosystem across the globe.

THE IDE EXPLORES HOW PEOPLE AND BUSINESSES WORK, INTERACT, AND PROSPER IN THE DIGITAL AGE.
NOTEWORTHY IN 2018

At home or abroad, the IDE collaborates with experts in many disciplines to examine the complexities of the digital economy and provide insights and strategies based on data.

GLOBAL EVENTS MAKE AN IMPACT
The IDE convenes academic and industry-focused events that bring together the brightest minds and thought leaders from across disciplines and sectors to exchange ideas and learn. In 2018, more than 2,000 thought leaders and industry experts from around the world gathered to tackle the most pressing challenges of the digital era, including AI and the future of work, and digital platform disruption. We increased the number of events, hosting gatherings not only at MIT, but on five continents. page 10

PRESS & MEDIA
The IDE again experienced a significant increase in press coverage, which expanded our global reach and deepened public understanding of our mission and vision. We reached stakeholders and external audiences through more channels than ever before, and optimized our social media presence.

THE IIC EXPANDS ITS GLOBAL REACH
We expanded our flagship initiative, the MIT Inclusive Innovation Challenge, with events in five global regions, culminating with the award of $1 million at the Global Grand Prize Gala at MIT in November. page 8

ON THE RISE: SUPPORT FOR THE IDE
We continued to build and expand relationships with new and existing Corporate Members. Our members played prominent roles at our events as speakers and as vocal participants. We welcomed Corporate Member Deutsche Bank as our newest Founding Member, and our Corporate Membership program grew significantly.

GROUNDBREAKING RESEARCH
This year, our team of world-class researchers and visiting scientists conducted more than 35 cutting-edge research projects in collaboration with stakeholders, business, government, and other institutions. page 6

LEARNING IN ACTION
The IDE managed another successful year of the Analytics Lab (A-Lab), a project-based course focused on big data and modern analytics applied to real world problems using data provided by our stakeholders. In addition, IDE content was featured in several MIT Sloan Executive Education courses, from IoT to Platforms. page 13
In 2018, the IDE initiated, continued, or completed 35 research projects. Here’s a look at five from the past year.

The Truth About False News
Sinan Aral
Deb Roy
Soroush Vosoughi

What Can Machines Learn and What Does It Mean for Occupations and the Economy?
Erik Brynjolfsson
Daniel Rock
Tom Mitchell

Concern about automation’s impact on employment is growing. Rapid advances in machine learning (ML), many based on deep neural networks, are poised to generate significant economic value and transform numerous occupations and industries. Our research suggests that ML technologies will indeed grow more pervasive, but not uniformly. What we define as the “suitability for machine learning” (SML) of work tasks varies greatly. The team used data from the Bureau of Labor Statistics to understand the kind of tasks that typically make up a job and provided insight into the risk of automation of some 1900 different professions. Our 23-question SML rubric can be used in the redefinition of a job or an occupation. The results indicate that debates about the effects of artificial intelligence (AI) on work should shift from the common focus on full automation of many jobs and pervasive occupational replacement, toward the redesign of jobs and reengineering of business processes.

The Potential of Cryptocurrencies
Alexander Lipton
Alex “Sandy” Pentland

The researchers contributed to a cover article for Scientific American on “The Future of Money.” Their article, “Breaking the Bank,” discussed how new financial networks could stop the concentration of wealth and increase participation in the economy—only if used with care. A key finding was that new technologies, such as digital currencies, are making it possible to simulate every trade and transaction. People could exchange directly with one another instead of relying on banks. Additionally, the potential for sweeping change is real, but there are many uncertainties. The changes could just as easily lead to extreme levels of centralized control.

Our research suggests that ML technologies will indeed grow more pervasive, but not uniformly.

The Spread of Falsehood has Implications for our Democracies, our Economies, our Businesses, and even our National Security. Professor Sinan Aral of the MIT IDE revealed the truth about false news based on the largest-ever longitudinal study of the spread of false news online, published in Science on March 8, 2018. The research, conducted with Soroush Vosoughi and Deb Roy of the MIT Media Lab, studied “The Spread of True and False News Online.” It investigated the differential diffusion of all the verified, true and false news stories distributed on Twitter from 2006 to 2017. The data comprise approximately 126,000 stories tweeted by about 3 million people over 4.5 million times. Until this study, few large-scale empirical investigations of the diffusion of false news or its social origins had existed. The findings overturn conventional wisdom about how misinformation spreads, what causes it to spread so fast, and who or what is spreading it. The research was named the second most mentioned scholarly article of 2018 by the Altmetric Top 100.

Numerous studies examine the relationship between human workers and machines; we narrow the scope and look at a specific slice of the pie. Our research documents empirically that aging leads to greater industrial automation, and in particular, to more intensive use and development of robots. Using U.S. data, we document that robots substitute mostly for middle-aged workers—those between the ages of 36 and 55. We then show that demographic change—an increasing ratio of older to middle-aged workers—is associated with greater adoption of robots and other automation technologies. The data provide evidence of more rapid technological automation in countries undergoing greater demographic change. The model further predicts that the induced adoption of automation technology should be more pronounced in industries that rely on middle-aged workers and those that present greater opportunities for automation. Our model also implies that productivity will increase and labor share will decline in industries that are most amenable to automation. The research can help guide and explain workforce trends as more automation technologies are adopted.

Technology is moving toward “Zero UI,” the ultimate, invisible user interface that allows technology to collect data and anticipate needs without direct requests or user activity. We focus on the circumstances—why and how—these technology-mediated experiences lead to better behaviors. The goal of the study is better understanding of the factors that affect customer adoption and abdication of control to benevolent technology. To this end, this first study examines what combination of active and passive interface makes customers more (or less) comfortable with technology-mediated management. We have designed a field experiment that tests the impact of passive versus active technology, and how best to present information to users.

VIEW MORE RESEARCH PROJECTS AT IDE.MIT.EDU

MIT IDE's Sinan Aral at the IDE Annual Conference. His research on false news with co-authors Roy and Vosoughi was named the second most mentioned scholarly article of 2018 by the Altmetric Top 100.
ACCELERATING THE FUTURE OF WORK AROUND THE WORLD

The MIT Inclusive Innovation Challenge (IIC) is the flagship initiative of the IDE. Since its inception in 2015, the IIC has strengthened the outlook for the Future of Work around the world.

Each spring, the IDE opens our proprietary application and judging platform to entrepreneurs across the globe, seeking the most innovative future of work solutions operating in each region. We convene thousands of innovation ecosystem leaders at regional events and award $1.6 million in prizes yearly to Inclusive Innovators—entrepreneurs who are using technology to generate economic opportunity and shared prosperity—the grand challenge of the digital era.

A Global Tournament

In 2018, the IIC expanded to a global tournament model, working with collaborators in five regions—North America, Latin America, Europe, Africa, and Asia—to identify 60 Regional Finalists. Twenty Regional Winners proceeded to MIT in November where we awarded $1 million to four Global Grand Prize Winners.

The IIC Winners are exemplary Inclusive Innovators, representing organizations from every corner of the globe that are harnessing technology to create increased work opportunities and more widely shared prosperity for people at the bottom and middle of the economic pyramid.

Whether they are providing easier access to financial loans, offering coding classes or college-entry support, or skilling and matching workers to new work opportunities created in the Second Machine Age, the winning global entrepreneurs earned their awards by using technology to engage thousands more people in the digital economy.

“The grand challenge of our era is to use digital technologies to create not only prosperity, but shared prosperity. We created the MIT Inclusive Innovation Challenge to reward and promote the many amazing people and organizations that are working to accomplish this mission.”

ERIK BRYNJOLFSSON
Director, MIT Initiative on the Digital Economy

$3.5M AWARDED
100 WINNERS
100+ OUTREACH PARTNERS
3,000+ REGISTERED ORGANIZATIONS
500+ JUDGES
100+ NATIONS REPRESENTED
4,000+ EVENT ATTENDEES

INCOME GROWTH + JOB CREATION
TECHNOLOGY ACCESS
SKILLS DEVELOPMENT + OPPORTUNITY MATCHING
FINANCIAL INCLUSION

2018 MIT INCLUSIVE INNOVATION CHALLENGE WINNERS

GRAND PRIZE WINNER

Wefarm AFRICA

Wefarm is a free, peer-to-peer knowledge sharing network for the world's 500 million small-scale farmers who have no access to the internet. To date, 1.2 million farmers have registered on Wefarm, and have exchanged more than 190 million SMS messages.

WINNERS

Agri Latin America
Plastics for Change Asia
AnnieCannons North America

GRAND PRIZE WINNER

Solar Freeze Africa

Nearly 45% of farm-grown food in developing countries spoils due to lack of cold storage. Solar Freeze is a portable, off-grid toolkit for localized food production containing a complete ecosystem of smart farm technologies to enhance agricultural productivity.

WINNERS

Level Latin America
SOLshare Asia
Apps Without Code North America
BLITAB Europe

GRAND PRIZE WINNER

CareAcademy North America

CareAcademy provides online education to caregivers, teaching them how to provide excellent care for older adults and people with disabilities. Caregivers can better serve their clients while advancing their careers and improving their own quality of life.

WINNERS

Mentor Microbit Europe
Lynx Africa
Mentor Asia
Suma Latin America

GRAND PRIZE WINNER

ftcash Asia

ftcash is a fast-growing fintech venture empowering Indian small-businesses and micro-merchants through loans and digital payments. ftcash also provides loans to underserved small merchants based on the analysis of their creditworthiness using its proprietary algorithms.

WINNERS

Fig Tech North America
Wala Africa
Trezeo Europe
RedeDots Latin America

APPLICATION FOR THE 2019 IIC CHALLENGE + VIEW PAST IIC WINNERS AT MITINCLUSIVEINNOVATION.COM

GLOBAL REGIONAL APPLICATIONS OPEN MARCH 2019
Game-Changing Events Across the Globe

Students, executives, policymakers, and entrepreneurs hacked, learned, and challenged one another throughout the year and around the world.

Hacking Our Digital Future
January-February 2018
Cambridge, MA

In this four-week long "hackathon" during MIT’s Independent Activities Period, we invited members of the MIT community to develop scenarios in an exploration of the unforeseen consequences of major technology-driven transformations in the digital age.

April 27, 2018
New York, NY

Leaders from industry, academia, and public policy joined us in New York City to discuss, debate and envision the future of capital markets, digital assets and the disruption of jobs, industries, and business models.

MIT Sloan CIO Symposium
May 23, 2018
Cambridge, MA

Hundreds of thought leaders and practitioners gathered to provide insight into the most critical issues and opportunities around the digitization of business.

IDE Annual Conference
May 24, 2018
Cambridge, MA

The IDE Annual Conference is a unique opportunity for our stakeholders to hear our latest research results, discuss areas of focus going forward, and engage in dialogue with our researchers and each other. Our annual "drink from the firehose" event, offered brief, TED-style presentations of our current research projects.

Conference on Digital Experimentation (CODE)
October 26-27, 2018
Cambridge, MA

This two-day Conference on Digital Experimentation (CODE) brought together leading researchers conducting and analyzing large-scale, randomized experiments in digitally mediated social and economic environments. Organized by the IDE’s Sinan Aral, Erik Brynjolfsson, Alex "Sandy" Pentland, and Dean Eckles, MIT Sloan Assistant Professor, the event attracted more than 200 attendees from several scientific disciplines— including economics, computer science, and sociology—to gain better insights into human behavior. CODE hosted over 60 presentations, including a Fireside Panel on algorithms, transparency, and accountability.

MIT IIC Regional Celebrations
August - September 2018
This year, the MIT IIC hosted celebrations in five geographical regions, awarding prizes, celebrating inclusive innovations, and accelerating the global future of the work ecosystem. The events were held in São Paulo, Brazil; Bangkok, Thailand; Nairobi, Kenya; Darmstadt, Germany; and Detroit, Michigan.

MIT IIC Global Grand Prize Gala
November 8, 2018
Cambridge, MA

At this invitation-only capstone event, we celebrated the 2018 IIC Regional Winners — organizations from around the world that are accelerating economic inclusion and shared prosperity in the digital age — and awarded a total of $1 million to four Global Grand Prize Winners. The Gala, attended by regional prize winners, government officials, and IDE leaders from academia and business, brought together thought leaders from academia and business, economists, leaders from academia and business, and entrepreneurs to explore the economics of major technology-driven transformations in the digital age.

EU Platform Economy Conference
November 20-21
Berlin, Germany

It was an honor for the MIT IDE to support two-day event focused on the platform economy in Europe. IDE Director Erik Brynjolfsson delivered the keynote address, and IDE Digital Fellow Geoffrey Parker moderated a panel discussion.

IDE Seminar Series
March – May 2018
September – December 2018
Cambridge, MA

Our informal seminars include provocative ideas and early results from current research projects and. Speakers included:

- Glen Weyl, Microsoft Research, Yale University
- Tyler Cowen, George Mason University
- Jared Cohen, Jigsaw
- Timmit Gebru, Microsoft Research
- Caroline Paunov, OECD
- Cory Doctorow, crashound.com
- Hal Varian, Google
- Andrew Lo, MIT
- Tascaul Restrepo, MIT, Boston University
- Morgan Frank, MIT Media Lab
- Daniel Rock, MIT Initiative on the Digital Economy
- Nicholas Economides, NYU
- Christos Makridis, Council of Economic Advisers
- Sunny Feng Han, Co-Founder, Elastos
- Yannis Bakos, MIT
- Iván Werning, NYU
- Pascual Restrepo, MIT, Boston University
- Morgan Frank, MIT Media Lab
- Daniel Rock, MIT Initiative on the Digital Economy
- Nicholas Economides, NYU
- Christos Makridis, Council of Economic Advisers
- Sunny Feng Han, Co-Founder, Elastos
- Yannis Bakos, MIT
- Iván Werning, NYU

Platform Strategy Summit
July 13, 2018
Cambridge, MA

The IDE hosted the fifth annual workshop on platform centered economics and management. We assembled a global community of executives to explore the economics and management of platform-centered markets and discuss their implications for managers, industry, and governmental policy. The IDE published a report of the valuable insights offered at the Summit, available at ide.mit.edu.

STAY INFORMED ABOUT EVENTS! SIGN UP AT IDE.MIT.EDU

Download the 2018 Platform Strategy Summit Report at IDE.MIT.EDU
5 YEARS OF ACTION LEARNING

Student teams use analytics to deliver solutions to real-world business challenges.

Student teams in the MIT Analytics Lab (A-Lab) select and deliver projects using analytics, machine learning, and other methods of analysis to develop results that diagnose, enable, or uncover solutions to real business issues and opportunities.

Organizations from around the world, including Corporate Members of the IDE, provide their data, time, and insights at the start of the semester to enable student teams to develop actionable solutions and impactful findings that provide value far beyond the fall semester.

Projects this fall ranged from areas as diverse as predicting the future of jobs based on job postings, optimizing the efficiency of matching in a two-sided marketplace, segmenting and classifying brick and mortar store visitors using wifi data, building a chatbot to assist sales managers responsible for product configuration, and predicting the risk of default using consumer transaction data.

The winning team, determined by a live panel of “celebrity judges,” worked with a leading paint manufacturer in Latin America to determine the effectiveness of their marketing strategy. To do this, the students built a ready-to-use, customizable, image recognition tool to measure in-store brand presence. The tool will inform how the company can better allocate its marketing budget and allow decision makers to further explore the effect of visual presence on B2B and B2C sales, product presence, and pricing.

A leading paint manufacturer in Latin America now has an image-recognition tool to help it better allocate its marketing budget—thanks to this year’s winning A-Lab team.

PROJECT SPONSORS

Accenture and Morningstar • Avianca • BASF • Burning Glass Technologies
C6 Bank • Citibank • College Pulse • Falabella • GE Transportation • Havas
Intursa • JPMorgan Chase • Lineage Logistics • LittleHoots
Nomura Research Institute • Qroma • Schneider Electric • TASA
TripAdvisor • Urbanova • Voices.com

EDUCATION

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DIGITALLY DELIVERED EXECUTIVE EDUCATION

Our educational programs are equipping a new generation of principled leaders who recognize the power of technology, but respect the human importance of “work.” IDE faculty and researchers taught a number of executive education courses during 2018 including:

- Artificial Intelligence: Implications for Business Strategy
- Blockchain Technologies: Business Innovation and Applications
- Digital Business Strategy: Harnessing Our Digital Future
- Digital Marketing and Social Media Analytics
- Internet of Things: Business Implications and Opportunities
A LOOK AHEAD: 2019

Automation, digital platforms, and innovations in AI and machine learning are changing the fundamental nature of work—and more rapid change is ahead.

The IDE will continue mapping the landscape for the future of work, helping business leaders, policy makers, and workers understand these shifts and move forward.

Want to be part of the IDE action in 2019? Sign up for the IDE newsletter at ide.mit.edu.

SUITABILITY FOR MACHINE LEARNING (PART 2)
New machine learning techniques and automation are transforming the American workforce. In previous research, we evaluated every job task in the O*NET database for its “suitability for machine learning” (SML), offering a theoretical framework for how occupations will change and predicting which specific occupations are most exposed to advances in machine learning methods. In 2019, we will apply the rubric to ten primary sectors of the economy, and to five corporations. Not only will this approach provide a broad and deep picture of how machine learning is affecting the workforce, but this input will inform a new, multi-stakeholder approach for the modern global enterprise and contribute to a public-policy manifesto. Our overarching goal is to help workers achieve and maintain meaningful employment.

MIT INCLUSIVE INNOVATION CHALLENGE 2019
In 2019, the IIC will again collaborate with organizations in five regions around the world to further expand the IIC’s impact on the Future of Work and the entrepreneurs who are reinventing it, deriving even more diverse and valuable insights for would-be inclusive Innovators. Sixty Regional Finalists, selected by in-region experts, will pitch their solutions at regional celebrations. There, 20 Regional Winners will be selected to proceed to the 4th Annual MIT IIC Global Grand Prize Gala where $1 million will be awarded to four Global Grand Prize Winners.

MORE FEATURED EVENTS
MIT IDE events will focus on new topics in 2019 including policy-making around AI and how to engage law-makers. We also have plans to host more events in different parts of the world in order to engage a broader group of stakeholders. Sign up for the IDE newsletter at ide.mit.edu to stay informed on upcoming news and events.
THE PEOPLE BEHIND THE IDE

* New additions to the IDE team are denoted by a red dot.

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OUR THANKS

We invite you to connect, engage, and share ideas with other visionaries who are shaping the conversation about the digital economy and future of work. There are many ways that individuals and organizations can support the IDE to drive meaningful change and help shape the future economy. To learn more, go to ide.mit.edu/support-ide.

 Cooler heads are prevailing.

The constant drumbeat of “machines taking our jobs” has thankfully softened, and the hard work of harnessing technology for broader and more equal benefit is gaining traction.

The IDE is leading the way as only a global initiative at a place like MIT can.

Our research is measuring the real impact of technology—at the macro level, and at the very granular level by geography, sector, and even the firm.

Our events are building bridges between members of the ecosystem who are putting ideology in their back pockets so that we can move toward real solutions.

Our educational programs are equipping a new generation of principled leaders who recognize the power of technology, but respect the human importance of “work.”

And with the MIT Inclusive Innovation Challenge, we are scouring every corner of the earth to find organizations that are reinventing the future of work.

I am so energized by the positive impact we are making through our activities at the IDE. We need more of you with us!

David Verrill
Executive Director
MIT Initiative on the Digital Economy

Photography
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