

MIT Media Lab

The MIT Media Lab kicked off fiscal year 2017 with its second annual summer event that brought together hundreds of MIT alumni, students, and faculty. Called [Forbidden Research](#), the symposium attracted speakers and participants from around the world, such as National Security Agency whistleblower Edward Snowden, author and hardware hacker Andrew “bunnie” Huang, robot ethicist Kate Darling, Harvard geneticist George Church, and Dr. Alaa Murabit, who founded the Voice of Libyan Women. The program included sessions on technology as a tool for change; Islam, women’s rights, and global security; genetics; the climate; and the impact of legal and ethical concerns on groundbreaking research. In the closing session of the conference, Media Lab director Joi Ito announced a \$250,000 Media Lab [Disobedience Award](#), funded by LinkedIn co-founder Reid Hoffman. By the May 1 deadline, the Media Lab had received 7,826 nominations from all continents except Antarctica.

Since July 1, 2016, the Media Lab has established two new research groups: Signal Kinetics, directed by Fadel Adib, and Conformable Decoders, headed by Canan Dagdeviren. Both are new faculty members this year. David S. Kong joined the lab as director of the newly created Community Biotechnology initiative. The Media Lab has launched two other initiatives—Space Exploration and Ethics and Governance of AI. The lab also welcomed its newest cohort in the Director’s Fellows program, which is now in its fifth year and includes almost 50 current and former Fellows. The Media Lab also launched a [new website](#) that more closely aligns with and supports the lab’s unique culture of exploration, curiosity, and discovery.

This past year was packed with diversity-focused programming and efforts aimed at increasing discussion, support, and community at the Media Lab. Among other achievements, there was significant growth in admissions of underrepresented minority women to the Media Arts and Sciences program; historically, this has been the smallest demographic at the lab. Also, in partnering with other MIT offices, the Media Lab was able to support new initiatives and encourage Media Lab participation in campus-wide activities.

All at the Media Lab were saddened by the loss of two members of the community in 2016. Seymour Papert, a founding faculty member, educational-technology visionary, and pioneer of constructionist learning, passed away in July. His impact on child development, artificial intelligence, and educational technologies is immeasurable. Developmental psychologist Edith Ackermann, who died in December, was a pivotal member of the lab’s faculty from its early days through the mid-1990s and continued to play an active role with many people in the lab and beyond.

A Sampling of Media Lab Research

- DuoSkin: DuoSkin is new user interface technology for creating functional, stylish customized devices that can be attached directly on the skin.
- Moral Machine: This human perspective on machine learning enables users to design and judge tricky moral dilemmas.

- Finding Places: Media Lab and HafenCity University researchers tackled the refugee housing crisis in Hamburg, Germany, engaging local residents by using algorithms and LEGO bricks.
- MedRec: This is a decentralized record management system to handle electronic health records, permission management, and trend analysis using blockchain technology.
- Reading through a closed book: New technology uses time-gated imaging to read through layered structures, such as books.
- The Nightmare Machine: This produces frightening imagery powered by deep learning algorithms.
- aeroMorph: Uses origami techniques to create customized inflatables, which might be used for packaging, clothing, or a variety of other applications.
- ChainFORM: This is a modular, shape-shifting hardware interface that allows users to reconfigure the system as needed.
- Glass II: The Mediated Matter group has developed a high-fidelity, large-scale, additive manufacturing technology for three-dimensional printing of transparent glass structures at architectural dimensions.
- Iterative expansion microscopy: This technique expands brain tissue in a two-fold approach that allows for high-resolution imaging using a commercial microscope.
- Digital Construction Environment (DCP): A new three-dimensional printing technology can produce whole buildings, customized to their locations, in just hours.
- Daisy drives: Daisy drive systems enable a community to alter organisms locally, and have the potential to restore populations in the wild to their original genetic state. The daisy drives are self-limiting, preventing them from spreading beyond a limited, predetermined geographic area.
- Investigating social presence: This project explores noteworthy attributes of communicative interaction using embodied minimal avatars in room-scale virtual realities in a same-time, same-place setting.
- Zensei: Zensei is an implicit sensing system that leverages bio-sensing, signal processing, and machine learning to identify uninstrumented users by their bodies' electrical properties.
- Transformative appetite: This project uses hydration to transform edible two-dimensional films made of common food materials (protein, cellulose, or starch) into three-dimensional food.
- DermalAbyss: The skin can be turned into an interface with a tattoo in which traditional inks are replaced with biosensors.
- Noninvasive deep brain stimulation: Electrodes placed on the scalp could help patients with brain diseases.

- **Intrepid:** Uses wearable technology to detect, communicate, and prevent sexual assault in real time.
- **FabricKeyboard:** A high-tech musical instrument created out of sensor-endowed fabric and conductive thread.

Visitors to the Media Lab

The Media Lab continues to attract many important visitors from around the world. In FY2017, visitors included the king of Sweden, the president of Madeira, the president of Mauritius, Apple chief executive officer and MIT Commencement speaker Tim Cook, and Isaiah Thomas of the Boston Celtics. Other visitors included numerous chief executive officers and other C-suite officials from companies such as Target, Unilever, Boston Consulting Group, Dell, EMC, and IBM; and US military officials, NASA representatives, and members of the US Congress, as well as various public school and academic groups.

MLTalks

In its sixth year, the Media Lab's MLTalks program featured a range of speakers and issues. Among them were the US Presidential Innovation Fellows, Intisar Rabb and Manal Omar on Islamic law as it intersects with US society and politics, Helene Langevin and Peter Wayne on the gaps in medical research, Jamila Raqib on nonviolent resistance, and Nichole Pinkard, founder of the Digital Youth Network. Rich DeVaul of Google X, who talked about "moonshots," novelist and screenwriter Warren Ellis, long-time activism organizer Marshall Ganz. Former assistant district attorney Adam Foss spoke on reforming the criminal justice system.

A Selection of Media Lab Events

Forbidden Research (July 21) was the Media Lab's 2016 summer event. It challenged long-standing laws and rules about what knowledge can be sought, and whether that knowledge can improve or impede the health and sustainability of society.

#MLDubai (August 29–September 2) convened, through the Media Lab, Community Jameel, and Wamda, designers, engineers, scientists, and artists to tackle big questions and prototype designs aimed at redefining cities.

No Permission, No Apology (September 9) was a conference that addressed issues of gender bias, diversity, and inclusion in STEM.

Reality, Virtually, Hackathon (October 7–10) explored new territory in virtual reality and augmented reality applications.

Thinking About Thinking about Seymour (January 26) was a celebration of the ideas and work of Seymour Papert, hosted by the Media Lab in a symposium that concluded with an announcement of the LEGO Papert Fellowships, endowed in honor of Seymour Papert's legacy.

Beyond the Cradle (March 12) was an event, Envisioning a New Space Age, that was devoted to exploring new ways of imagining, designing, and creating humanity's future in space. The event was also a launchpad for the Media Lab's Space Exploration initiative.

[Business of the Blockchain](#) (April 18) was an event co-presented by the Digital Currency Initiative and MIT's *Technology Review* to explore the challenges and opportunities of blockchain technology (the digital ledgers in which transactions made in Bitcoin or another cryptocurrency are recorded).

[Our World, Our Data](#) (April 30) in this gathering, co-hosted by Safecast (the environmental data nonprofit co-founded by Joi Ito) and the Media Lab, experts from both the public and private sectors examined the issues surrounding environmental data.

[Scratch@MIT](#) (May 6) was among more than 1,100 Scratch Days around the world on the 10th anniversary of the programming language and online community developed at the Media Lab.

A Sampling of Talks, Exhibits, and Performances

Ars Electronica Festival 2016 (September 8–12): In cooperation with Hiroshi Ishii and the Tangible Media group, the 2016 Ars Electronica Festival in Linz, Austria, focused on the theme of radical atoms.

Rosalind Picard delivered the keynote address at UbiComp 2016 in Heidelberg, Germany (September 12–16). Joe Paradiso, Chris Schmandt, and several Media Lab students also participated in the conference.

In November, the Media Lab co-presented the 2016 reThink Food conference with the Culinary Institute of America in Napa Valley, CA. The two-day event featured Media Lab speakers, including Deb Roy, Kevin Slavin, Caleb Harper, and Kevin Esvelt.

Hacking Arts 2016 (November 19–20): Speakers from the Media Lab community included Judith Amores (“Fluid Interfaces”), Dan Novy (“Object-Based Media”), and alumni David Sun Kong, Julie Legault, and Jenny Farah.

“Vespers Series II” by the Mediated Matter group debuted in November in the *Fear and Love* exhibit at the Design Museum, London, England, and ran through April 2017.

Mediated Matter’s “Glass II” was featured at the Milan Triennale from April through September 2016. The installation was a reflection on new frontiers in design, digital technology, and fabrication.

At the 2017 World Economic Forum Annual Meeting (January 17–20) in Davos, Switzerland, Joi Ito spoke about innovation and artificial intelligence.

The Media Lab was well represented at SXSW 2017 (March 10–19, Austin, TX) by 20 current and former members of the lab community. Among them were Mitchel Resnick, Deb Roy, Caleb Harper, Kate Darling, Dr. Alaa Murabit, and Baratunde Thurston.

The Space of Learning exhibit, which ran through April 14, 2017, in the School of Architecture + Planning, featured work from Mitchel Resnick and Caleb Harper of the Media Lab.

The Media Lab had 17 submissions accepted for CHI 2017 (May 6–11) in Denver, CO. Neri Oxman delivered the keynote speech on material ecology.

Ramesh Raskar and Hang Zhao of the Media Lab's Camera Culture group presented at SIGGRAPH 2016 (July 24–28) in Anaheim, CA.

The Tangible Media group's bioLogic and Cillia projects were displayed at Centre Pompidou, Paris, in the Mutations-Créations exhibit from March through June 2017.

The Harold and Arlene Schnitzer Prize in the Visual Arts 2017 exhibition in the Wiesner Gallery features the work of Media Lab students Ani Liu (Design Fiction) and Edwina Portocarrero (Object-Based Media).

Communications

Media Lab projects and people continued to garner positive media coverage in national and international markets. The lab members' work was covered in hundreds of print, broadcast, and online media outlets. The various *WIRED* outlets covered many of the Media Lab's projects and people, notably featuring Joi Ito in a special issue of *WIRED*, which was guest-edited by then-president Obama. Other media outlets included the *Atlantic*, the *New York Times*, BBC, CNN, CNN Latin America, ABC TV, NBC TV, *IEEE Spectrum*, the *Boston Globe*, the *Christian Science Monitor*, *El País*, NPR, NBC News, Bloomberg, the *Economist*, *Discover Magazine*, *Nature*, the *Guardian (UK and US)*, *El Mundo*, *Fast Company Co. Design*, *Harvard Business Review*, CNET, VICE, *Daily Mail UK*, *CoinDesk*, NHK, *Business Insider*, *Hindustan Times*, *TechCrunch*, *Popular Science*, *Sydney Morning Herald*, *Dezeen*, *El Mundo*, *Fast Company*, *Financial Times*, *Forbes*, WBUR, WGBH, KQED, and other NPR affiliates, *MIT Technology Review*, *MIT News*, *MIT Tech*, Salon, Huffington Post, Gizmodo, *PC Magazine*, *Popular Mechanics*, *Make Magazine*, Mashable, Buzzfeed, *New Scientist*, NOVA Next, NDTV (India), *Radiolab*, *TED Radio Hour*, Reddit, the *Verge*, *Smithsonian* magazine, and the *Washington Post*.

Finances

The MIT Media Lab's annual operating budget of approximately \$73 million was an increase of approximately 12% over FY2016. With surpluses from prior years, the lab's net asset balance is \$22 million. Some 42% of funding came from the consortium (\$30 million), which brought in a net annual membership revenue increase of \$1.2 million. Sponsored project funding was \$13 million, accounting for 19% of the FY2017 budget. Gift income came in at \$17 million, an increase of \$2.7 million, or 18%, over the previous fiscal year. The lab did not have to write off any members in FY2017, and it holds a bad-debt reserve balance of \$787,000 to protect it from downside risk. In all, FY2017 was a year of financial growth, and one in which the Media Lab introduced an updated financial system that provides flexible, real-time reporting.

Members

In FY2017, the Media Lab welcomed 20 new members: Takeda Pharmaceuticals, Emotibot, Mercedes-Benz Research & Development North America, IBM, Shima Seiki Mfg., Ltd, Inter-American Development Bank, PepsiCo, McKinsey & Company,

Novartis, BP, Verizon, International Flavors & Fragrances, ExxonMobil, Khazanah Nasional, Hyundai Motor Company, Young Communication Co. Ltd., Nomura Research Institute, NTT Data, UCB, and MiSK Foundation.

Patents

In FY2017, the Media Lab filed 70 patent applications (provisional patents, ordinary patents, patents filed under the Patent Cooperation Treaty division). Fourteen patents have been issued to the Media Lab since July 1, 2016.

Directed Research

In FY2017, the Media Lab submitted 87 proposals for new or continuing directed research projects, including graduate and postdoctoral fellowships. Approximately 27% of these proposals were for subawards in collaboration with other research institutions. Fifty-five proposals remain under consideration, and 22 have resulted in awards. More than half—56%—of the submitted proposals were in response to government solicitations (e.g., from the National Science Foundation, the National Institutes of Health (NIH), the Department of Defense, and the Defense Advanced Research Projects Agency), while the others were submitted to foundations and nongovernmental sponsors. The new awards ranged in size from \$50,000 to \$3.1 million, and spanned five months to five years.

Human Resources/Administration

MIT honored two Media Lab staff members this year: Monica Orta, assistant director, Diversity and Student Support, received an MIT Excellence Award; Amanda Stoll, program assistant in Media Arts and Sciences, was a recipient of an Infinite Mile Award. Among new hires, Jennifer MacDonald joined the lab as director of its communications team.

Joi Ito

Director

Media Lab Members

Consortium Research Lab Members

Dentsu-Aegis Network Ltd.
Digital Garage
Hisense Co. Ltd.
Jaguar Land Rover
LKK Health Products Group
NHK

NTT Data
Panasonic Corporation
RECRUIT
Samsung Electronics Co., Ltd.
TCL Multimedia
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Consortium Lab Members; Joint Program Members

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Bose Corporation	Mercedes-Benz Research &Development
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BT	Mori Building Co., Ltd.
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DP World	Six Capital
Emotibot	Sony Corporation
Estee Lauder	Steelcase Inc.
Exxon Mobil	Takeda Pharmaceuticals
Ferrero	Target Corporation
Fidelity Center for Applied Technology	Tata Consultancy Services
Flipkart	Thales
FutureWei Technologies, Inc./Huawei	TOPPAN Printing Co., Ltd.
General Electric	Toyota Motor Corporation
GlaxoSmithKline	Turner Broadcasting, Inc.
Google	Twitter
Hoffmann-La Roche Inc.	UCB
Hyundai Motor Company	Unilever
IBM	Univision
IDEO	Verizon
IKEA	Viacom
Intel	VSP Global
Inter-American Development Bank	Welspun
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Endowment and Naming Grants

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 Asahi Broadcasting Corporation
 Armand and Celeste Bartos
 Benesse Corporation
 BT
 CSK Holdings Corporation
 Dorothy Lemelson
 Informatix, Inc.
 Isao Okawa
 Jeffrey L. Silverman (1968)
 Joseph Chung
 The LEGO Group
 LG Electronics, Inc.

MasterCard International
 Misawa Homes
 Motorola, Inc.
 Masanori Nagashima 1976
 NEC Corporation
 Philippe Villers
 Schlumberger
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Research Contracts and Special Funds

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NASA - Johnson Space Center
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