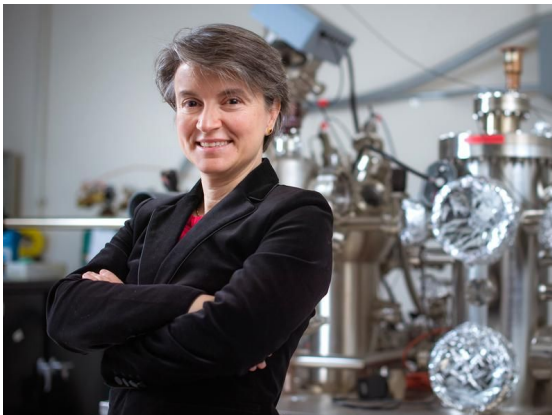


## In the Lab



### **Bilge Yildiz wins Rahmi M. Koç Medal of Science**

[Recognizing scientists of Turkish origin who have made outstanding contributions to their fields.](#)

Lab researcher Bilge Yildiz received the Koç University Rahmi M. Koç Medal of Science "for her seminal contributions to the understanding and design of novel surface chemistries, materials for efficient and durable electrochemical energy conversion, and energy-efficient ionic computing devices."



### **Gaining real-world industry experience through Break Through Tech AI at MIT**

[A new experiential learning opportunity challenges undergraduates to apply their AI skills.](#)

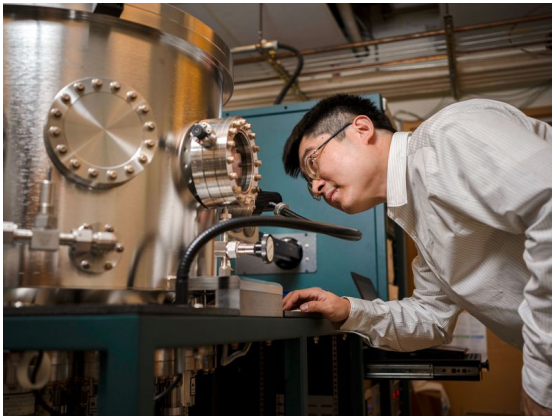
Through the program, undergraduates are developing pertinent AI skills while collaborating on real-world projects, including from the Lab. "Students are gaining industry experience by working closely with their project advisors," says Lab co-director Aude Oliva.



## Unpacking the 'black box' to build better AI models

[Stefanie Jegelka seeks to understand how machine-learning models behave.](#)

Lab researcher Stefanie Jegelka studies what neural networks learn, particularly working to optimize their performance with graph data. To that end, her applied work helps to build more robust models for applications in biology, computer vision, optimization, and more.



## Putting a new spin on computer hardware

[Luqiao Liu builds low-power, high-performance computer memories and programmable chips.](#)

Lab researcher Luqiao Liu utilizes novel materials and electron spin to create next-generation memory hardware for computers that can store more information, use less power to operate, and retain information for a longer period of time.



## This is your brain. This is your brain on code

[Discovering which parts of the brain are engaged when a person evaluates a computer program](#)

Researchers working with the Una-May O'Reilly group used functional magnetic resonance imaging (fMRI) to look at the brain activity of individual programmers as they process specific elements of a computer program, such as word manipulation versus a math operation, to determine if it's encoded in the brain.



## Postdoctoral Fellowship Program for Engineering Excellence

[MIT School of Engineering's program to develop future faculty leaders and inclusive culture.](#)

The program allows postdocs to pursue research and educational efforts that widen the scope and breadth of the school's current work, while maintaining its commitment to excellence in engineering. Included in the selection of 16 inaugural postdocs are two Lab-supported IBM School of Engineering Distinguished Postdoctoral Fellows.



## Explainer: Understanding quantum information and computation

[An IBM series, consisting of video lessons and textbook content, explains quantum computing.](#)

In the near-term, IBM plans to release university-level lessons monthly, until the first unit of the series (on the basics of quantum information) is complete. Subsequent units will cover topics including quantum algorithms and techniques to mitigate noise in quantum computers.

## A faster way to preserve privacy online

[Searching for information without revealing the queries](#)

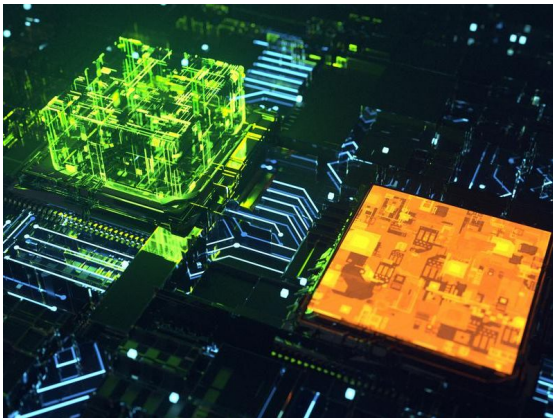
Researchers working with the Lab group of Vinod Vaikuntanathan have developed a method that enables users to search for information in a remote database, without revealing the content they are seeking to the server. The new scheme for private information retrieval that is about 30 times faster than other comparable methods.



## Busy GPUs

[Sampling and pipelining method speeds up deep learning on large graphs.](#)

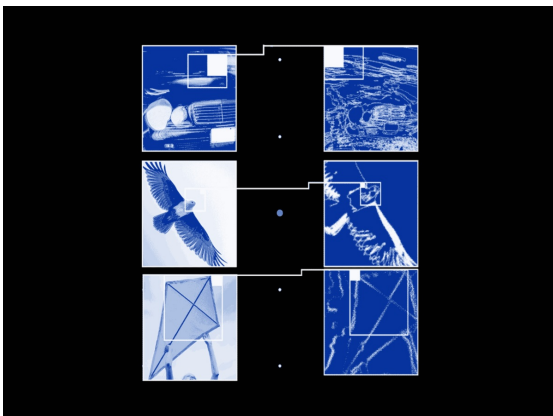
A method, SALIENT, developed in the Lab groups of Charles E. Leiserson and Jie Chen, keeps GPUs busy to significantly speed up deep learning on large graphs, helping to keep pace with fast-moving data in finance, social networks, and fraud detection in cryptocurrency.



## Your 'check engine' light is on. What if an AI could tell you why?

[A benchmark helps to train foundation models to perform specialized tasks.](#)

Work from the Lab groups of Rameswar Panda, Kate Saenko, Rogerio Feris and Leonid Karlinsky have produced FETA (Foundation models for Expert Task Applications), an open-source tool to evaluate an AI's ability to read technical documents, like manuals, catalogs and guides, which are crucial for automating everyday tasks.



# Annual Reports

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## MIT-IBM Watson AI Lab annual report

[2021-2022](#)

This annual report showcases the impact the Lab made in the last year to train the next generation of researchers, build real-world value for our member companies, and lead through the development of novel machine learning methods and hardware advances, and their applications.



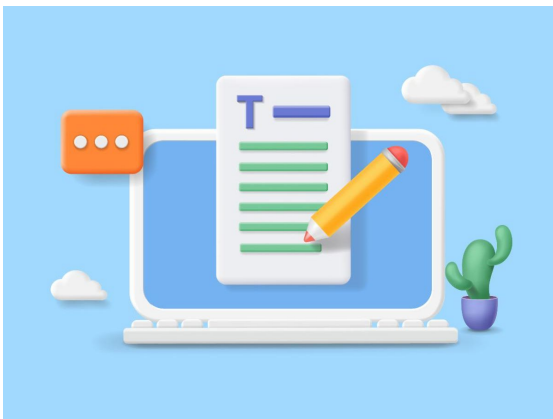
## The 2022 IBM Research annual letter

[Reflections on 2022 and a look towards what's next](#)

IBM Research shares their 2022 research highlights, which includes pioneering nanosheets for high-volume manufacturing transistor architecture. They have also built the world's largest fleet of quantum computers, and are working on quantum-safe algorithms and advanced AI for enterprises.

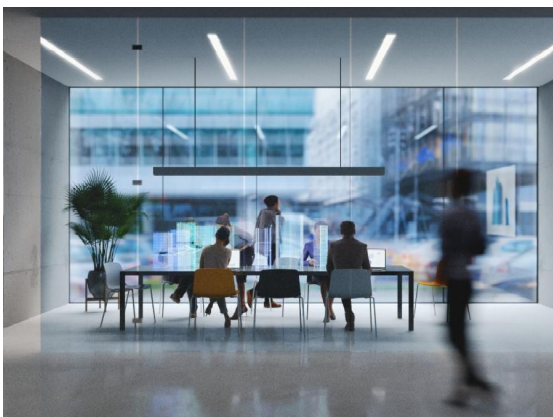
## In the Media

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## Was this written by a robot? These tools help detect AI-generated text

Thanks to tools like ChatGPT that can create text, it's becoming more difficult to decipher between natural language formulated by a human and a computer simulating it, [Fast Company](#) writes. However, work like The Giant Language Model Test Room (GLTR) from the Lab can help.



## How IBM plans to measure innovation in the AI age

Dario Gil, Lab IBM chair, IBM senior VP and director of research, writes in [Fortune](#) how IBM plans to measure innovation in the age of open source and quantum computing. "We have turned more of our talent and resources towards achieving high-quality, high-impact advancements in the specific areas of hybrid cloud, data and AI, automation, security, semiconductors, and quantum computing."



## The year ahead in encryption

The next year is setting itself up to be a big one for data security, [Gizmodo](#) reports, and Lab

researcher Peter Shor is one to watch. "As quantum encryption becomes more and more of a thing, one guy you're going to want to know is Shor. A brilliant MIT professor, Shor's algorithm is considered to be one of the foundational mathematical pieces to the quantum puzzle."



## How to spot AI-generated text

As more content online is created by AI, tools are needed to identify it. [MIT Technology Review](#) reports that researchers from the Lab and elsewhere have developed The Giant Language Model Test Room (GLTR) to inspect and detect automatically generated text.

## Upcoming Events

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### Social and Ethical Responsibilities of Computing

[An MIT Schwarzman College of Computing symposium](#)

April 18, 8 a.m.-5:30 p.m. ET

Join the MIT Schwarzman College of Computing for an in-person event with panel discussions including several Lab researchers on the implications of data and algorithms, beneficent and fair AI, equitable and personalized health, algorithms and humans, and ethics and computing education. More information to come.

## Event Recordings

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[Advances in the Quest to Understand Intelligence](#)

Researchers from the MIT Quest for Intelligence and the Center for Brains, Minds, and Machines share progress on understanding natural intelligence and the future of AI.

[Addressing Computer Architecture Vulnerabilities](#)

Lab researcher Mengjia Yan speaks with MIT CSAIL Alliances about insights into her cybersecurity research.

## Lab Highlights

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Lab researchers Rameswar Panda, Rogerio Feris, and Kate Saenko received received a [Best Paper — Honorable Mention](#) recognition at the 2023 IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) for their paper "Select, Label, and Mix: Learning Discriminative Invariant Feature

Representations for Partial Domain Adaptation."

Lab co-director Aude Oliva leads the Lab-sponsored [Algonauts Project 2023](#), which explores how the human brain makes sense of natural scenes.

Lab researchers to showcase over 20 papers and presentations at the 2023 [International Conference on Learning Representations](#) (ICLR), a premier machine learning conference.

## Online Learning

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[MIT Introduction to Deep Learning](#)

A Lab-sponsored course teaches the fundamentals of deep learning.

[TinyML and Efficient Deep Learning Computing](#)

Lab researcher Song Han's course is a deep dive into efficient machine learning techniques that enable powerful deep learning applications on resource-constrained devices.

[Unsupervised Machine Learning: Unlocking the Potential of Data](#)

A joint MIT Sloan & Schwarzman College of Computing Executive and Professional Course begins March 22.

[Making AI Work: Machine Intelligence for Business and Society](#)

A joint MIT Sloan & Schwarzman College of Computing Executive and Professional Course begins March 15.