

MIT FUTUREMAKERS



# 2024 IMPACT REPORT

From project-driven learning  
to impact-driven learning &  
computational action



RAISE Initiative  
Responsible AI for Social  
Empowerment and Education

# ABOUT MIT FUTUREMAKERS

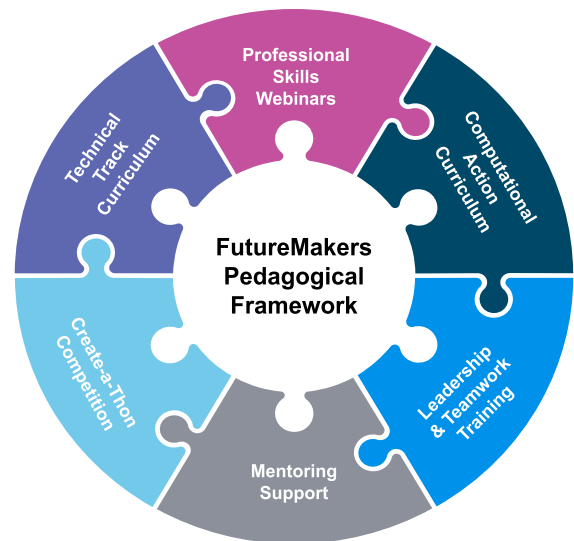
Artificial intelligence is shaping our personal and professional lives. It is transforming industries as AI-powered applications, tools, and solutions enter the marketplace. It has already contributed to impressive economic growth, and organizations continue to harness it to help address society's most urgent challenges and realize exciting opportunities. However, if not designed and deployed responsibly, it can exacerbate inequity and cause considerable harm, particularly to historically marginalized groups.

MIT RAISE ([raise.mit.edu](https://raise.mit.edu)), in a long-running collaboration with SureStart ([mysurestart.com](https://mysurestart.com)), created the MIT FutureMakers program to nurture early talent pipelines in student communities under-represented in STEM toward a more diverse, creative, and ethical AI workforce for the future. The goal of MIT FutureMakers is to help prepare the next generation of diverse, AI-powered changemakers who aspire to make a better world for all.

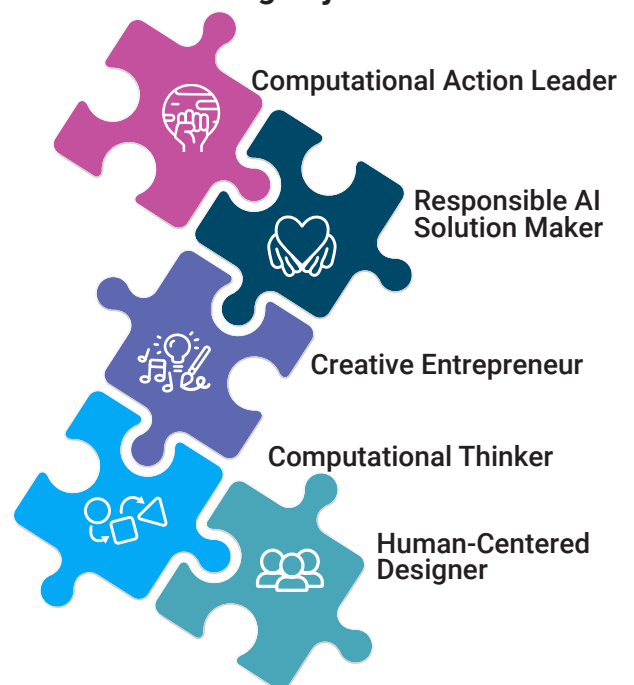
Through this comprehensive, free, six-week program, MIT FutureMakers systematically develops students' hands-on technical skills while also developing human-centered skills such as teamwork, leadership, entrepreneurial mindset, critical awareness, and responsible design methods of AI-powered solutions. It cultivates the formation of young people's computational identity and their confidence in digital empowerment. MIT RAISE has developed a novel pedagogical framework (Figure 3) and curriculum built on the principle of computational action, an impact-driven learning approach that empowers and encourages students to solve personally meaningful and authentic problems relevant to groups with whom they feel invested.

The six weeks consist of two phases: a training phase (4 weeks) consisting of cohort-based learning from a curated, interested curriculum, with regular mentoring by proximate mentors; and a Create-a-thon phase (2 weeks) of teams developing AI-based solutions to real-world problems, working in the same cohorts, once again guided by mentors. This culminates in a pitch competition.

Participants attend seminars on career skills, engage in formal and informal peer-networking, and attend technical talks by AI industry professionals. All interactions are hosted online using a digital platform and video-conferencing.



## MIT FutureMakers Student Learning Objectives



# IMPACT OF MIT FUTUREMAKERS 2024

The 2024 iteration of MIT FutureMakers ran virtually from July 1 to August 9. It brought together middle school (14% of 2024 participants), high school (50%), and college students (36%) from across the United States and Puerto Rico as a group of over one hundred highly motivated learners who wanted to develop new skills creating mobile apps that use artificial intelligence.

As participants selected from a diverse pool of applicants, they learned foundational concepts in AI and product development of software solutions. This included mobile and web apps, using AI-powered extensions with generative AI, and training custom machine learning models, and data science.

Specifically students were organized into four tracks. 1: Mobile app development with AI, for middle school students. 2: Mobile app development with conversational AI, for high school and early college students. 3: Applied deep learning. 4: Data activism.

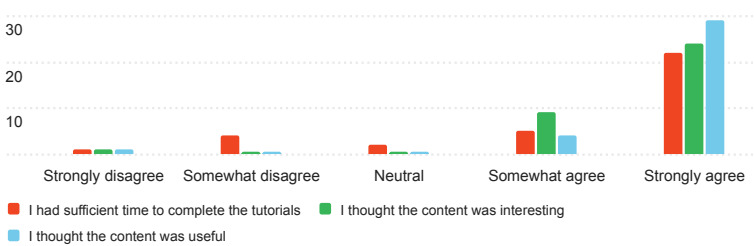


Figure 1: student survey responses to the prompt “Please rate the content presented to you over the first four (4) weeks of the program.”

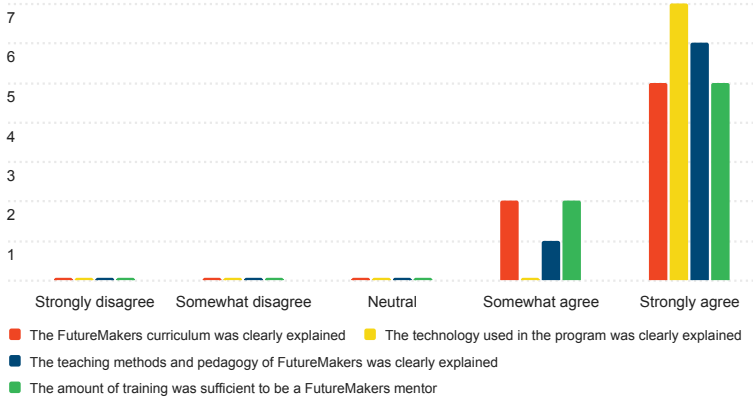


Figure 2: mentor survey responses (Likert scale) to the prompt “Regarding the mentor training you received, please respond with your level of agreement to the following questions.”

Importantly, participants worked with a diverse set of college-aged mentors and heard from industry experts on topics like entrepreneurship startup tactics, AI for social impact, and how to pitch projects.

Together, over the course of the six weeks, they first honed their skills as teams in scenario-based, 75-minute design jams and then ultimately produced tools within their tracks for entry in a Create-a-Thon competition. Students presented their tools on the last day of the program to a judging panel of experts from partner tech organizations, and winning teams received cash prizes and a trip to the ASU-GSV Summit in San Diego, California, where they networked with thousands of educators and workforce leaders and presented their projects.

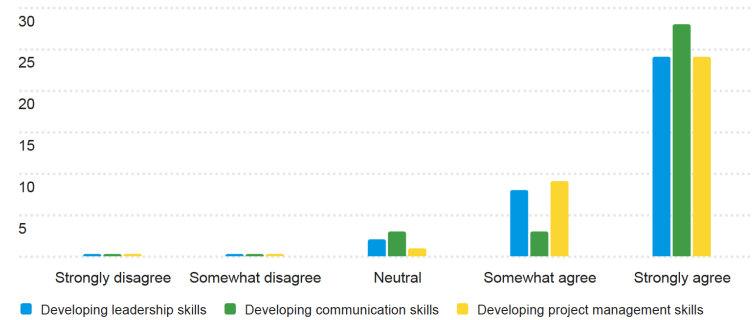


Figure 3: student survey responses to the prompt “What have you learned in this program?”

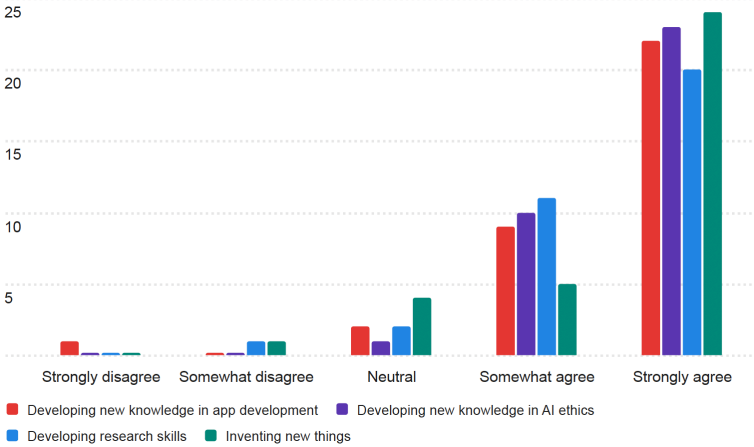


Figure 4: student survey responses to the prompt “What have you learned in this program?”

# 110

The number of 2024 MIT FutureMakers participants, hailing from 22 states and Puerto Rico. They worked with 21 mentors from across the U.S.

# 7.5x

The before-and-after increase in MIT FutureMakers students reporting that they “completely agree” that they know how AI works.

# 100%

The percent of 2024 MIT FutureMakers mentors who responded to a post-program survey and agreed the MIT RAISE team clearly explained the curriculum, technology, methods, and pedagogy.



# 2024 CREATE-A-THON

MIT FutureMakers participants work in teams to design apps for specific challenges. Winners in different tracks are chosen by judges of experts.



## Track 1

### Mobile app development with AI, middle school students

Team Certified Squirrels won the Track 1 competition with **Findable**, empowering people with disabilities with an app that extracts detailed accessibility data from New York City records, making the city more navigable and inclusive.



## Track 2

### Mobile app development with conversational AI, high school and early college students

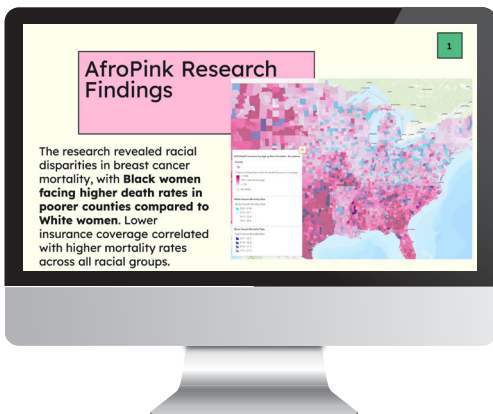
Team EcoGuardians won Track 2 with **GreenGuard**, a recycling and waste management app designed to help communities make environmentally conscious decisions. It scans products to identify how they should be recycled, provides an information hub for recycling-related queries, locates nearby recycling centers, and helps track users' recycling efforts to encourage good habits.



## Track 3

### Applied deep learning, high school students

Track 3 winner, Team **KineX**, produced an innovative physical therapy app that leverages AI to improve mobility and reduce health risks. Among other AI-driven features, it employs computer vision to analyze user poses in order to provide feedback on safe, effective exercise.



## Track 4

### Data activism

Student teams worked with non-profits to analyze data for advocacy. For instance, they worked with AfroPink to detecting breast cancer early within the African-American community and with the Vera Institute of Justice to explore how systemic inequities contribute to high school dropout rates in Baltimore City.

	TRACK 1: MOBILE APP DEVELOPMENT WITH AI (MIDDLE SCHOOL)	TRACK 2: MOBILE APP DEVELOPMENT WITH CONVERSATIONAL AI (HIGH SCHOOL AND EARLY COLLEGE)	TRACK 3: APPLIED DEEP LEARNING (HIGH SCHOOL)	TRACK 4: DATA ACTIVISM (HIGH SCHOOL AND EARLY COLLEGE)
TECHNOLOGY- ENHANCED SMART CITIES	1	0	0	1
PHYSICAL HEALTH AND MENTAL WELL-BEING MANAGEMENT	1	2	2	3
ENVIRONMENTAL PROTECTION EFFORTS, WASTE MANAGEMENT	1	1	2	1
EQUITABLE RESOURCE ALLOCATION	0	1	1	4
AI USAGE TO IMPROVE HEALTH AND FITNESS	0	0	1	1
ENVIRONMENTAL RISK MITIGATION	0	1	0	4
GENERATIVE AI FOR IMPROVING EDUCATION	0	1	0	0

Themes tackled by the number of student Create-a-Thon teams.

## WHAT 2024 MIT FUTUREMAKERS STUDENTS HAD TO SAY

“

I enjoyed the process of figuring things out by myself rather than be guided completely through the whole process.

”

“

I loved working with others who have similar ideas and interests.

I was able to feel independent and was able to learn how to effectively and efficiently research topics that I don't understand fully.

The Create-a-thon was challenging to put the pieces together coherently but it was ultimately reawarding.

”

# WHAT A 2024 FUTUREMAKERS MENTOR AND JUDGE HAD TO SAY

“

When I was a professor in my country, I was a little tired of teaching, because sometimes students don't care, they don't care at all, and here...my overall experience is great! I really enjoyed it. It renewed my feelings about teaching! I like teaching again!

– MIT FutureMakers Mentor

”

I am no stranger to judging and it was amazing to see what I saw today. It compares to a lot more experienced teams and considering time that you were able to put into it, it's a big achievement...reflect on what you have learned. Maybe it's not just the information about how to use certain technologies. I'm sure there have been a lot of things that you have been able to achieve by understanding how to work with each other, how to communicate in challenging situations, resolve conflicts, and look at things creatively.

– Create-a-Thon judge



MIT FutureMakers Create-a-Thon winners travel to the ASU+GSV Summit in San Diego. Last year's winners, shown here, presented their projects, networked, celebrated each other, and met people like RAISE director Cynthia Breazeal and STEM education legend Bill Nye.



MIT RAISE director Cynthia Breazeal celebrating with some of the Create-a-Thon winners in San Diego



Create-a-Thon winners meeting Bill Nye "The Science Guy"

MIT FutureMakers is made possible in part through the generous support of: DP World

As well as 2024 Data Activism track student scholarships from:  
ACM Conference on Fairness, Accountability, and Transparency 2024 DEI Scholarships  
MIT Sea Grant  
A Vision for Engineering Literacy and Access

## HOW YOU CAN HELP

A generous grant by DP World supports our summer MIT FutureMakers program. The inaugural MIT FutureMakers program was launched in the summer of 2021 with 71 students and by 2024 hosts well over 100.

MIT FutureMakers is seeking support to scale our program beyond the summer session to accommodate more participants (students and mentors) across the U.S. and in other countries. If you are interested in becoming a sponsor, please contact us at [futuremakers-info@mit.edu](mailto:futuremakers-info@mit.edu).