

MIT offers admission to 1,337 applicants into Class of 2026

33,796 students applied, a 2% increase from last year

By Srinidhi Narayanan
NEWS EDITOR

MIT admitted 1,337 out of 33,796 applicants via early and regular round applications, for an overall acceptance rate of 3.96%. This is a 2% increase in number of applicants from last year, with both years being significantly greater than the pre-pandemic baseline of about 20,000 applications.

MIT suspended the SAT/ACT requirement last year due to disruptions faced by many students in scheduling tests because of the pandemic. Dean of Admissions and Student Financial Services Stu Schmill '86 had attributed the spike

in applications to this suspension. However, although the SAT/ACT requirement was not waived this year, application numbers were similarly high.

The acceptance rate from this year is a slight decrease from last year (4.03%), with both marking a sharp decrease from pre-pandemic acceptance rates (approximately 7%).

As per MIT tradition, the decisions were released on Pi Day, March 14, at 6:28 p.m. Admitted students must decide whether or not to attend by May 2.

In addition to comments in a blogpost on MIT Admissions, Director of Special Projects Chris Peter-

son SM '13 spoke on the admissions process in an email to The Tech, stating that "With this many applications, it really takes a tremendous amount of dedicated work from our entire team, many of whom spent 8+ hours a day in Zoom committee for weeks on end, trying to select the best class possible."

On behalf of the admissions office, he wrote that "we're very excited about this year's applicants, and can't wait to welcome them to campus at the first CPW [Campus Preview Weekend] since 2019 in a few weeks," and encouraged current students to sign up to host prospective students for CPW at community.mitcpw.org/host/ by March 20.



STEPHANIE FU

Organizations including the MIT Energy Initiative, MIT Divest, and Climate & Sustainability Consortium came together at MIT's first Sustainability Midway in Lobby 13, Tuesday.

IN SHORT

Half-term final exams (H3) end March 18.

The deadline to submit events for CPW is March 19.

Students should sign up to host prefrosh for CPW by March 20

at <https://community.mitcpw.org/host/>.

Spring break is March 21–25.

Interested in joining The Tech? Email join@tech.mit.edu.

Send news and tips to news@tech.mit.edu.

Two EECS degree proposals and supporting students affected by war in Ukraine discussed at faculty meeting

Faculty at the March meeting also heard presentations about changes to thesis submission, annual tuition and financial aid, and new mechanisms for faculty-Corporation engagement

By Kristina Chen
PUBLISHER

At the March 16 faculty meeting, faculty members discussed support for students impacted by Russia's invasion of Ukraine, the termination of MIT's Skoltech Program, proposals for two new degrees in the electrical engineering and computer science (EECS) department, and a proposal to require theses to be submitted digitally. Faculty also heard reports on annual changes in tuition and financial aid, new mechanisms for engagement between faculty and

members of the MIT Corporation, and the slate of nominees for faculty chair and committees.

Skoltech and support for students affected by Ukraine

Chancellor Melissa Nobles described support systems in place for Ukrainian and Russian students affected by the events in Ukraine. These include the chancellor's office's Indirect Impact team, whose primary responsibility is to "reach out to students when tragedy or catastrophic events occur off campus," and inform them about accessing MIT's student support network, and

to alert the students' academic advisors and heads of house so that they may provide support.

Nobles said that on the day of Russia's invasion of Ukraine, Blanche Staton, senior associate dean for graduate education, and David Randall, senior associate dean for student support and well-being, sent "supportive messages" to the 18 undergraduate and graduate students from Ukraine and the 38 students from Russia.

Additionally, the Student Financial Services waived the spring student work contribution for Ukrai-

nian undergraduates and replaced it with the MIT scholarship, and Grad-Support provided "similar support" for Ukrainian graduate students, Nobles said.

MIT's International Students Office also organized a group information session with immigration attorneys to facilitate any legal assistance the students might require.

Associate Provost for International Activities Richard Lester PhD '80 discussed MIT's decision to terminate the MIT Skoltech Program, announced Feb. 25; the program will formally end April 26.

Lester said that President L. Rafael Reif chose to end the program after being advised by his senior risk group, which consists of Vice President for Research Maria Zuber, General Counsel Mark DiVincenzo, and Lester.

Lester said that the program was terminated because "MIT could not be associated even indirectly with a government that had perpetrated such an appalling act of aggression against the sovereign democratic state." MIT joined "the global ef-

Faculty Meeting, Page 3

Professor Agustín Rayo looks ahead to his new role as the Dean of SHASS

Rayo had previously chaired SHASS committees and served as associate Dean of SHASS 2016–19 and later as interim dean

By Yeabsira Moges and Srinidhi Narayanan

Philosophy professor Agustín Rayo '01 was named Dean of the School of Humanities, Arts, and Social Sciences (SHASS) Jan. 25, after having served as the interim Dean following former SHASS Dean Melissa Nobles's appointment to the Chancellor position. The appointment went into effect Feb. 1.

Rayo has been an MIT faculty member since 2005, and served as associate Dean of SHASS from 2016–19. His work lies at the intersection of the philosophy of logic and the philosophy of language, and seeks to understand the relationship between our language and the world it represents, clarify the connection between logic and mathematics, and investigate the limits of com-

municable thought, according to his faculty page.

Rayo is devoted to campus leadership and service, chairing the SHASS Faculty Diversity Committee, the SHASS Educational Advisory Committee, and the Digital Humanities Steering Committee while associate Dean. He was also housemaster of Senior House from 2010–14.

A detailed biography, description of service, and comments from administrators can be found on MIT News.

The Tech communicated with Rayo via email. His responses have been lightly edited for clarity.

The Tech: What do you hope to accomplish in your time as the dean of SHASS, especially with regards to the school's focus on research, critical skills, and international education?

Agustín Rayo: I want to continue to highlight the core role of the humanities, arts, and social sciences at MIT.

To solve the world's problems you have to understand how the world works. Our School can help students acquire that understanding.

SHASS also empowers our undergraduates to develop the whole of their multidimensional selves. It gives students who are focused on STEM the freedom to delve into speculative fiction, performance, music technology, ethics, logic, the ancient world, justice, policy-making — or dozens of other explorations.

TT: Can you elaborate on the direction in which you are hop-

Agustín Rayo, Page 2



COURTESY OF JON SACHS, MIT SHASS COMMUNICATIONS

Professor Agustín Rayo '01 was named Dean of the School of Humanities, Arts, and Social Sciences Jan. 25.



FARIN TAVACOLI—THE TECH

MIT Shakespeare Ensemble puts on the play Coriolanus, Thursday.

JAZZ ENSEMBLE

A tribute to MIT's father of jazz. **ARTS, p. 7**

WRESTLING

MIT Wrestling makes historic wins. **SPORTS, p. 15**



COMPARTMENT NO. 6

Kindred spirits on a train. **ARTS, p. 7**

DOOMSDAY

The two year anniversary **CAMPUS LIFE, p. 10**

SECTIONS

Opinion 4
Arts 7
Photo 8
Campus Life 10
Fun Pages 12
Sports 15

WEATHER

Spring warmth arriving just in time for break!

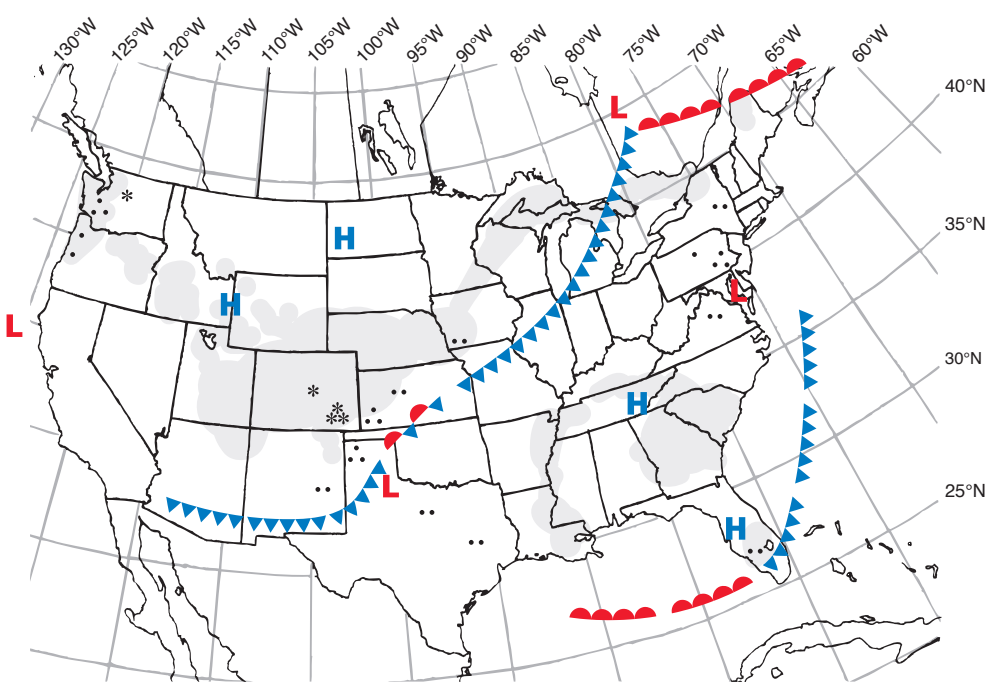
By Paige Yeung and Phoebe Lin

While Boston is warming up dramatically this week with a near record high of nearly 71°F this Friday, a cold front is heading toward the east coast, bringing showers to Boston this Saturday. A modest amount of rain is expected, though winds will stay relatively calm. Hopefully this doesn't

dampen your spring break travel plans! The onset of daylight savings means that it's been brighter outside later in the day. Get used to the brightness — in related news, the Senate just recently voted to keep daylight savings permanent! To celebrate (or not), make sure to set aside some time this week to catch some rays and to enjoy the warm weather outside.

Extended Forecast

Today: Mostly cloudy. High around 56°F (13°C). Winds 5–8 mph, from the southeast.
Tonight: Chance of rain, fog. Low around 46°F (8°C). Winds 4–6 mph, from the east.
Friday: Mostly cloudy. High around 71°F (22°C) and low around 46°F (8°C). Winds 6–8 mph, from the west.
Saturday: 90% chance of rain. High around 54°F (12°C) and low around 48°F (9°C). Winds 7–10 mph from the southeast; gusts as high as 20 mph.
Sunday: Partly sunny. 30% chance of rain. High around 57°F (14°C) and low around 42°F (6°C). Winds 6–11 mph, from the west.



Situation for Noon Eastern Time, Thursday, March 17, 2022

Weather Systems	Weather Fronts	Precipitation Symbols	Other Symbols
<div>H</div> High Pressure	<div>---</div> Trough	<div>Snow</div> *	<div>Fog</div> ☁
<div>L</div> Low Pressure	<div>—•—•—</div> Warm Front	<div>Rain</div> •	<div>Thunderstorm</div> ⚡
<div>§</div> Hurricane	<div>▲▲▲▲</div> Cold Front	<div>Light</div> *	<div>Haze</div> ☁
	<div>▲▲▲▲</div> Stationary Front	<div>Moderate</div> **	
		<div>Heavy</div> ***	

Compiled by MIT Meteorology Staff and The Tech

Rayo: ‘I’m worried that DEI conversations at MIT have become increasingly polarized and people are more ready to disparage the other side of the debate’

Agustín Rayo, from Page 1

ing to take SHASS?

Rayo: Rather than thinking of SHASS as a single entity, I think of it as consisting of three parts: a house of humanities, a house of arts, and a house of social sciences. I’m hoping to support the growth of all three. MIT’s humanities programs are ranked among the best in the world. They teach critical thinking and a deeper understanding of the world’s history and culture. I’d like to empower our distinguished humanists to continue doing what they do best. And I’d like to convince our students to take more humanities classes. Alumni often tell me that their most meaningful experience at MIT came from a humanities class. I wish I could give this insight to students just starting out. The performing arts

based in our School are an important part of the MIT experience. Our acclaimed Music Program — which includes a conservatory-level music track — is among the reasons students choose MIT. The 2024 opening of our new music building will usher in a new era of programming, classes, and events. And the recently opened theater building in W97 has created unparalleled opportunities for theater arts. MIT’s social science fields are problem-solving engines, with superb graduate programs and research that informs national and international policy in sectors ranging from healthcare to jobs to democracy. I want to support this research and empower students to integrate these powerful methodologies into their studies. Finally, the MIT International Science and Technology Initiatives

allow MIT students to develop as respectful, knowledgeable global citizens. It gives them the skills they’ll need to become international leaders. **TT: What is the importance of an education in SHASS, especially to students at a tech school?** **Rayo:** The humanities, arts, and social sciences are crucial to understanding the human condition and our complex social, political, and economic institutions. MIT’s SHASS classes help develop powerful career, leadership, and problem-solving skills. They also help develop core values, a moral compass, and a more nuanced perspective of the world. **TT: How will you help promote further diversity, equity, and inclusion (DEI) within SHASS?** **Rayo:** I will continue advancing our DEI efforts, reflecting our commitment to shared values of excel-

lence, collaboration, kindness, and mutual respect. I care deeply about the mental and physical well-being of our students. We are seeking to further diversify our faculty and student cohorts. In our hiring and teaching, we work to ensure underrepresented groups are afforded as many opportunities as possible. Tracie Jones, Assistant Dean for DEI, is leading these efforts. I’m worried that DEI conversations at MIT have become increasingly polarized and people are more ready to disparage the other side of the debate. This is partly a reflection of our state as a nation. But I hope we can do better in SHASS. I hope we’re able to give others the benefit of the doubt. **TT: Given that you are also a professor in the philosophy department, how does that play into your role and how do you hope to**

see the department grow in the near future? **Rayo:** Philosophy will always be my first love. But I’m the Dean of all of SHASS, not just of philosophy, and I’ll try not to forget that while I’m in this role. **TT: Consensus shows that MIT has one of the best humanities departments in the country, and the Times Higher Education World University Rankings often ranks it highly in comparison to its peers. To what do you ascribe this success?** **Rayo:** As is often the case, it’s about the people. Our school attracts some of the world’s finest scholars and artists. Our students are incomparable. And our staff are absolutely amazing. *Editor’s note: Yeabsira Moges ’25 conducted the question-and-answer email exchange for this article.*

Remembering electrical engineering professor emeritus Markus Zahn

Markus Zahn SB ’67, SM ’68, EE ’69, ScD ’70, professor emeritus of electrical engineering, passed away at the age of 75 March 13. Zahn is remembered for his electrodynamics research and writings, teaching prowess, and renown as a student advisor. Zahn earned his undergraduate and doctorate degrees at MIT before becoming a professor at the University of Florida. He joined the faculty at MIT in 1980 and retired in 2015. According to Zahn’s obituary, his research interests in electrodynamics ranged “from the theoretical to the practical.” This included high-voltage charge transport and breakdown phenomena in dielectrics; battery technology; applying magnetic processes for oil cleanup; detecting buried land mines; and charged, polarizable, and magnetic fluids. Zahn also conducted research on how electricity moves “through different mediums” and penned a seminal textbook in the field, *Electromagnetic*

Field Theory: A Problem Solving Approach. For Zahn’s contributions to his field, he became an Institute of Electrical and Electronics Engineers fellow in 1993 and received the Paris Sciences Scholar ESPCI (École supérieure de physique et de chimie industrielles) Medal in 2000. Zahn has taught 6.013 (Electromagnetics and Applications), 6.641 (Electromagnetic Fields, Forces, and Motion), 6.642 (Continuum Electromechanics), and 6.UAT (Preparation for Undergraduate Advanced Project). Zahn “collected stamps and enjoyed bicycling, baseball, good food and time with his family,” his obituary states. He and his wife Linda “shared a love of travel and were able to visit much of the world.” He is survived by his wife, four children, and seven grandchildren. Zahn’s online memorial can be found at www.lasting-memories.com/memorial/markus-zahn. — Wenbo Wu



KATE LU—THE TECH

Over 100 classes were taught by MIT students during Spark, MIT’s annual teaching and learning extravaganza for middle schoolers, March 13.



ALEXA-RAE SIMAO—THE TECH

Frosh explore the Museum of Science during a Connect by Chance event, March 6.

New degree proposals include Artificial Intelligence and Decision-Making (6-4) SB; Computer Science, Economics, and Data Science (6-14) MEng

Faculty Meeting, from Page 1

fort to isolate” Russian President Vladimir Putin and his government by no longer being involved in “activities that might assist the Russian state in its technological and economic development.”

Lester expressed that it is “unfortunate” that MIT’s action in response to the illegal actions of the Russian government “will also harm some of the very people in Russia who object to what their government is doing,” including Skoltech colleagues and students.

As of last month, 21 MIT faculty members and around 40 students and postdoctoral students were participating in projects as part of the Skoltech program. MIT will work with the principal investigators and Skoltech program leadership to help personnel transition to other work and ensure that students can complete their thesis and academic work.

Aside from Skoltech, Lester said that MIT has a “handful” of smaller engagements in or with Russia that have either been paused or are under review by the senior risk group.

During a discussion following Nobles and Lester’s presentation, Deputy Dean the Sloan School of Management Michael Cusumano asked whether MIT could “do something as an institution” to help displaced Ukrainian scholars, whether through partnerships with other universities or funds remaining from the Skoltech program.

Lester responded that MIT has yet to see many requests to support these scholars, mostly because “the immediate questions they face are ... about survival and securing the basics of food and accommodation and safety,” rather than their academic careers. Lester added that in the similar case of Afghan refugee scholars, MIT had formed an ad hoc Afghan Working Group to develop responses across the Institute and would likely also take an ad hoc approach to issues surrounding Ukrainian scholars.

Lester acknowledged that in light of multiple crises arising, there “would be some benefit to considering how we might develop a more systematic approach to this kind of engagement on humanitarian grounds.”

Aeronautics and Astronautics Professor Olivier de Weck PhD ’01 asked how MIT would support faculty “in limbo” after the termination of the Skoltech program. Lester responded that MIT would address these professors on a case-by-case basis.

EECS degree proposals
EECS Professors Leslie Kaelbling and Dennis Freeman PhD ’86 introduced proposals to establish a Bachelor of Science (SB) degree in Artificial Intelligence and Decision-Making (6-4) and a Master of Engineering (MEng) degree in Computer Science, Economics, and Data Science (6-14).

First proposed in Fall 2021, the 6-4 SB would allow students to de-

velop techniques for analyzing and synthesizing systems that “interact with an external world via perception, communication and action, and that learn, make decisions, and adapt in a changing environment,” according to Kaelbling’s presentation. The program would integrate disciplines from multiple departments, including electrical engineering, computer science, statistics, operations research, and brain and cognitive sciences.

The proposed MEng program for 6-14 would operate similarly to MEng programs for the 6-1, 6-2, 6-3, 6-7, and 6-9 majors, where students complete a fifth year of study with additional coursework and a thesis and have the opportunity to receive financial support through a research or teaching assistantship.

The 6-14 MEng program would be administered by a committee of faculty and administrative officers appointed jointly by the EECS and economics department heads. Admissions would be available to students who had completed their junior year in the 6-14 Bachelor’s program. Students would be advised by a member of the EECS or economics department, likely their undergraduate advisor.

Freeman said that enrollment in the 6-14 major has increased from 29 students in Fall 2018 to 126 in Fall 2022, and that both faculty and students have been very interested in the formation of an MEng program. Freeman added that students originally majoring in 6-14 have considered switching to 6-3 to take part in the MEng program.

Economics Professor Glenn Ellison PhD ’92 added that he has seen a “bigger lobbying campaign by students” requesting the 6-14 MEng program “than for any other issue” he has had in the department.

At present, approximately 44% of 6-1, 6-2, and 6-3 students pursue an MEng in their programs, so the number of students participating annually in the 6-14 MEng would likely be around 18.

Both proposals will be voted on at the April 20 faculty meeting; approval at the meeting would result in the programs being available to students beginning Fall 2022.

In response to the proposal for a 6-4 SB, Anthropology and Management Professor Susan Silbey expressed concern over how the program would administer its human- and decision-centric areas, saying that attaching explanations for human behavior to “machines with rapid and extensive data capacity” could have negative consequences without “understanding the fundamental problem” of “how human behavior is aggregated.”

Kaelbling welcomed discussion on the topic outside of the meeting, in the interest of time, but cited examples of classes jointly offered with non-EECS departments with flexible interpretations of human- and decision-centric areas.

In response to both proposals, Literature Professor Diana Henderson said that she was concerned

students would feel pressured to choose an EECS discipline over other options due to opportunities like the MEng program and the large number of undergraduates studying EECS.

Freeman and Undergraduate Officer in EECS Katrina LaCurts acknowledged that currently many students are enrolled in Course 6 majors, but that less than half choose to pursue an MEng, suggesting that a new MEng program would not put additional pressure on students.

Additionally, EECS Professor Martin Rinard and EECS Department Head Azu Ozdaglar PhD ’03 emphasized their willingness to collaborate with other departments, particularly humanities departments, to create more opportunities for and to encourage students to participate in cross-disciplinary initiatives such as SuperUROPs (Advanced Undergraduate Research Programs).

Rinard also proposed that other departments form MEng programs to create similar graduate opportunities for non-Course 6 students.

Digital thesis submission proposal

Professor Roger Levy, chair of the committee on the library system, presented a proposal to formalize a requirement for digital thesis submission.

Previously, MIT required physical thesis submission in order for archival preservation; though due to the pandemic however, starting in Spring 2020, the Institute’s emergency academic regulations resulted in a shift to requiring digital thesis submission. The proposal would make this shift permanent, changing the format of the thesis being submitted without otherwise modifying the thesis requirement.

Levy said that digital submission was found to be “cheaper, faster, and simpler,” waiving the fee needed for students to submit a physical thesis and no longer requiring the physical document to be scanned. Additionally, digital thesis submission is more environmentally-conscious and becoming more common at peer institutions.

The proposal states that digital thesis submission would also expand the MIT Libraries ability to accept digital supplementary materials along with the thesis and reduce the time between graduation and thesis access. Additional digital and physical components could also be submitted to the libraries as part of the record.

Faculty brought forward concerns about students potentially revising their theses after submission or otherwise protecting the archival copies from modification. Levy addressed these concerns by saying that the copies submitted to the libraries would be final, with no channels for revision.

Faculty also asked whether students would be able to embargo their thesis work after submission and questioned the policy that results in students’ theses copyrights

belonging to MIT. Levy said that students would still be able to embargo their theses and that changing the copyright policy would potentially be addressed in a different proposal.

Annual tuition and financial aid report

Provost Cynthia Barnhart PhD ’88 gave an annual report on changes to MIT’s tuition and financial aid.

In her report, Barnhart referred to MIT’s goal to remain “accessible to the best students regardless of their geographic or financial circumstances” while also keeping its full tuition cost competitive with that of MIT’s peers — Harvard University, Yale University, Princeton University, and Stanford University. Barnhart also said that MIT matches undergraduate and graduate tuition through graduate tuition subsidies and is a need-blind institution, committed to “meeting full financial need for everyone.”

Barnhart displayed a chart showing the increase of MIT’s tuition and fee increase overtime, from \$42,050 in 2013 to \$55,878 in 2021, similar to that of its peers (Harvard saw an increase from \$40,866 to \$55,587 in the same period.)

Barnhart also outlined metrics to measure MIT’s success in providing aid while remaining competitive with its peers, including yield for students admitted to both MIT and one of Harvard, Yale, Princeton, or Stanford. MIT saw an overall yield of 82% in 2021, yield of 88% for students admitted to both Yale and MIT, yield of 83% for students admitted to both Princeton and MIT, yield of 54% for students admitted to both Stanford and MIT, and yield of 48% to students admitted to both Harvard and MIT. Both overall yield and bilateral yield for admits to peer institutions have mostly increased in the past decade.

Barnhart also presented a chart of yield by income grouping, which showed that the percentage yield for most income groups was higher for students entering MIT in 2021 than in 2018–2020, with the exception of families with annual income between \$150,000 and \$199,999 and between \$250,000 and \$299,999. For those income groups, yield was significantly higher for students entering MIT in 2019.

Barnhart also mentioned that MIT’s financial aid expenditures have increased annually since fiscal year 2010, reflecting that the cost to MIT “and the price tag of our education has been going up at a rate faster than our students and their families’ capability to pay.”

Because MIT has a “commitment to meet need,” MIT’s “financial aid budget has been increasing every year,” Barnhart said.

In academic year 2020–21, MIT Scholarships summed to \$115M (lower than usual due to COVID-reduced costs), 57% students were MIT Scholarship recipients, and the median MIT Scholarship for a student was \$51,082 — 78% of total tuition, room and board, and other fees.

In the last academic year, 38% of undergraduates had free tuition and 20% were Federal Pell Grant recipients. Seven percent of undergraduates took out loans and 18% of graduating seniors borrowed to pay for tuition. The median debt at graduation for borrowers was \$15,721. Additionally, 58% of undergraduates had MIT or federal work study jobs and had average earnings of \$966 annually.

For the upcoming academic year 2022–23, MIT will see a 3.75% increase in tuition costs, a 3.7% increase in housing costs, and a 4.0% increase in dining costs. As a result, the financial aid budget will be increased to \$161.8M to account for these increases, to align with the College Board’s updated financial aid calculations overall, and to reflect the Institute’s goal to increase the income level for MIT’s free tuition guarantee from \$90,000 to \$140,000.

MIT Corporation-Faculty engagements

Chair of the Faculty Lily Tsai presented findings from the ad hoc committee on Corporation-faculty engagements, charged to review existing mechanisms of engagement between the MIT Corporation and faculty and to formulate recommendations for new ways of engagement.

The committee found that more two-way dialogue including real time exchange with questions and answers would be essential for “full discussion and the development of mutual understanding,” Tsai said.

Additionally, the committee determined that “more mechanisms for understanding faculty views of Institute-wide cross school priorities would be beneficial.”

To allow for these conversations, the committee decided on three proposals: random faculty and Corporation dinners or Zoom meetings scheduled around quarterly Corporation meetings, the invitation of the faculty chair to discussions of the executive committee on the Corporation regarding matters of significance to the faculty, and a speaking and discussion slot for the faculty chair at Corporation meetings upon the faculty chair’s request.

Slate of nominees
Deborah Fitzgerald, Chair of the Committee on Nominations, presented the slate of nominees for faculty chair and standing faculty committees. Literature Professor Mary Fuller was nominated for the position of Chair of the Faculty for the 2023–2025 term.

New members were nominated to the committees on academic performance, campus planning curricula, discipline, faculty policy, graduate programs, the library system, nominations, student life, undergraduate admissions and financial aid, undergraduate program, Harold E. Edgerton Faculty Achievement Award selection, and James R. Killian Jr. Faculty Achievement Award selection.

Faculty members will vote on the slate of nominees at the April faculty meeting.



RILA SHISHIDO—THE TECH

The MIT Symphony Orchestra’s spring concert featured Kalinnikov’s Symphony No. 1, Marquez’s Danzon No. 2, and Sarasate’s Carmen Fantasy, Friday.



FARIN TAVACOLI—THE TECH

MIT Wind Ensemble has their first concert of the semester, Saturday.

As we draw closer to the election April 4-5, now is the time for graduate students to become as informed as possible on these matters. It is essential that every eligible student make it a priority to vote: This election's outcome will be determined by a simple majority of those who vote, but will be binding on both voters and non-voters in the proposed bargaining unit.

OPEN LETTER

Ukraine is fighting the war that we should be fighting

The following letter is adapted from the speech given at the MIT Vigil Rally that took place March 3.

In the past week, the world has seen heroic images of Ukrainian resistance against Russian invasion. Students picking up arms to defend their homeland; civilians forming human walls to stop the enemy's advance; Ukrainians abroad organizing awareness and fundraising campaigns; Ukrainian President Volodymyr Zelensky standing his ground, unwavering on the front lines in Kyiv. Ukrainians' efforts have been portrayed as an act of self-defense, of patriotically defending their country against foreign invaders. What we need to realize is that Ukraine is not just fighting for itself — it is fighting for the freedom of people around the world.

Just a few hours after Russia invaded Ukraine, China sent a sortie of warplanes into Taiwanese airspace. North Korea fired yet another ballistic missile. The governments of Venezuela and Myanmar are continuing their human rights abuses. These incidents continue to happen because Russia is empowering these countries. The Ukrainian army is fighting, right now, not just to defend their homeland and their people but to defend us, to defend our freedom, and to defend democracies around the world.

In 2014, Russia annexed Crimea, and the world watched in silence: even the

sacrifices of the Euromaidan protests were not sufficient for us to act. In 2019, when China killed democracy in Hong Kong and in 2020, when Belarus brutally cracked down on peaceful protesters calling for fair elections, the world stayed silent. All these events, directly or indirectly, have contributed to the war in Ukraine today. Putin is sending troops to Ukraine through Crimea and Belarus; and it is because we, as democracies, failed to act in the eight years leading up to this war that now the Ukrainian people are suffering.

This war is not just about Ukraine. It is not just about Taiwan, South Korea, or some other far-away democracy that stands as the next domino to fall after Ukraine. Any country could be next. Any home, any family could wake up to the sounds of shelling and missile strikes. On March 2, Russia sent warplanes into the airspaces of Sweden and Japan. If the war in Ukraine isn't proof enough, this further demonstrates that being an ally of the free world — even being part of NATO — is not a guarantee of safety. Even in the U.S., there are people waging a war of misinformation; there are Americans supporting Putin unapologetically; there is the looming threat of authoritarianism trying to take over. This is what we are fighting against.

The current situation is not one in which we are trying to help Ukraine fight their war. It is one where brave Ukrainians are fighting our war, the war that we should be fighting in the first place. Ukrainians are fighting and dying to protect the ideals that we claim to uphold: freedom, liberty, democracy. Why is it that we are not fighting with them?

The free world has been large on words and small on actions in the past eight years. While a general atmosphere of appeasement certainly played a role, it has also been frustratingly vague when it comes to “how to help.” For governments, traditional diplomacy seemed to have lost its viability. For individuals, there have been very few options beyond “raising awareness” via social media. This time, however, the movement supporting Ukraine seems to have succeeded where previous attempts have failed.

Ukraine is remarkably adept at resisting their foe in this modern, digital age. Their proficiency spans all levels, from the highest echelons of government to each and every individual. President Zelensky, who won the 2019 election with a mostly virtual campaign, has forged an online persona of staunch, unwavering resistance. The Ukrainian Army has mastered the modern art of crowdfunding, which it has been practicing since 2014. Perhaps most awe-inspiring is the fortitude of individual Ukrainians, from those resisting the invasion on the front lines to those helping abroad. We see many displays of this courage here at MIT — Ukrainian members of our community who, despite bearing the pain, anger, and incessant dread of war, stood up and organized a massive ongoing campaign to offer us a chance to help.

Our Ukrainian friends are doing so much to tell us exactly how we can help. They are swallowing back tears to publicly recount the atrocities committed against their families. They are resisting the urge to fly home and pick up a rifle, so that they might be able to find some help for their country abroad. They are mustering the

tenacity to not constantly check the news and their messages, but instead focus on creating an entire support campaign from scratch. They are doing this for our sake, so that this time, unlike our past blunders, we actually have a chance to pull our weight in our own fight. Donate to support Ukraine — the National Bank of Ukraine has already made it as easy as clicking a few buttons, and the MIT Ukrainian community has made it even simpler. Pick up your phone. Call your representative. Demand MIT to act now.

MIT as an institution has valued the critical importance of ethics in science and the significance of science in ethics. It is time for us to once again stand up for these values and ensure that our actions reflect our beliefs. MIT should continue to publicly support its Ukrainian community. The administration should disclose its ties with Russian oligarchs, Russian oil, and reconsider the ethical implications of their investments. We should also leverage our political influence as an institution to amplify the voices of our Ukrainian community, and do our best to support Ukrainian students both financially and academically. Only in such a way can we, as an academic institution, live up to our commitment towards ethics and our responsibility towards society.

I am so proud of my Ukrainian friends for organizing this powerful, coordinated effort. They are doing so much just to offer us the chance to help, handed to us on a silver platter. Now, it is up to each and every one of us to act for Ukraine, and to defend ourselves.

Слава Україні!

Yu-Chi (Jacky) Cheng '23

LETTER TO THE EDITOR

Senior Associate Dean of Housing & Residential Services responds to “We are unionizing for quality and affordable housing”

To the editor,
I read last week's opinion piece "We are unionizing for quality and affordable housing" with great interest because our department shares the goal of providing quality and affordable housing for members of the graduate student community and because we have been working with many campus partners in recent years toward that goal.

Housing & Residential Services oversees on-campus housing assignments, as well as the repair, maintenance and stewardship of 19 residential houses. This includes eight graduate residences totaling 2,700 beds that can currently house up to 37% of MIT's graduate students. Our team is responsible for ensuring that residences are welcoming, safe, and support MIT's distinctive residential experience.

The opinion piece inaccurately characterized the Institute's residential system as being out of touch with graduate students' housing needs and offered an unfairly grim picture of the living conditions within our on-campus residence halls. It also claimed that a union will secure housing gains and a housing-related grievance process for graduate students in a collective bargaining agreement which, when you examine the collective bargaining agreements at Harvard and Columbia, has not occurred at these peer schools with graduate student unions.

I'd like to share my perspective about our longstanding efforts to improve the MIT graduate housing experience, including resident satisfaction with the on-campus housing experience, MIT's commitment to offering capacity to house nearly 50% of graduate

students, and the ongoing collaboration that continues to create positive outcomes for the student experience.

MIT shares our students' goal of providing quality, affordable housing.

We know that housing costs make up the largest portion of graduate students' budgets, whether they live on or off campus. MIT's housing inventory remains below the area market rates and our approach to rate-setting is informed by the Graduate Housing Working Group, which is composed of student leaders, Heads of House, and Institute leaders.

The Institute sets rates on an annual basis based on a variety of factors, including housing operational costs, and shares projections with graduate student leaders who then incorporate the proposed housing rates into their annual stipend recommendation calculations. Because of the ongoing COVID-19 pandemic, MIT did not increase housing rates in 2021–22, even as the Institute increased graduate student stipends by 6.25%. MIT also provides students with a variety of additional financial resources such as short- and long-term funding, and grants for graduate students with families.

Our goal is to provide a range of housing options — single rooms, efficiencies, one-bedroom, and multi-bedroom units in a mix of newer and older buildings — so students can make choices that best fit their circumstances. As is the case with any housing system, rate increases are necessary to cover annual increases in operational costs — including livable wages for the hundreds of staff members who help keep our 24/7 housing operation running.

As in any other housing system, buildings require regular maintenance and repairs. While the experiences described last week in The Tech do not paint an accurate picture of most residents' on-campus housing experience, I am always concerned whenever a resident has a negative experience and make sure we follow through on addressing those issues that do arise. We have a talented and committed team that is available to residents 24/7 to respond to building-related issues in partnership with the Department of Facilities. Longer-term, the MIT 2030 Framework will help us to address deferred maintenance across the campus and in the residence halls.

Our data show that graduate residents are overwhelmingly satisfied with their on-campus housing experience, and we are building more graduate residence halls.

According to survey data, 90% of respondents agree or strongly agree that they are satisfied with their choice to live on campus.

That's why MIT graduate students continue to choose to live on campus — and in response to that demand, MIT's residential system is in the midst of a significant expansion. By the fall of 2024, MIT will have delivered more than 1,075 new beds for graduate housing — surpassing a 950-bed commitment the Institute made in 2017 — which will provide capacity to house close to 50% of the graduate student population.

Existing collaboration with student leaders creates positive outcomes.

The partnership between the Institute, student government organizations and the Graduate Housing Working Group has led to

tangible improvements in the overall graduate housing experience. We have partnered to create renewable housing contract opportunities to enable students to extend their on-campus housing assignments, expanded the housing options available to couples and streamlined housing processes, including adapting the contract period to better align with when students arrive for the start of their programs.

With input from graduate student leaders, Heads of House and campus partners, we are upgrading our housing management system to improve our processes and offer a more user-friendly student experience. As part of this significant change, students will no longer need to go through a lottery process and will instead be able to select their desired housing unit. Through this new process, which will be launched this spring for the 2022–23 housing cycle, students will be able to view available housing options, compare different unit types and price points and select an on-campus housing option that meets their individual or family needs.

MIT is home to some of the most innovative thinkers on earth, and I am proud that many of our graduate students call our residence halls home. We will continue to work with partners across the Institute to make improvements to our operations, systems, and the conditions of our current buildings, while we also expand housing capacity to provide even more on-campus housing opportunities for graduate students.

David Friedrich
Senior Associate Dean,
Housing & Residential Services

Have something to say?
Write **opinion** for *The Tech*!
opinion@tech.mit.edu



OPINION

OPEN LETTER

An open letter on the considerations to be made about MIT graduate student unionization

We are writing as interested faculty, not at the request of the MIT administration. The possibility of MIT graduate students forming a workers’ union will be determined by an upcoming vote April 4–5. We fully support the right of graduate students to decide whether or not to unionize. At issue is the question of whether our students and our Institute would be better served by a relationship that positions students as “workers” in an industry-like organization or as academic partners and rising colleagues who, in the course of their educational program, contribute to our shared teaching and research missions. We urge our community to consider this question openly, broadly, and with the utmost care. In our view, unionization would represent a fundamental change in the academic partnerships between faculty and graduate students and could put at risk the critically important relationship between graduate student mentee and faculty mentor, potentially jeopardizing the leadership roles that our students and faculty hold in advancing the future of science, technology, and scholarship.

The relationship between workers and management in a unionized environ-

ment, as laid out under the National Labor Relations Act, reflects organizational structures drawn from the history of labor relationships in industry. Such a structure would position graduate education quite differently from its historic role in academia. By its nature, a unionized environment emphasizes the common experiences of workers over their individuality; it reduces flexibility in favor of a highly structured relationship between manager and workers.

We believe that such industry-framed relationships are ill-suited to the nature of and rapidly evolving opportunities in graduate education, where individuality and flexibility are necessary to foster a dynamic trajectory for graduate students as they move from undergraduate degree holders to full participants in discovery and teaching. Interposing a bureaucratic and potentially oppositional relationship of “workers and management” could undermine the success of this critically important step in career evolution. We welcome our graduate students into our programs as partners and colleagues in the pursuit and transmission of knowledge, and we feel that the best way to do so is with an unwavering commitment to the development of policies, programs, and a culture that will support collaborative, flexible, and, above all, collegial interactions.

We believe, and many have articulated, that graduate students choose to come to MIT because of the departmental and faculty advisors who will work with them individually, as caring mentors, to develop foundational knowledge and to identify

topics at the forefront of their field for a thesis. In many cases, students do their thesis work by becoming research assistants (RAs), and they receive stipends supported by grants from federal, nonprofit, or for-profit organizations. For graduate students, the primary value of an RAship comes from the training process and how it prepares them for a lifetime of contribution to society. The team of mentor and student, interacting together in a partnership and as collaborators, is critical for this training process to be effective.

In preparing graduate students for a professional career, MIT also introduces them to the education of others, often by having students serve as teaching assistants (TAs). In this role, again, graduate students serving as TAs are mentored by the MIT faculty and often receive specialized training that creates a positive experience for both the TAs and their students. MIT graduate programs integrate research, communication, and disciplinary training, and no matter what profession graduate students ultimately pursue, the training they receive in these areas greatly helps them further their careers.

MIT’s graduate students do different kinds of research and teaching depending on their disciplines and subdisciplines. We afford autonomy to the faculty of each graduate program, within generally accepted parameters, to allow them to design programs that address evolving critical topics and rapid breakthroughs in research. Innovation at speed is one of our greatest assets, and that speed requires flexibility and interdisciplinary variation. Unionization, with its externally imposed

and uniform requirements, risks hampering the development of individual graduate students; it might also impede our ability as a university to adapt to new opportunities and challenges.

Excellent, internationally recognized graduate programs and support for our students are central to our mission; they are not optional accessories. Graduate students represent the future of our disciplines — and of MIT itself. We compete to bring to our campus the world’s best students and faculty; there are no contributors more important to our mission and ambition. As the training ground for tomorrow’s leaders, graduate education plays a particularly critical role in the continuous reinvention of our disciplines and our universities, which means that the question now under consideration is of the utmost importance. Is unionization in the best interests of our graduate students and their education?

Because of the risks of constraining the individuality, flexibility, and collaborative partnerships of student-faculty relationships that enable us to be leaders in research, science, and education, we believe that unionization is not in the best interests of our graduate students and their training. We believe that those relationships, and the leadership roles of our students and MIT, should not be placed in jeopardy unless there is overwhelming evidence that it is necessary.

Phillip A. Sharp
Institute Professor and Professor of Biology

Alan D. Grossman
Professor and Head, Department of Biology

GUEST COLUMN

Without a union, MIT is failing GRAs and undergraduates alike

Broken buildings and precarious housing can’t be fixed by individual action

By Sydney Dolan, Ki-Jana Carter, and Alyssa Rudelis

As a graduate resident advisor (GRA), I provide guidance, resources, and a sense of community to the undergraduate students that live in MIT’s residential facilities. I live with and get to know my residents, help them build community with each other through social events, and support them as they navigate the challenges of being college students. Interviewing to be a GRA at MIT is a very thorough process, involving multiple rounds of interviews with both housing staff and students. In return for GRA-ing, I do not pay rent for my room. While working for an institution that plans for graduate student-workers to be severely rent burdened, the ability to save money on a graduate stipend is a huge financial advantage.

Starting my first semester as a GRA last fall, I was thrilled to get started and meet all my residents. However, I quickly discovered numerous issues. When I moved into my room, the ceiling leaked every time it rained. It stayed this way for three months. MIT administration has neglected to maintain their buildings for years, all while charging the same price for a crumbling building. Simple tasks like repairing the washer are left on

hold for months with no update on when the repairs will be performed. MIT has identified over \$2 billion in maintenance backlog on campus, and by their own admission, many of the undergraduate houses are in “poor condition.”

Like many other GRAs, I quickly discovered how hard it was to advocate for myself in this role. When submitting requests for repairs, my concerns were quickly written off as a personal failure rather than an earnest request. In response to issues with heating that left me working in my room at my desk in a down jacket and sleeping in my winter camping sleeping bag liner, I was advised to use the thermostat. Trying to maintain adequate living conditions was exhausting, frustrating, and totally disruptive to my research, my studies, and my GRA responsibilities.

I was placed in the precarious situation of having to report concerns to the very people that could drop me as a GRA at any time for any reason. (The GRA agreement states: “An appointment may be terminated at any time if your House Leadership and/or Residential Education determine you are not fulfilling all written expectations and/or the responsibility of the role”). Initially, I felt like I didn’t have a right to raise concerns about

my living situation — “You don’t pay rent,” I would tell myself. “How can you possibly complain?” The extent of the issues with my living space ultimately left me without a choice, but coordinating meetings with MIT’s administration requires immense effort despite inconsistent results.

These issues are not uncommon for GRAs. Moreover, it’s not just GRAs who are affected by building negligence. The students living in these houses deserve to have a building that is liveable and fully functioning. And if we as GRAs can’t even get our own heating fixed in a reasonable time, how can we possibly help our undergraduates overcome their own challenges at MIT?

How would a union help?

When the union reached out to me after hearing about my ceiling, they provided me with legal resources and support, even before being officially recognized. It was immensely helpful to have a group of fellow graduate student-workers helping me figure out how to navigate my situation, especially because I had exhausted all formal channels.

With a union, GRAs and all other graduate students will have the collective power we need to resolve our issues. We would be able to:

- **Negotiate a contract:** GRA working and living conditions are related to the larger housing issue, which will be a major concern in negotiations with MIT.
- **File grievances:** With a union, GRAs could file grievances to resolve our issues together rather than being forced to deal with them as isolated individuals who can easily be ignored.

- **Have a permanent organization to fight for our needs:** MIT has already shown, and is showing right now, that they do respond to pressure when we’re organized. The union provides an ongoing organization that can apply that pressure when we need it.

Graduate students deserve decent living conditions, and a union can provide the support for even niche situations like mine to make sure my voice is heard. To win our union, we need to show MIT that we are united by signing the VOTE YES PETITION and showing up to vote yes for our union April 4–5.

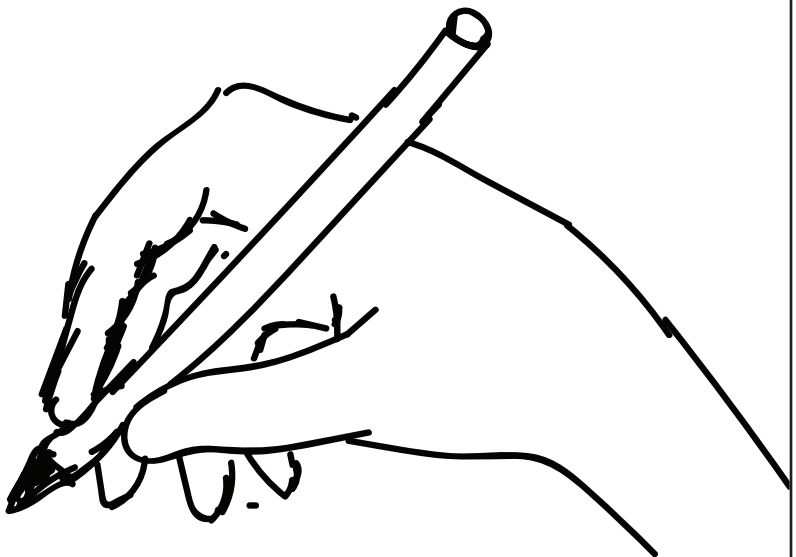
Sydney Dolan is a third-year PhD student in AeroAstro and a GRA in a sorority.

Ki-Jana Carter is a fifth-year PhD student in Materials Science and Engineering and a GRA in Baker House.

Alyssa Rudelis is a fourth-year PhD student in Physics and a GRA in Maseeh Hall.

Are you handy with a pen?

join @ tech.mit.edu





Next House hosted a Pi Day event where students were voted to be pied in the face, Monday.

FRANKIE SCHULTE—THE TECH



MIT's Undergraduate Mathematics association holds a Pi Day social, Monday.

FARIN TAVACOLI—THE TECH



Students pose in the aftermath of Next House's Pi Day Celebration, Monday.

ALEXA-RAE SIMAO—THE TECH



Happy Pi Day

On Pi Day, not only do MIT students celebrate the mathematical constant's anniversary of our acceptance, but many dormitories, living offices baked and gave out campus





Students cut pies to be eaten at Next House's Pi Day Celebration, Monday.

ALEXA-RAE SIMAO—THE TECH

ay 2022!

T students celebrate the
Pi, we celebrate the
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ts.

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Pi day print on the Kresge Oval walkway, Monday.

RILA SHISHIDO

VIVIAN’S REFLECTIONS

Dear friend,
How well do I know you?

By Vivian Hir
STAFF WRITER

Dear friend,

I thought the years of communicating online were sufficient for maintaining a close friendship until I bought *I Wrote a Book About You* for your birthday last year. I thought that completing the open-ended prompts wouldn’t be too difficult since we have texted each other almost every single day since middle school. We have had a few in-person interactions, and I can still vividly recall memories from the summer of 2015 and even some from when we were children a decade ago. So I thought this would be enough to maintain our friendship.

But I was wrong. While most of the prompts in the book were about your personality and character, some prompts assumed that you existed in my physical world. One of the prompts asked what activities we enjoyed doing together. I spent what felt like a long time thinking of how to fill in the blank. Zoom calls sounded inadequate, and the word “Zoom” made me think of the pandemic even though the reason we had online video calls was distance, not COVID-19. Writing down “long, spontaneous text conversations” also didn’t satisfy me. Thoughts that I previously never considered started rising to the surface of my consciousness. If I hadn’t left Boulder, Colorado, what would we have done together growing up?

The birthday gift that was meant to celebrate our long-distance friendship only made me wonder what our friendship lacked. I thought about things we missed out on that other friends experienced together: celebrating graduation, going to prom, having sleepovers, and so much more. I know that it is useless to think about changing the past, but regret flooded me nevertheless. What was I doing that summer when we were in the same place? Why was I wasting time on your computer when we could have been doing something more meaningful? I took things for granted. I had assumed that I would see you again in a year or two. But the reality is that nothing in the future is certain.

I have to admit that after I mailed that book to you, I started questioning whether I could call you my closest friend. I know your insecurities, secrets, and aspirations, but can I really know you well despite having no day-to-day interactions with you? What are you like as a physical being?

I know that my question sounds strange considering I spent nearly the whole month of June with you five-and-a-half years ago. As the years go on, however, you gradually feel more abstract, as if you are just a part of cyberspace. I recognize your voice, but I read your text messages in my head in my own. Most of the time, I view your existence in the form of the active speech bubble in my messages app. I wonder what your college life is like hundreds of miles away, even the mundane things, like walking across

campus or eating dinner with your friends. If you made daily vlogs, I would watch them religiously just to know how you are doing in real life.

At the same time, however, I wonder if the online nature of our friendship is the reason I am still friends with you. As much as I would like to think that I know you as a multifaceted person, the truth is that we can selectively choose aspects of ourselves to present online. Consequently, we can choose what to hide from others. I was aware of the fact that you disagreed with me on a number of things in middle and high school, but that never really bothered me. I just told myself to accept our differences.

Would I have ended up drifting away from you over time if we went to the same school? Would our differences have seemed more striking? To be honest, I don’t know, and that scares me. Yet our friendship still exists to this day, and I am grateful for that. You are the only person that I can talk to about my vulnerabilities and secrets. You know random quirks about me that I never share with others — pictures of my favorite stuffed animals, my mortifying elementary school diary entries, embarrassing iMovie trailers we made. Out of the friends I have made in the various places that I have lived, you are the only one that I have still maintained contact with since childhood.

Although each year only seems to prevent us from reuniting, I still cling to the possibility that I will see you again someday. I

imagine meeting you in New York City, playing your favorite song *Harlem* by New Politics in the 125th Street station, pretending that we are the band members in the music video. I daydream about spending the whole day walking around New York City with you, exploring the various neighborhoods during our adventures.

Even if New York City doesn’t work out for both of us, my dreams won’t stop there. Maybe I can surprise you when I visit your college campus. Maybe I can fly back to Boulder and relive those simple summer days of early adolescence with you: walking around the neighborhood after dinner, appreciating the sunset’s vibrant colors, playing on the swings at the local playground, enjoying the relaxing environment of Boulder Creek.

I know that I have shared many of my thoughts and feelings in this letter, but I also want to know what you think. Have you also imagined a version of our friendship that was face-to-face? Have you worried about how awkward and mechanical our in-person interactions might be when we meet again? I wish that I had conversations with you about what distance does to our relationship because it is the lack of this discussion that makes me feel farther away from you. I think what I seek from you is not mere connection, but conversation, because these two words do not mean the same thing.

Your close friend,
Vivian

CAMPUS LIFE CAMPUS LIFE CAMPUS L

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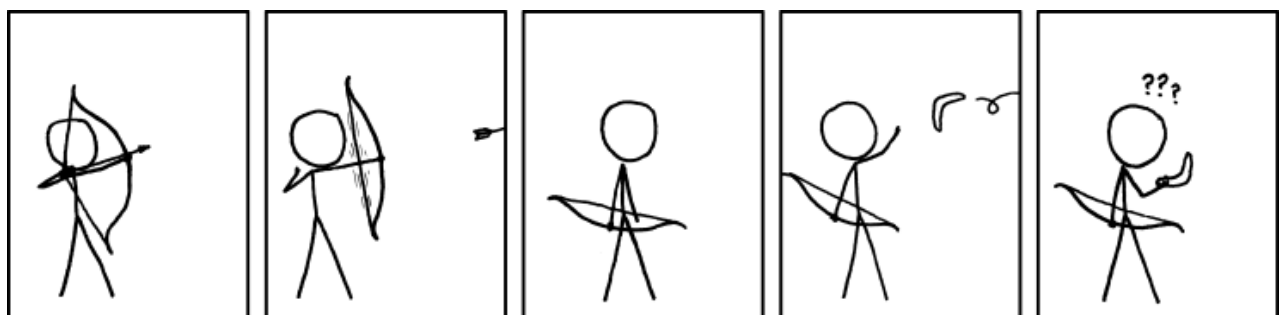
Pecan Pi

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	6			5			1	
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	90x		6		
4		72x		6x	6
11+					2x
	80x				
3		1-		30x	

Past/Present/Future by Sally R. Stein

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13						14					15			
16						17					18			
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55	56	57	58				59	60				61	62	63
64						65				66				
67						68				69				
70						71				72				



'The Return of the Boomerang' would make a great movie title.

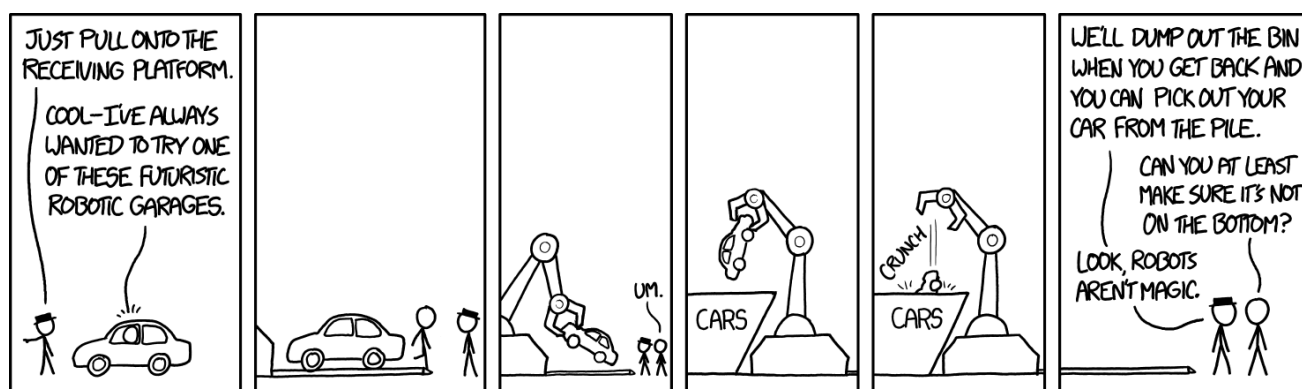
Banana Cream Pi

Solution, page 14

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Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

[1651] Robotic Garage



But listen, if getting your car out from under the pile is REALLY important to you, we do have an axe you can borrow.

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@mit




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with Maia Weinstock
in conversation with Evelyn Hu

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Image: Courtesy of Robert Merton

Robert C. Merton

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KILLIAN LECTURES
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MIT Massachusetts
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Technology

Solution to Pumpkin Pi

from page 12

1	5	4	3	7	2	6	8	9
6	2	7	5	9	8	4	3	1
9	3	8	6	1	4	7	5	2
7	9	2	1	4	3	8	6	5
8	6	3	9	5	7	2	1	4
5	4	1	8	2	6	3	9	7
3	7	9	2	6	1	5	4	8
2	1	6	4	8	5	9	7	3
4	8	5	7	3	9	1	2	6

Solution to Pecan Pi

from page 12

1	2	6	5	4	3
2	3	1	6	5	4
4	5	3	2	1	6
5	6	4	3	2	1
6	1	5	4	3	2
3	4	2	1	6	5

Solution to Banana

from page 13

6	8	4	7	1	9	2	3	5
5	1	9	8	2	3	6	4	7
7	3	2	5	6	4	1	8	9
2	6	8	4	5	7	3	9	1
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4	9	5	1	3	8	7	2	6
8	5	7	6	4	2	9	1	3
1	2	3	9	7	5	8	6	4
9	4	6	3	8	1	5	7	2

Solution to Past/Present

from page 12

MAGI	TIPS	ITEM
SIRE	IDOL	SWAY
PLANS	ELSE	LIST
FEBRUARY	SEVENTH	
EEL	EVE	
TSK	SOB	ERRATA
OHO	OUST	SONIC
MARCH	FOURTEENTH	
ELENA	YEAR	OLE
STANZA	PUP	YES
ETC	SIP	
APRIL	EIGHTEENTH	
LAIR	AREA	CAIRO
ALSO	SCAM	ERNIE
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