thetech.com

Volume 139, Number 21

FRI: 57°F | 43°F Breezy with Chance Showers



Thursday, October 3, 2019



Students come together to vocalize their concerns towards President Reif's and the greater MIT administration's treatment of issues such as the Epstein scandal, David Koch's legacy, and more at the MIT & Epstein Student Forum on Tuesday.

MIT-Epstein student forum held Tuesday

Reif, UA, GSC, senior admin. present

By Kristina Chen

The Undergraduate Association and Graduate Student Council hosted a student forum Tuesday to discuss concerns about MIT's relations with Jeffrey Epstein, the late financier accused of sex trafficking. Undergraduate and graduate students spoke about their disappointment in the Institute's leadership with respect to transparency in accepting donations, treatment of female-identifying members of the community, and prioritization of money over student sentiment.

Over 350 students attended the forum, as well as President L. Rafael Reif, Chancellor Cynthia

Barnhart PhD '88, and 22 deans and department heads including Vice Chancellor Ian Waitz and Vice President and Dean for Student Life Suzy Nelson.

UA President Mahi Elango '20 began the forum by saying, "Our discussion today is not only about Epstein, but also about the many axes about which we can feel and think our way through these difficult questions," such as "our cultural treatment of women at MIT," "our organizational structure and shared governing system, including the role of individual judgement," "our process for vetting and accepting funds," and "our fundamental values

Epstein Forum, Page 3

Tenenbaum given 'genius' award

Money will fund computational cognitive science projects

By Kerri Lu

Brain and Cognitive Sciences professor Josh Tenenbaum PhD '99 was awarded a MacArthur Fellowship Sept. 25. Tenenbaum leads research initiatives in the Computer Science and Artificial Intelligence Laboratory, the Center for Brains, Minds, and Machines (CBMM), and the MIT Quest for Intelligence. The Tech spoke to Tenenbaum about his work and the field of computational cognitive science.

This interview has been edited for length and clarity.

The Tech: What does winning the MacArthur Fellowship mean

Tenenbaum: It's obviously an incredible honor. Informally, it's called the "genius" award, but most of the work I do is very collaborative, so to me it means recognition for being able to do great work in collaboration with amazing people.

TT: How will you use the grant to further your research?

Tenenbaum: One of the things I might use the grant for is to seed new, far-out, crazy projects. The other thing is to support programs that increase access to and participation in our field for people from underrepresented groups. We have some very good programs in our department that don't get nearly as much funding as they deserve, and I feel lucky that I can use some of my funding to support these programs.

TT: Computational cognitive science seems to be a fairly new field. What are some of the most exciting research discoveries you've made at MIT?

Tenenbaum: "Discovery" is a funny word because in a lot of areas of science, it isn't so much discovery, but a kind of understanding. We study common sense. While a machine might, in learning a concept, require hundreds of thousands of examples provided by a human engineer or user who has some dataset, a child learning a

concept might learn from only one or two examples.

Imagine growing up in a city where there aren't any horses typically walking down the streets. The first time you see a horse, it's a really exciting event, and your parents might say, "Look! A horse!" And that one instance might be enough to learn what that word means, to be able to figure out which things in the world are horses and which things aren't. You can get that concept, learn a word for it, and be able to generalize from just that one example. Those are some of the amazing things that people learn, and we're able to some extent describe how they do that using computation and mathematics.

TT: What work did you envision yourself doing when you first came to MIT for graduate school? How has that vision evolved over time?

Tenenbaum: When I came to MIT for grad school, I imagined

MacArthur, Page 11



A variety of hand-blown pumpkins dazzles visitors Monday in the Great Glass Pumpkin Patch. The installation, held every fall by the MIT Glass Lab, showcases work from students of all skill levels

IN SHORT

ing today 8 a.m. to 6 p.m. at Walker Memorial.

The deadline for dropping half**term subjects** offered in the first half of term is Oct. 4.

Class of 2020 students applying for a double major must do so by

Interested in **joining** *The Tech*? Stop by for dinner Sunday at 6 p.m. or email join@tech.mit.edu.

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Overnight utility work starts outside Edgerton

Construction independent of MIT operations will take place for four weeks

By Wenbo Wu STAFF REPORTER

Overnight utility work by Eversource Electric started Monday on Albany Street outside Edgerton House, a graduate student dorm, and will continue for the next four weeks. Residents have raised concerns about the noise and vibration possibly disrupting sleep.

Options for temporary housing and other accommodations are available to Edgerton residents but are limited in space. Because the construction is independent of MIT

operations, there is little Housing and Residential Services (HRS) and the Division of Student Life can do other than advocating for Edgerton's residents.

In an email to Edgerton House residents last Friday, Dennis Collins, director of capital renewal and renovation in the DSL, informed residents of the work and wrote that they "should anticipate hearing some noise and feel some vibration during this three-week project."

There's no good-faith effort by MIT to try to curb the fact that they were going to do this overnight construction," said Chris Lloyd G, a resident of Edgerton, in an interview with The Tech Monday.

"I felt like there should have been a longer period of time where students were warned," said Lloyd, who was offered a noise machine. which "was only made available to me when I reached out."

In an email to The Tech Tuesday, Alex Joerger G, vice-president of the Graduate Student Council, wrote that the "GSC has not been informed about the overnight construction or potential disturbances for student life."

In an email to The Tech Wednesday, David Friedrich, senior associate dean in HRS, wrote that HRS is "in touch with the project team to get updates and advocate for residents living near the worksite."

Collins wrote in a follow-up email to Edgerton House residents Tuesday that "housing can be arranged in other parts of campus on a case-by-case basis utilizing a limited number of units that are currently vacant. While space is not unlimited, we want to be respon-

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DIVESTMENT

Fossil fuel divestment: MIT should be leading the fight against climate change. Instead, it's lagging behind.

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Leo and Yuri's lives collide. ARTS, p. 6

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WEATHER

A rainy week across the country

By Sarah Weidman STAFF METEOROLOGIST

After such a beautiful hot weekend. Boston has returned to fall. A cold front blew across the country this past week, passing over the northeast US yesterday, bringing in the heavy rainstorm yesterday. The same front caused record rainfall across the country, dropping over two inches of rain in some parts of middle America. Expect to see a bit more rain later tonight as another frontal boundary passes by, it but shouldn't be as strong as the rain we saw yesterday. Friday is projected to be extremely breezy, with gusts up to 30 mph. Don't be deceived by the relatively mild temperatures, as the wind will make the temperatures feel much colder than they are. The weekend will bring back the sun, but temperatures will remain cool. Enjoy the beautiful fall weather while you have the chance!

Hints of cold can be seen in many parts of the country. The western US had its first big snowstorm of the season this past week, dropping up to 4 feet of snow in some parts of the Montana Rockies! It was a record storm for the month, and lucky school children had their first snowday of the year in late September. Although we likely will not see snow in Boston for another month or more, this storm acts as a reminder of even colder weather yet to come later this season.

Extended Forecast

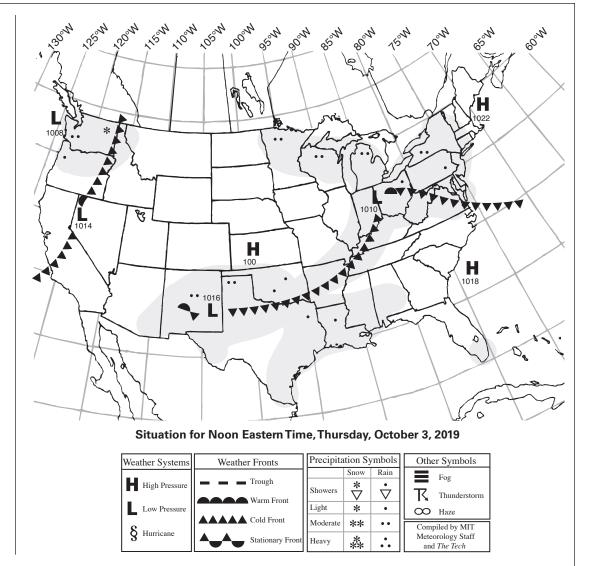
Today: Mostly cloudy. High around 56 °F (13 °C). North, then east wind around 8-12 mph.

Tonight: Rain. Low around 53 °F (12 °C). Southeast winds around 8-10 mph.

Friday: Breezy, with chance of showers. High around 57 °F (14 °C) and low around 43 °F (6 °C). North winds at 10-20 mph, with gusts up to 30 mph.

Saturday: Sunny. High around 57 °F (14 °C) and low around 48 °F (9 °C). North, then east winds around 5-7 mph.

Sunday: Mostly sunny. High around 66 °F (19 °C).



Proposed federal rules threaten grad student unionization

New policy would no longer require universities to recognize graduate student unions

By Ronak Roy

Proposed new rules by the National Labor Relations Board would effectively revoke the right of graduate students at private universities to unionize. While graduate students at MIT are not unionized, the proposed ruling would affect unionization efforts of graduate students across the country.

The proposal considers the relationships between graduate students and universities "primarily educational in nature," rather than economic. It would allow universities to voluntarily recognize graduate student unions, but does not guarantee students the right to unionize.

While there have been initiatives for MIT graduate students to unionize — a survey conducted in January 2019 found that over 60 percent of graduate students support unionization — the official policy platform of the MIT Graduate Student Council does not include a stance on graduate student unionization. In an email to The Tech, GSC External Affairs Board Chair Jack Reid G wrote, "The Graduate Student Council is not currently involved with any unionization efforts here at MIT."

However, the GSC is a member of the National Association of Graduate-Professional Students. The official platform of the NAGPS states that the association "supports the rights of students to decide to organize, and supports the efforts of students to unionize at their individual universities.'

In an email to The Tech, GSC President Peter Su G wrote that, while the GSC does not have an official stance on unionization, "we recognize that graduate students have both an educative and an economic role within the university, and the GSC seeks to advocate for both aspects of graduate students'

According to the MIT Office of Graduate Education's website, "the Institute believes that its relationship with its graduate teaching and research assistants is primarily an educational one and that unionization of graduate students could disrupt academic programs, mentoring and research."

The OGE did not respond to a request for comment about the Institute's potential response if, under the new rules, graduate students unionized.

The current rules that give graduate students the right to unionize result from a 2016 decision made by the NLRB under the Obama administration, which ruled in favor of graduate students in a case brought by Columbia University.

The proposed new reversal is one in a series of conflicting rulings by the board — the right to unionize was preserved in 2000 by the Clinton administration's NLRB in a case brought by New York University, but later reversed in 2004 by a ruling by the Bush administration's NLRB in a case brought by Brown University.

During the Columbia case, MIT joined eight other universities in filing a brief with the NLRB that called for graduate students to not be recognized as employees.

Many universities have expressed resistance to recognizing graduate student unions. Graduate students at universities including Yale University, the University of Pennsylvania, and the University of Chicago previously submitted petitions to the NLRB seeking official certification, but withdrew them following new member appointments to the board in 2018.



Students queue up for food at a UPOP information session in front of the Student Center Friday.

Grad students can ask for alternate accommodations

Edgerton, from Page 1

sive to those whose circumstances

Graduate residents can still arrange for accommodations. Collins, in the follow-up email, explained that students "who are in distress after hours (5pm-9am or on weekends) should call the Dean on Call" for a place to sleep for the night.

"It appears that the overnight construction is not connected to Edgerton in-house work, but construction on Albany Street itself," Joerger wrote in his email. "According to our source, the City of Cambridge

does not allow to close Albany during the day, so work seems to be scheduled for 7 pm to 5 am."

According to Collins' email Tuesday, the utility work would consist of digging pits with vac trucks, which generates noise. "The project will start at Cross Street work toward Mass Ave, so it will move away from Edgerton as it progresses," Collins wrote.

"Because this is a public utility project, however, neither HRS nor DSL have control over Eversource's plans," Friedrich wrote in an email statement to The Tech Wednesday.

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THURSDAY, OCTOBER 3, 2019 THE TECH 3

Students express disappointment and demand institutional change

Epstein Forum, from Page 1

around technology and knowledge production."

She was followed by GSC President Peter Su G, who informed attendees of the forum guidelines each student speaker in the queue was allowed to speak for two minutes and would be monitored by student moderators - and introduced Reif, who delivered his open-

"The past few weeks have been a time of great distress for our community. I expect that the extant situation has left you feeling sad, disappointed, hurt, and angry, including angry at me, so I want to begin by saying, with my whole heart, that I am deeply sorry for the actions I took and failed to take that have been part of bringing this trouble to all of you, the students of MIT," Reif

Reif then addressed the issues surrounding sources of funding. "In this time of growing fortunes and shrinking federal funds, we need to look at everything, from the changing nature of the donor population, to how we should weigh the political, physical, cultural, and economic impacts."

He also spoke about the attitudes toward the Institute's female population: "Female faculty, students, and staff across MIT are telling me that this is our last straw, that allowing Jeffrey Epstein to stain our reputation was only the latest example of how many in our community devalue the lives, experiences, and contributions of women and girls."

Reif concluded his remarks by stating his intentions for the future of the Institute and the involvement of students, saying, "I'm committed to make this moment of crisis a moment of reckoning in our turn toward real accountability, and I believe that in the process, there will be a very important role for students because the future of MIT belongs to you. ... I believe that together, we can find a way to transform so much pain for so many people into some enduring good

The forum then opened the floor to students who wished to speak. There were 27 students who spoke, including members of student organizations such as MIT Students Against War and UnKoch My Campus. Many expressed disappointment in the administration's behavior and demanded greater consideration of students' needs

Several student speakers cited other questionable donors to the Institute besides Epstein.

"We have seen nothing but a fundamental betrayal of the trust invested into you, the senior administration. We, as students, have told you about these concerns repeatedly and consistently," Lilly Chin G said.

"Fossil Free MIT warned you about the dangers of taking the Koch brothers' money. ... MIT Students Against War protested against your involvement with MBS, [Henry] Kissinger, and Chinese surveillance companies; you ignored them," Chin continued, using an abbreviation for Saudi Arabian Crown Prince Mohammed bin

"All of these things have been ignored because donor money has been shown to trump student demands," Chin said. "Please do not sweep this scandal under the rug, but take it as a learning opportunity to stop ignoring students over donors."

Husayn Karimi G questioned the ethics of the College of Computing, funded by Stephen A. Schwarzman. "One thing we can learn from the Epstein scandal is that there's no such thing as money without strings attached. How can MIT talk about a new college being at the forefront of ethics, when its main funder was a Trump advisor, is pushing poor people out of their homes, partnering with some of the most repressive governments in the world, and burning down our planet?

"How can MIT possibly reconcile these values? ... This is a question directly to you, Rafael Reif, why should we believe you? And why should you still be our president?"

Reif responded, "I'm an open book; people know how I think, and people know what I think. I strongly believe that when we make a mistake, as I did in this case, we need to learn from those mistakes. And we need to try to do the best we can to repair the damage."

When asked what he intended to do with these donations, Reif answered, "The Institution does what it wants to do with a gift for research, but it's not controlled by the donor; that's the level of principle we have right now. That may have worked very well in the past, but it just doesn't work anymore today, so those principles have to be revisited. ... That's something we're going to be doing exactly now. We're going to be involving the community to address those principles."

Other student speakers expressed their discomfort with being on a campus that had accepted donations from Epstein and their dissatisfaction with how little the administration had done to acknowledge their trauma.

"Why has the senior administration forgotten to even mention survivors of sexual violence and women-identifying folks at MIT who have been triggered like myself by the Epstein incident?" Mani Mengiste G asked.

"This has seriously affected us and we have not received one email stating resources at MIT, there has been no additional funding given to be VPR to support us," Mengiste said, referring to Violence Prevention & Response.

Lindsey Backman G said, "I'm really tired of the sympathy toward gender-based discrimination but lack of action. I want more resources for VPR and MIT mental health. There should be enough counselors for all students here, and it's also so crazy to me that to this day, we still don't have support groups for survivors of sexual trauma."

Reif addressed these accusations towards the end of the forum, saying, "It was extremely painful to see all the survivors that were reliving their pain because of this situation, and I'm extremely sorry to

see you reliving all of that horrible experience."

"I'm going to check my statements; I thought I commented on that. [If] I didn't, ... it was a tremendous oversight," Reif said.

Speakers also demanded that Professor Seth Lloyd, who accepted gifts from Epstein and visited him in prison, resign.

Eleanor Graham '20, a student who dropped Lloyd's quantum computing class, said, "By letting Professor Lloyd teach, you are outsourcing your moral decisions to us, the students."

"Simply by choosing what to put in our schedule, [we are] being asked to make a moral decision about what we support and what we can condone. That is not our job as students," Graham said. "You should be making those decisions."

Neil Gaikwad G said, "I think we need to reflect on the culture of research, science, engineering, and

Regarding discussions of faculty hiring, Gaikwad asked, "How many times do we hear what's the character of this person, what kind of human values does this person have? Maybe this is the litmus test for all of us," which will "determine whether we have made any progress ... to define the science, to define the academic, and to define the future of this great institution."

Though many student speakers were disillusioned by the administration's role in accepting and anonymizing Epstein's donations, some thanked Reif for his willingness to listen and his presence at the forum.

Addressing Reif, Chelsea Hodgkins G said, "It's not respectful that the MIT corporation is not here. I applaud you that you're here. I appreciate that you're here. And the fact that it took this long, ... that's water under the bridge from where I'm coming from."

'The corporation is a group of 11 executives ... that are dictating all of this. And to be honest, if you want to help usher in a cultural change, serve as a door: help us open that door to get on the board, release the documents, stand behind the things

that you're claiming to uphold as president," Hodgkins continued.

Students also described changes they hoped to see at the Institute, including greater transparency regarding donations and a more democratic system for administrative procedures.

"From undergraduates to graduate students to faculty to staff and to admin, we all deserve a seat at the table. A community is defined by its constituents, and if we are to cultivate an ethical MIT, we must be open and honest with one another," Luis Becerra Solis '22 said.

"I implore the administration to not further obfuscate any of its interactions with any contributors of any kind. Information regarding programs and facilities funding must be made open to the MIT community. Candid and honest discussion must be continuous and will not stop at this forum," Solis added.

Alonso Espinosa-Domínguez '20 emphasized the potential of student organization in reforming the Institute, "We really have to, as students, pause, and really critically examine whose interests the Institute protects."

"If you want to change the nature of that, it's not really with talking with the administration. The power to change it lies with us as a student body," Espinosa-Domín-

"It's amazing that the community has come together to bring all of the different perspectives to address the issues and the flaws that exist in the MIT system. I'm just so proud of everyone who spoke up," Ellie Simonson G said in an interview with The Tech after the student forum. "Once we hear each other's suggestions, we can come together to start the changes that we want to see in our community."

Reif ended the forum by saying, "Let me just make it clear that I respect the views you expressed."

"I would have enjoyed much more to have an actual conversation," Reif said. "I would love to figure out a way to do that, to have a conversation so that we can actually hear each other and truly learn from each other."



Comedians Bo Burnham and Jonny Sun talk about social media's effects on mental health for a packed audience in 26-100 Friday.

Volume VVV, Number NNNN

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LETTER TO THE EDITOR

Alumnus on the sources of MIT's donations

To the editors,

What would it take for MIT to end its reliance on problematic, ultra-rich donors? Gifts make up a relatively small 10 percent of MIT's total revenue and are used for scholarships, fellowships, professorships,

research, educational programming, student life activities, and building construction and renovation. In fiscal year 2019, gifts and pledges totaled \$602.1 million. MIT has 137,765 living alumni, but only 33 percent of them donate to MIT. If every alumnus donated \$4,370 per year, equivalent to 4.9 percent of the mean starting salary for graduates with an SB degree, MIT would not need to take large contributions from the likes of Epstein, Schwarzman, and Koch.

Numerous student and faculty groups have petitioned the administration for

change in recent years, including women faculty, UnKoch MIT, MIT Students Against War, MIT KSA, undergraduate women, LGBTQ+ students, Fossil Free MIT, Black Students Union, and Black Graduate Student Association. Despite some progress, most recommendations remain unmet. If MIT were serious about making a better world, it would start at home with these community concerns, and perhaps alumni would be proud to donate to an institution they believed was truly committed to its mission.

—Brian Gilligan '17 (SB) and '19 (SM)

OPEN LETTER

Vice President for Research responds to letter on Open Agriculture Initiative

By Maria Zuber

This is a response to an open letter published Sept. 26, "A letter to President Reif regarding the Open Agriculture Initiative." Dear Mr. Zondervan,

As MIT's Vice President for Research and as a member of the interim Media Lab Executive Committee, I write in response to your open letter to President Reif regarding the Open Agriculture Initiative, published in *The Tech* on Sept. 26, 2019.

The issues you raise in your letter are important ones that MIT takes very seriously. With oversight of MIT's Council on Environmental Health and Safety, it is my

responsibility to ensure that policies are in place to assure that research conducted at all of MIT's facilities, including the Bates Research and Engineering Center, follows all environmental health and safety regulations and protocols. OpenAg research at Bates that involves water discharge has been suspended, and a thorough assessment is taking place. MIT is committed to working constructively with MassDEP and the town of Middleton.

Regarding the allegations of academic misconduct that you referenced in your letter, let me be clear: research integrity at MIT is paramount. It lies at the heart of what we do and is central to MIT's mission.

While MIT policy does not permit commenting on any individual allegations, the Institute has policies and confidential processes in place to assess any concern of this nature that might be raised (see here), and we are committed to ensuring the absolute integrity of all research conducted at MIT.

Thank you for sharing your concerns. MIT is committed to moving forward together as one community, and we value the input and dedication of our alumni.

Sincerely, Maria T. Zuber E.A. Griswold Professor of Geophysics Vice President for Research Chair, Institute Council on Environmental Health and Safety

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GUEST COLUMN

Now is the time for MIT to divest from fossil fuels

MIT should not be resisting the divestment movement. It should be leading it

By Owen Leddy

On Sept. 17, the University of California (UC) system announced that it would divest not only its \$13.4 billion endowment from fossil fuel companies but also its \$70 billion pension fund by the end of the month. The UC system is just the most recent and highest-profile of many colleges and universities across the country that have divested from fossil fuel companies. The UC system's commitment to complete divestment of its huge investment portfolio demonstrates that divestment is both feasible and financially

When the UC system's chief investment officer and the chairman of its Board of Regents' Investments Committee announced the decision, they did not cite the moral demands of the global climate emergency, but rather acknowledged that investments in fossil fuel companies are financially dangerous. "We have been looking years, decades and centuries ahead as we place our bets that clean energy will fuel the world's future," they wrote. The U.N.-backed Principles for Responsible Investment organization (to which the UC system is a signatory) argues that policy responses to the climate crisis are likely to dramatically undermine the value of major energy companies that derive the vast majority of their profits from fossil fuel extraction, making investments in these companies risky.

We are asking MIT to divest from fossil fuels because we want to see the Institute excel as a leader in driving the decarbonization of the economy. MIT cannot do that while continuing to place financial bets on fossil fuel extraction. Furthermore, by staying invested in fossil fuels, MIT stands to lose regardless of how the political struggle over decarbonization plays out. Rapid decarbonization will hurt these investments, and if decarbonization doesn't happen quickly, MIT will have bigger problems to worry about than the return on its endowment — for example, the fact that its campus will be chronically flooded by rising sea levels in a matter of decades and that the futures of more and more of its students and alumni will be foreclosed by climate-driven scarcity, poverty, and instability.

Of course, this is not just a matter of MIT's self-interest. The climate emergency is a crisis of empathy. It forces us to ask ourselves: Do we care about rural communities whose water is being poisoned by fracking? Do we care about people dying of lung cancer caused by air pollution? Do we care about people facing one cataclysmic storm after another in the Carribean and southeastern U.S.? Do we care about people in California whose homes have burned in unprecedented wildfires? Do we care about people in Guatemala facing starvation due to intensifying droughts and crop blights? Do we care about people in Nigeria being killed and tortured for opposing oil extraction by multinational corporations? MIT should be asking itself all these questions and more - and answering "yes" to every single one.

If MIT does care, it is clear what we as an institution need to do.

By divesting from fossil fuels, MIT can send a strong message that extracting and burning fossil fuels is not just normal commerce — it is deeply immoral and unjust, and it is killing people all over the world. Divestment would be not only the right thing to do, but also a highly effective strategy for action on the climate crisis.

Historically, divestment movements have been a powerful tool for social change, most notably in helping to stigmatize and weaken the Apartheid regime in South Africa. Today, the movement to divest from fossil fuels is gathering momentum, with universities, NGOs, religious organizations, cities, and even countries committing to divest \$11 trillion in total. Fossil fuel companies are beginning to feel the impact on their public image and their finances. As an institution globally renowned for shaping the economy of the future, MIT should strive to become a leader of the fossil fuel divestment movement.

MIT is experiencing a moment of crisis, as the Institute's acceptance of funds from Jeffrey Epstein has laid bare deep, systemic problems with the way the university finances its activities. Divestment from fossil fuels is a necessary component of any adequate plan for MIT to align its finances with its values. If MIT is serious about financing itself in ways that do less harm to its own community and to the world, it should withdraw its investments from fossil fuel companies and reinvest those funds in clean and renewable alternatives.

For MIT, divestment would not be an especially difficult or onerous process. MIT has its own investment management company (MITIMCo) and therefore would not have to overcome resistance from a thirdparty investment management company, as some schools have, in order to divest. Organizations like the Intentional Endowments Network exist specifically to help guide and support universities through the process of aligning their investment strategies with their institutional values. It would be well worth the time and effort for MIT to take a concrete step toward improving its financial ethics and update its investment strategy for a sustainable future. The UC system and many other schools have managed the transition. Surely MIT is no less capable.

Two weeks ago, the Global Climate Strike brought four million people into the streets around the world to condemn institutional complacency and complicity with respect to the climate emergency. The world has had enough of inaction. The science has been understood for decades. The companies that play the biggest role in driving the climate crisis are known. Divestment provides a clear means to oppose and condemn their destructive practices. MIT should be planning for a decarbonized future, and its investments must reflect that. As an institution proudly committed to science, MIT should do what the data demands: stop supporting climate catastrophe, and invest in a fossil free future.

Owen Leddy is a first year PhD student in Biological Engineering at MIT and a member of the MIT Divest campaign.

GUEST COLUMN

Liberal outrage and white supremacy: the case of Epstein

MIT's role in vast crimes against non-white individuals seems to matter less to the university establishment

By Yarden Katz and Grif Peterson

In recent weeks, condemnations of MIT's Media Lab — a place usually lavished with praise — kept rolling in. The lab's director, Joi Ito, was criticized for taking billionaire Jeffrey Epstein's money years after Epstein's conviction as a sex offender. MIT insiders claimed the lab knew of Epstein's record (how could it not?) and deliberately covered up his donations. Attacks on the lab heightened after the New Yorker published emails confirming this charge, and Ito quickly

Epstein's case opened a door for critiques of the Media Lab and elite universities more broadly. Many critics were indignant: how could a revered place of learning like MIT take money from a sex trafficker like Epstein? Ethan Zuckerman, a faculty member at the lab, resigned in protest, saying he can't pursue work on "social justice" when his employer takes Epstein's money. Others delivered dramatized disavowals of the lab, using the occasion to draw press attention to themselves. Once the New Yorker piece came out, several of Ito's prominent allies who had initially signed a petition in his support called for him to step down.

When it became clear that the Media Lab was following procedures approved by MIT's president, more condemnations flowed from within. A petition written by faculty expressed "great and heartfelt dismay" that the university was involved with Epstein. According to these faculty, this alliance represents "a void where basic values should prevail" and signals "a cultural crisis that the administration must work to repair." One faculty member, quoted in the Boston Globe, was likewise appalled by MIT's "drastic step of accepting money from a disqualified donor."

Epstein used his relationship with prestigious institutes and scientists not only to launder a horrific sex trafficking operation, but also to find a sounding board for the eugenic visions that accompanied his behavior. Yet, it does not minimize Epstein's crimes to recognize that MIT has a long history of normalizing evil. The outrage at Epstein's ties merely shows which crimes, and which affiliations, matter to liberal critics. Those critics, with their selective indignation, reinforce the university's self-styled progressive image — an image that is in turn sold to criminals and murderers.

Many who are now inflamed about Epstein remained silent, then as now, about MBS, Schwarzman, and MIT's war profiteering.

In spring 2018, MIT and Harvard hosted Saudi Crown Prince Mohammed bin Salman (MBS) on a secretive visit that served to extend partnerships with his government. At the time, MBS was presiding over a devastating U.S.-backed war on Yemen, which continues to the present. Tens of thousands of Yemenis have been killed. while millions are facing famine and deadly disease as a result of the war. According to U.N. estimates, a child under the age of five dies of preventable causes every ten minutes in Yemen, and war has led to a rise in violence against women and children, including rape and child marriage. In Saudi Arabia, MBS's government has jailed women fighting for human rights, subjecting some to torture and sexual violence. The government has even tried to coerce some jailed activists, like Loujain al-Hathloul, to retract their abuse allegations as a condition for release (she has resisted).

MBS's campus appearance is emblematic of universities' long-standing servitude to the American empire and the rich. MIT's celebration of its new Schwarzman "College of Computing," only months after MBS's visit, is a case in point. Like every well-supported initiative at MIT or Harvard, this one was based on secretly negotiated partnerships with private corporations, donors, and the Pentagon. The college, ostensibly devoted to "ethical" computing, is named after Blackstone Group CEO Stephen Schwarzman. Blackstone, the largest private equity firm in the world, is notorious for displacing tenants worldwide through its management of uninhabitable rental units, its ruthless evictions policy, and fighting against rent control. Blackstone also plays a role in the

destruction of the Amazon rainforest, damaging not only indigenous communities and sovereignty, but the earth as a whole. It is fitting, then, that MIT chose Henry Kissinger architect of bloody coups and promoter of racist regimes - to speak at Schwarzman's celebration.

Yet, many who are now inflamed about Epstein remained silent, then as now, about MBS, Schwarzman, and MIT's war profiteering. This silence is not for lack of information, nor a lack of potential allies. Residents in Cambridge, Massachusetts protested MBS's visit to the city (months before the murder of writer Jamal Khashoggi) as well as the Schwarzman celebration. The city of Cambridge even passed a resolution condemning MBS and the way universities handled his visit. The silence on these issues, from many appalled by Epstein, is explained by a white supremacist logic that doesn't see the university's routine operation — which is complicit with the misery of the poor and non-white in the name of American empire

The truth is that monstrous alliances, served with a progressive veneer, are foundational to how universities operate.

as sufficient cause for outrage

But to be enraged about ties to Epstein, once brave victims and journalists made the issue unignorable, is cheap. Resisting academia's investment in war is not. Elite universities expecting to produce the next generation of weapons engineers or foreign policy elites won't easily deviate from the agenda of the state and allied corporations; especially as whole academic departments are funded by companies like Lockheed Martin and Raytheon, major profiteers of arms sales to the Saudi-led war coalition. Once the U.S. government reaffirmed the Saudi alliance, MIT fell in line, concluding that nothing really needs

Instead, the university establishment remained focused on cultivating its own progressive image. Seven months after MBS's visit (merely weeks after Khashoggi's murder), in November 2018, the Media Lab held its second annual "Disobedience Award" ceremony, funded by Silicon Valley mogul Reid Hoffman. The same people who hosted MBS were now presiding over a celebration of "dissent."

Unfortunately, many embraced this seizure of activism by venture capital by going along with the charade. Here too, the problem was not lack of knowledge. Just as MBS's agenda was known before Khashoggi's murder, so were the Media Lab's tactics clear before Epstein. Receiving a mark of "disobedience" from venture capitalists, in a setting resembling the "Billionaires' Dinners" that Epstein regularly attended, is no feat of social justice. It is a transaction that elevates powerful donors who co-opt the language of social movements. That the words "The Patriarchy Isn't Going to Smash Itself" were projected on a big screen during the ceremony is only a contradiction in theory. In practice, the neoliberal ethos absorbs nearly

The truth is that monstrous alliances, served with a progressive veneer, are foundational to how universities operate. This is why, as historian Robin DG Kelley argued, it is misguided to criticize universities in the hopes that they'll become liberatory "engines of social transformation." When the establishment at places like MIT or Harvard starts dropping activist lingo — as Joi Ito did in his mea culpa, invoking "restorative justice" — it is best to head for the

Nonetheless, universities do have exceptional pockets, always precarious and under threat, and repeated campus protests show that the administration's agenda doesn't reflect that of the broader community. The long struggle is to make room for alternative visions and practices, in and out of campus, without becoming agents of the university's false progressive image.

Yarden Katz PhD '14 is a departmental fellow in systems biology at Harvard Medical School and former fellow of the Berkman Klein Center for Internet & Society.

Grif Peterson is an alumnus of the Harvard Graduate School of Education and former fellow of the Berkman Klein Center for Internet & Society.

SARTSARTSARTSAR **ARTS ARTS ARTS**

RESTAURANT REVIEW

The Urban Outfitters of restaurants

Shojo stands out as a moody, flavorful Chinatown gem

★★★★☆

Shojo

Modern Asian, \$\$

9 Tyler St

Boston, MA 02111

Monday-Wednesday, 5-11 p.m.

Thursday, 11 a.m.-11 p.m.

Friday and Saturday, 11 a.m.-1 a.m.

By Muskaan Aggarwal and Victoria Dzieciol

Shojo is an eclectic experience nestled amongst the boba shops and classic Chinese fares in downtown Chinatown. Even on a Thursday night, the line extends outside the door, highlighting the popularity of this modern Asian restaurant-bar. Graffiti style artwork covers the walls; the dark lighting matches the energetic, close quarter ambiance; and the loud, rhythmic hip-hop sets the tone. With its moody vibe, Shojo is definitely the new hip restaurant in Chinatown.

The menu is somewhere in between Asian and contemporary American. Featuring unique dishes such as its famous duck fat fries, Shojo puts an interesting and modern twist on traditional Asian food. The selection is small but constantly changing, offering a variety of tapas-style food that pulls inspiration from a range of Asian cuisines and on-trend street foods. We sampled the restaurant's vegetarian

options, which are somewhat limited but very flavorful.

Our first foray into Shojo's relatively limited menu began with their fried green tomato bao. Although they were small, they definitely packed a punch. The texture of the crispy fried green tomatoes and that of the soft bao bun unexpectedly complemented each other. The spring pea aioli had a hint of sour spice and yet managed to be refreshing and flavorful without overpowering the other flavors and textures. Topped with the marinated onion and fennel salad and cilantro, the baos were our favorite item of the night.

Our second dish was the sesame charred greens: a small mountain of bok choy, white onions, celery, and shallot. Considering that the majority of the dish was vegetables, it was surprisingly flavorful; with a soy sauce-based seasoning, sesame seeds, lemon zest, garlic, and black pepper, the greens managed to bring a sophisticated and well executed taste. The lightly charred flavor of the vegetables blended with the simple sauce nicely. Towards the bottom of the dish, though, we noticed a big difference in the saltiness of the greens — the thin sauce had collected at the bottom, so that while our first few bites had a nuanced flavor, the final ones were almost swimming in a soup of soy sauce.

After the rich bao buns and charred greens, the kimchi fried rice initially seemed like a let down. The comparatively large serving of sunny egg, green onions, bean sprouts, and cabbage on a bed of kimchi jasmine rice had a hint of spice enough to add a kick but not overpowering, which seemed to be a signature of all Shojo dishes. The traditional kimchi flavor was rather diluted at the top and the rice was hard and sticky. This unusual dichotomy of textures did not seem to work as well as the bao buns. However, as we kept eating, the flavor of the rice grew on us, either because the flavor was at the bottom or because the spiciness had been layering on our tongues. Either way, the kimchi fried rice is definitely a dish that tastes better the more you eat.

Next was the Miso Hungry which, in spite of the brilliant name, was definitely our least favorite dish of the night. Upon taking a bite, our first impression was that the noodles had a very strong eggy flavor thanks to the duck yolk. The dish was very simple; the pasta was tossed in a creamy sauce and topped with scallions and crispy parmesan which overall really let the flavor of the egg shine. The toppings provided a nice relief from the noodles, which had a chewy texture that bordered on being slimy, and once the toppings were finished we were slightly less excited to keep eating. The Miso Hungry certainly wasn't inedible, but it requires a specific set of egg-loving taste buds.

Shojo is famous for its fries — both the duck fat hand-cut fries and the shadowless fries. So, although we were absolutely stuffed, we knew we had to try to them.

And they were so worth it. Served in a Instagrammable basket on a little butcher board, with a side of sriracha aioli, the duck fat hand-cut fries were crispy on the outside and soft on the inside. Not soggy, not oily, and not overly salty, the fries somehow managed to be extraordinarily flavorful. Before the fries came out, I had thought I could not eat another bite. But, we polished off the entire basket within five minutes, which speaks to how amazing these fries truly were.

Five dishes were a bit much for our stomachs, but we didn't regret them at all. In hindsight, three to four dishes is enough for two people, even though the portions are tapas-style. Overall, we loved Shojo. It's pricey but a great place to go out on a Friday night with a group of friends or coworkers. The food and ambiance definitely make it worth the trek over to Chinatown — for vegetarians and meat-lovers alike.



Customers dine in front of Shojo's dynamic murals.

COURTESY OF MARIN MEGHAN

MOVIE REVIEW

First loves can be fun and crazy, and so is First Love

Many films play with drugs, violence, and romance, but First Love takes it to another level in the best way possible



Sakurako Konishi and Masataka Kubota star in First Love.

By Liane Xu

Leo (Masataka Kubota) is haunted by an alleged brain tumor that cut his boxing career short. Yuri (Sakurako Konishi) is haunted by the ghost of her abusive father, who forced her into prostitution to pay off his own debts. As luck would have it, their paths cross — in the middle of a drug-smuggling scheme orchestrated by Kase (Shota Sometani), a two-faced and

murderous yakuza. Leo eventually finds out that his "brain tumor" was actually a doctor's mix-up, but not before a crazy night of bloody deaths, high-speed car chases, and of course, falling in love.

On top of drugs, First Love deals with almost every conceivable cliché about love and violence. Yet, director Takashi Miike holds nothing back in terms of action, and the result is an incredibly thrilling ride that overpowers its occasional

sappiness. Ultimately, while the storyline feels very familiar, the direction of the movie feels fresh.

Miike successfully uses music for enhancing the mood and foreshadowing; it varies from dramatic and tense to peaceful and light, depending on what the scene needs. Moreover, while the soundtrack is frequently prominent, it never crowds out other elements of the film, supporting them like the leader of a team.

The other members of that team are nothing to sneer at either. The acting, especially from Konishi and Sometani, is superb. The subtleties in Konishi's acting encapsulate Yuri's deep emotional distress, particularly when seeing images of her abusive father. However, her chemistry with Kubota feels a bit one-sided; Kubota's character, Leo, appears to be more in love with her than the other way around. Nonetheless, this does not detract from the movie, which centers more on the action and Leo's love for Yuri anyways. Meanwhile, switching between a smoothtalking criminal mastermind and a (not really) innocent follower, Sometani's layered performance vividly and believably depicts his character's back-stabbing nature.

More than anything, the outstanding visual and sound effects bolster the fast pace of the movie. Even the most graphic scenes, including a decapitation, look and sound realistic enough that you experience a visceral reaction. (First Love isn't rated, but if it were,

it would definitely be rated R. If the sight of blood makes you queasy, make sure you have a trash can nearby when watching the movie.) In this way, First Love easily sucks you in and immerses you in its plot, unlike various poorly made action movies that can leave you laughing at their absurdity.

Miike truly goes all out here, which is exactly what a movie like this needs to succeed. Yes, First Love dips into clichés on occasion, but as a whole, it embodies that crazy, disordered, fast-paced fun of a great action movie. If you ever want to see a movie about drugs, violence, and romance, make this the one. Skip the traditional Hollywood fare. Go see First Love.

 $\star\star\star\star$

First Love

Directed by Takashi Miike

Screenplay by Masaru Nakamura

Starring Masataka Kubota, Nao Omori, Shota Sometani, Sakurako Konishi

Not Rated, Now Playing

THURSDAY, OCTOBER 3, 2019 THE TECH 7

CONCERT REVIEW

A concert for the soul

Sam Trump and Harold Green perform their Soul and Stanzas at the Isabella Stewart Gardner Museum



Sam Trump performs at the Isabella Stewart Gardner Museum Thursday.

By Victoria Dzieciol

Sam Trump and Harold Green make for a surprisingly remarkable duo in concert.

The show opened with NwaSoul, a Boston-based jazz/rock/hip-hop band that immediately set a lighthearted mood for the night. Vocalist Tricia Reed danced around the stage every moment she wasn't singing, and the group showed off each other's talents by giving each member a solo: most notably, Craig Hill's dynamic saxophone solo went on for minutes

After a brief intermission during which audience members got to know each other, the Soul and Stanzas program began.

Throughout the night, Trump showed off his mastery of a wide range of music styles: upbeat, beachy songs on the ukulele; passionate ballads about love; sophisticated jazz featuring his energetic trumpet solos. Green let his genius with words shine through metaphors and stanzas that left the audience

Alternating between Trump's music and Green's poetry was more natural than you'd expect — with common themes, rhythms, and emotions, the two blended together until it was hard to tell them apart. Together, Trump and Green tackled real issues that resonated with the people watching, including acceptance, peace, and love. But they did it in their own way: in an extended analogy, Trump sang about how love is similar to different cakes; Green told a story through math concepts. As they went back and forth performing for the audience, the two crafted an overarching message of positivity and empowerment that took any worries off the minds of the audience.

Not only were their performances uplifting, but their relationship was as well. Taking turns being supportive and bragging about each other to the audience, Trump and Green displayed such a cute friendship that it was hard not to smile.

And more than being friends with each other, the pair established an extremely

close connection with the audience. They cracked jokes, asked questions, and included the crowd in the show. At one point, Green invited a woman onto the stage and recited his poetry to her. Trump's songs had viewers dancing, singing, and nodding their heads in unison. By the end of the night, it felt like everyone in the room was a family.

Trump and Green are performers you have to witness live because their personality is not something you can experience any other way. Despite a few technical missteps like Trump's microphone being off for the first few lines of a song, the sense of community fostered by their performance earned them not one but several standing ovations, each. For a night of good music, good poetry, and good vibes, I highly recommend checking out Trump and Green.

Sam Trump and **Harold Green**

Isabella Stewart Gardner Museum

Sept. 26

OPERA REVIEW

Boston Lyric Opera tries its hand at 'bread and circuses'

Leoncavallo's Pagliacci served with a new appetizer

Pagliacci

Music and Libretto by Ruggero Leoncavallo

English translation by Bill Bankes-Jones

Boston Lyric Opera

Sept. 27-Oct. 6

By Alexandra Sourakov

Boston Lyric Opera opens the season with an experimental take on Pagliacci, a play-within-a-play centered on a love triangle between members of a commedia dell'arte troupe. The advertised "immersion" takes place in Act 1, where audience members are invited into the Fairgrounds. There, they can play carnival games, watch acrobats and jugglers, listen to the MIT Cambridge Chinese Choral Society, and eat the food they have purchased at the affiliated food trucks. Act 2 is the opera itself, which features cameos by some of the circus performers from Act 1.

Artistic Director Esther Nelson proclaims that "you become more than a spectator; you are a participant." I don't agree. I was still in the comfortable, complacent position of spectator: my life and love were not held in the balance nor did I have to please people with my dulcet tones or comedic timing. The initial priming of the Fairgrounds setting did, however, make the theatrical world more immediate and the dramatic atmosphere more tangible. You did not have to gain your bearings as the orchestra struck up the overture under the circus tent; Tonio's prologue seemed like a perfectly logical extension of the series of

The main event of the evening — the opera itself — did not disappoint. Leoncavallo's melodic score, sometimes evocatively melancholy, sometimes rousingly happy, was skillfully executed by the BLO Orchestra in spite of the poor acoustics provided by the DCR Steriti Memorial Rink where the production was staged. In this production, Leoncavallo's original Italian libretto was translated into English, with the exception of the love duet. The translation itself was fine, but both the music and some of the singer's voices would have been better augmented by the mellifluous romance language. Was this artistic choice another attempt to appeal to a broader audience by reducing the perceived language barrier? Sylvio (sung by Tobias Greenhalgh) allowed for ready comparison between the two as he sang both in English and Italian. His voice blossomed into more fullhodied vibrant tones in Italian and he seemed more at ease and more confident in his role as Nedda's lover. Rafael Rojas's performance as Nedda's jealous husband/ Pagliaccio also suggested that his talents would have been more clearly highlighted by the original libretto.

As Nedda, Lauren Michelle was radiant and expressive in both languages. Her ringing voice projected in the unusual venue. She was an excellent actress: full of girlish charm, coquettish with a cruel streak. That streak is partly what sets off Tonio (Michael Mayes), precipitating the ensuing drama. Mayes is a powerful singer and actor. As the vindictive, violent Tonio, he does not evoke sympathy, but his voice is very much



COURTESY OF LIZA VOLI

Nedda (Lauren Michelle) confides to her lover Silvio (Tobias Greenhalgh) in Pagliacci.

another matter: a dynamic baritone which composer's work. Yet, if the option were betenderness to murderous rage. One of the most pleasant surprises was the singing of the Pagliacci chorus, which inhabited the aisles and played the role of the audience of the play-within-a-play. It was not carnival games, but hearing the vibrato two feet away, that made for a truly immersive experience.

Being a short opera (only 80 minutes), Pagliacci is traditionally staged with another short opera like Cavalleria rusticana. After the dramatic conclusion of *Pagliacci*, it might have been difficult to pivot in the space of an intermission and be completely receptive to watching another human drama unfold and settling into the pace of another format presented by the BLO, I think I would still prefer the former.

It was interesting to see a new approach to staging Pagliacci, and while the BLO's idea for "Act 1" is a creative one, the execution could have been better. Part of its mission is to make opera a more intimate and less esoteric art form. However, suturing a completely different form of entertainment onto the body of the opera did not enhance the experience for me. While one may enjoy both dishes on their own, combining them on one plate can be off-putting. As it stands, BLO delivers a wonderful Pagliacci with a festive preamble that makes up in spirit what it lacks in substance.

DID YOUR MIT ESSAYS GET YOU IN?

The Tech is collecting successful application essays (hint: yours!). Email your pieces to cl@tech.mit.edu!

Harpy

Solution, page 12

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

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.

Crowned

Solution, page 12

6×			240×		
360×		7+		24×	
1-			1		3
		30×		48×	
2-	48×		15×		
		2			5

Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–6. Follow the mathematical operations for each box.

17

32 33

40

43

55 56 57

22

39

46

For the Weather by Sally R. Stein

Solution, page 12

ACROSS

- 1 Measure of carbs or protein
- 5 Numerical fact, for short
- 9 Thin lock of hair
- 13 Boxing match site 14 Sugar lump's shape
- 15 Turn __ (become)
- 16 One eating at a restaurant
- 17 More than
- 18 Cozy corner
- 19 Blizzard cleanup machine
- 21 Sand hill
- 22 Once around a track
- 23 Creator of a pearl
- 25 Church steeples
- 29 Winfrey of TV
- 31 Alan of M*A*S*H
- 32 Angry, informally
- 34 Become edible, as fruit 38 __ as a rock (reliable)
- 40 Round green veggie
- 41 Dig deeply
- 42 "Laughing" African beast
- 43 Spanish bull

- 45 Hawaiian garlands
- 46 Impolite
- 54 Parcel (out)
- 55 Beachgoer's eyewear
- 63 And others: Abbr.
- 64 No longer edible
- 66 Identical
- 67 National bird

DOWN

- 2 Nevada casino city
- 6 Letters after S
- 7 Busy as ___

- 48 Foot-operated levers
- 50 Curved parts of feet
- 53 Rowboat blade
- 62 Grand-scale story

- 65 Quick kiss

- 68 Sounds of disapproval 69 Backyard tool building
- 70 Sandwich breads

- 1 Big smile
- 3 All over again
- 4 Rock used for sculptures
- 5 Ice-cream serving utensil

- 8 "Holy" brat
- 9 Auto's front glass
- 10 Come __ of the rain (dry
- 11 Boulder or pebble
- 12 Card game with flushes
- 24 Three-foot measure
- 25 Wide belt
- 26 Ruse
- 28 Tickets for postponed baseball games
- 29 Triple-decker cookies
- 33 __ out (declines to participate)

49 Pencil mark remover

- 36 Wicked
- 44 White gem
- 47 Evaluate

- 13 Billboard displays
- 20 Young girl
- 27 Not doing anything
- 30 Bosc or Bartlett
- 35 "Not guilty," for one
- 37 Loch __ monster
- 39 Act boldly

16

38

62

25 | 26 | 27 | 28

50 51 52

50 Highly skilled 51 Tug-of-war cords

63

66

- 52 Computer mouse sound
- 53 Stared at 56 Great Salt Lake's state
- 57 John, Jane, or Jackson

15

18

23 24

41

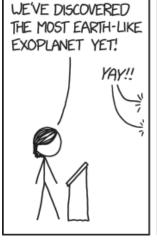
44

48 49

- 58 Remain
- 59 Wise person
- 60 Letters after kays 61 Take a look at

[2202] Earth-Like Exoplanet





HABITABLE ZONE. HABITABLE-15H. "Habitable." THE SURVIVABLE ZONE.

WELL, IT'S IN THE

IT'S TIDALLY LOCKED. AND BLASTED WITH STELLAR FLARES. AND PROBABLY METEORS. AND BATHED IN ACID.

BUT WE'VE DETECTED WATER VAPOR! IN BETWEEN ALL THE SWINGING BLADES. I SEE. WE'RE HOPING TO FIND BIOSIGNATURES IN THE FORM OF SCREAMING.

It we find a planet covered in flames, it might be an indicator that it supports life. Or used to, anyway, before the fire. Fire is actually a potential biosignature, since it means something is filling the atmosphere with an unstable gas like oxygen.

Golden

Solution, page 12

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

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.

Bald

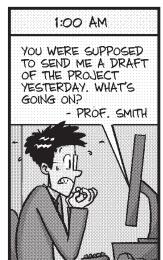
Solution, page 12

10+		45×			2
12×			20×		12×
60×				2	
20×		12×	5×		6÷
	3÷		48×		
3		12×			5

Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–6. Follow the mathematical operations for each box.

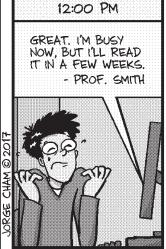


by Jorge Cham







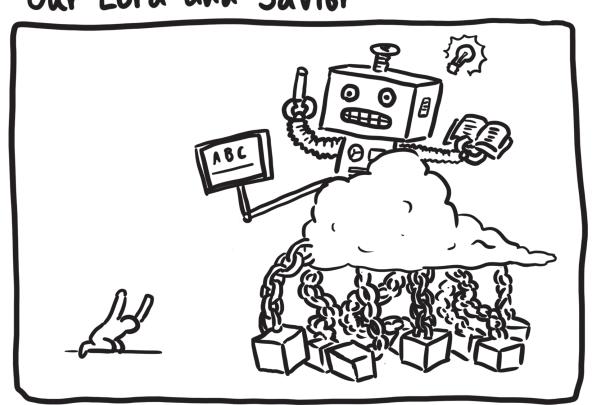


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Our Lord and Savior



a comic about life at the 'tvte



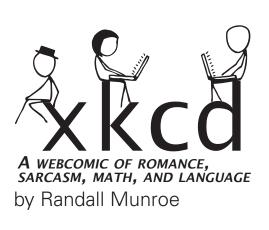
Red-Tailed

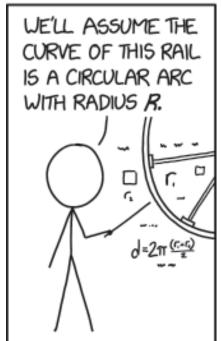
Solution, page 12

27+	i	!	10×	!	23+		i	7
2	-	9	-	168×			-	6
9	┨	5–	8	-	5×		21×	32×
4÷			162×			5	-	
21+			25+				45×	
49×			9	-	144×			-
	8×	20+		9	-	- 8÷		18×
40×	┥		28×			48×		-
	5		7	-	72×			3

Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–9. Follow the mathematical operations for each box.

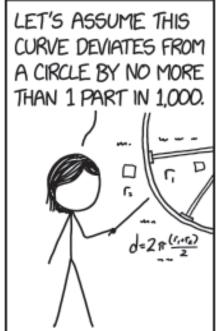
[2205] Types of Approximation





PHYSICIST

APPROXIMATIONS



ENGINEER

APPROXIMATIONS



COSMOLOGIST

Thursday, October 3, 2019

Tenenbaum looks forward to bridging the fields of cognition and AI

MacArthur, from Page 1

myself doing exactly what I'm doing now. My father was an early artificial intelligence researcher, and my mother worked in education and studied how kids learn. I was lucky to have some great mentors as an undergraduate. I did my PhD in the same department where I work now

A couple of things have evolved. There are some specific projects that I was really interested in 25 years ago, which were too early to work on then. Before graduate school, I worked on a project in "intuitive physics," trying to understand how the human mind is able to think about and imagine complex physical situations.

Then, starting about ten years ago, some great folks in my lab started working again on intuitive physics using a technology called physics engines — tools that people use to make interactive physics-based video games. So, many techniques which had been developed over the intervening years, both software and hardware, allowed us to build these models.

All the interest that has arisen in artificial intelligence in the last few years has also taken on increasing importance in what we do.

TT: What are the greatest challenges you've faced in bridging the

gap between computer science and human cognition?

Tenenbaum: The first gap that comes to mind has to do with cultural gaps, and gaps of language. The communities that study these topics are often different groups of people who are used to thinking and talking in different ways.

The fields of computer science and cognitive science were born together and grew up together. A lot of what we had to do in bridging these fields is develop ways of talking to each other — to figure out ways to use the math or the formal systems of computation to think about how the mind works, and to convince psychologists or neuroscientists that these tools are actually the right ones.

TT: What inspires you in your

Tenenbaum: The early mentors I had. I was lucky to work with one of the great cognitive psychologists of the twentieth century, Roger Shepard, who was a professor at Stanford, when I was an undergrad. [Shepard and] my PhD advisor here at MIT, Whitman Richards, were inspiring figures for me, and I think about the lessons that I learned from them on a daily basis.

In the last few years, I've been especially inspired by scientists who study children's development. My specialty is computation, but scientists like Elizabeth Spelke or Susan Carey, who both used to be MIT faculty but are now faculty at Harvard, are some of the great developmental psychologists of all time. Some of my closest colleagues at MIT, Rebecca Saxe and Laura Schultz, also study the brains and minds of young babies and children, and their work has deeply inspired me. I'm incredibly lucky that I get to work with all of them collaboratively on these projects.

TT: With the founding of the Schwarzman College of Computing, there has recently been a great emphasis on the ethics of technology. As a leader in the MIT Quest for Intelligence, how do you approach the ethics of AI?

Tenenbaum: Many researchers at MIT, including myself, are still figuring out how to do that because we're not trained in ethics.

The kind of work that we do is potentially related to machines that can affect the labor market. David Autor, Daron Acemoglu, and many others at MIT have studied for a long time the impacts of automation and recent advances in AI on the general picture of jobs. And that's something we've been trying to talk to those colleagues and others about — to understand how the work that we do can make people work more efficiently, more creatively, more satisfyingly, and not less.

Another clear ethical issue has to do with who's paying for the research and what priorities we're spending [the money] on. MIT is doing some much-overdue reflection about those issues. That's something the faculty has to take very seriously.

TT: What are your future plans for your research? What are some potential applications of your work that you look forward to?

Tenenbaum: The thing that I'm most excited about right now is a project that we've been working on as part of the Quest for Intelligence and CBMM. We're working on the idea that we might be able to build machine intelligence that grows into intelligence the way a person does.

What I'm most excited about going forward is building that bridge between the fields of cognition and AI around how children learn to think. I'm especially interested, going into a somewhat farther future, in the computational grounds of what words mean and how people put them together into questions and answers. We have on the AI side ... machines that can generate natural looking English text in amazing ways, but they'll babble and go off in completely crazy or boring directions that no human who has ability with language would ever do. We

are interested in taking the kind of understanding that we've been achieving in basic, prelinguistic kinds of common sense and seeing how those might carry over to understanding how language works.

TT: Do you have any advice for members of the MIT community who would like to get involved in AI or cognition?

Tenenbaum: Take the opportunity of being at MIT to learn very broadly and deeply about all the different aspects of cognition and AI. There's so much attention on the field right now that many students are only looking at a very small part of the picture — in particular, there's a lot of interest these days in deep learning methods and papers that have been published since 2015.

One of the great things about MIT is that there are lots of people who have been working on cognition and AI for decades using a range of different techniques.

So, take the opportunity to learn from different kinds of people of different ages, especially from the older faculty or people who take approaches from different areas of science. Be aware that wherever you start, it's just one small corner of the space. Be open, explore, and really try to listen and learn from a broad range of people and perspectives.



SOCCER

MIT draws against WPI

MIT Men's Soccer maintains a streak of 12 undefeated matches after a draw on Saturday

By Suleman Thaniana

The Engineers Men's Soccer team played WPI on Saturday Sept. 28 at the Roberts Field, MIT. The match ended in a draw after two overtimes with each team scoring one goal each. The goal for MIT was scored by Richter Brzeski '23 with 4:39 left to play.

MIT came into this game full of confidence as they had won their previous two matches against Wheaton College (2-1) and Curry College (4-1). But things didn't start well for the Engineers as WPI kept putting pressure on the MIT defense which eventually led to a WPI goal in the 20th minute. The opening goal was scored by

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WPI's Luke Reiniger who finished a through ball from Brandon Hima into the bottom left corner. Throughout the attacking spree by WPI, MIT goalkeeper Jeremy Cowham '20 showed a splendid performance, putting the audience in awe with his excellent saves, he finished the game with a season-high seven saves. As it got closer to the end of regulation time, it seemed like MIT would suffer their first loss of the season, but the players didn't give up as Brzeski leveled the score in the 86th minute thanks to an assist from Cowham. The goal started off with a long free kick from goalkeeper Cowham which deflected from Will Seiple '23's head and landed at Brzeski's feet who made no mistake and tucked the ball in the far right corner of the goal. As nothing separated both teams at the end of regulation, the match went on to extra time. Even though WPI outshot MIT 5-3 in overtime and took four corner kicks they could not find the net, and the match ended in a 1-1 draw.

Thanks to this draw, MIT extended its undefeated streak to 12 matches which is just two matches short of a program record. The team wishes to continue this streak and hopefully register a win in their upcoming match, a road game against Brandeis University on Tuesday Oct. 1.



John Flynn '23 battles to head the ball against WPI's Ben Rickson



Solution to Harpy

from page 8

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

Solution to Crowned

		110111	page 0		
2	1	3	4	5	6
6	5	1	2	3	4
5	4	6	1	2	3
4	3	5	6	1	2
3	2	4	5	6	1
1	6	2	3	4	5

Solution to Weather

MATTERHORN ALI

ALLEGE RED LIEN TENS IWO OPERAHOUSE URSA GETS HEAP

Solution to Golden

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

Solution to Bald

from page 9

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

Solution to Red-Tailed

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

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