MIT’s Oldest and Largest Newspaper

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Volume 132, Number 53

Tuesday, November 13, 2012

Fiscal cliff on the horizon

MIT prepares for federal research cuts

By Anthony Yu

Unless Congress can come to a compromi- se regarding the fiscal cliff before the start of 2013, MIT could face up to a 10 percent cut in its federal research funding, affecting both students and faculty. The fiscal cliff refers to the mandated set by the Budget Control Act of 2011 that the Joint Select Committee on Deficit Reduction agreed on, a $1.2 trillion deficit reduction package by Nov. 23, 2011; otherwise, roughly $400 billion in immediate budget cuts, or sequestration, automatically become effective in 2013.

In an email to The Tech, Associate Pro- fessor Claude Canizares said, “It’s encourag- ing to see that the President and Congress- sional leadership want something to avoid the ‘fiscal cliff’ but we just have to wait and see if they can succeed in finding a compromise. Until then, the uncertainty and risk remain.”

In fiscal year 2012, MIT’s total campus research expenditures totaled $684 million — not including Lincoln Labs’ $684 million. Federal funds accounted for $473 million of that amount, which includes extra funding from the American Reinvestment and Re-covery Act, the $787 billion dollar stimulus package.

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Dropbox has proved to be wildly successful. Last year, the Silicon Valley company appeared on the cover of Forbes, and today it boasts tens of millions of users. Here on the East Coast, the com- pany has become a symbol of the tech start-up culture at MIT, where students walk down the Infinite with the telltale translucent blue boxes prominently displayed on their t-shirts.

“Building Dropbox has been the most amazing experience of my life, and I’m really excited to share the experience and what I’ve learned in this whole journey,” Houston said.

“Starting a company is a very mysterious process,” Houston added. But he did hint that he was saving up advice for the

Houston for Commencement

Dropbox CEO will be youngest speaker in history

By Leon Lin

Drew W. Houston ’05, co-founder and CEO of Dropbox, the online file storage service, will be the keynote speaker for the gradu- ation class of 2013 at MIT’s 147th Commencement on June 7, 2013. While Khan Academy founder and 2012 speaker Salman A. Khan ’98 was MIT’s youngest com- mencement speaker in at least 30 years, Houston is even younger at 29 years of age. He won’t be more than a couple of years older than many of the addressees receiving graduate degrees.

Houston graduated from MIT with a Bachelor of Science in Computer Science and Engineer- ing (Course 6-3) in 2005. While at MIT, he spent his summers work- ing at startups, and took a leave of absence during his junior year to work at Bit9, a cybersecurity firm. He then started Accolade, an S/P3 pmp company, which he managed while working for Bit9. Houston continued his work at both places after graduating from MIT. About a year later, Hous- ton came up with the idea for a cloud-based file storage website that would allow users to syn- chronize folders on their com- puter with other devices via the Internet. He was joined by Arash Ferdowsi, a student who left MIT to work with him, and in 2007, Dropbox was born.

Houston says that part of his in- spiration for Dropbox came from the MIT’s Athena computer across campus. Houston said his goal was to do this for “the world”.

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Houston, Page 6

$25 million for international development initiatives

Funding from USAID will support projects in DUSP, D-Lab, Sloan, ESD, Course 2, and the PSC

By Stephen Suen

MIT will receive up to $25 million in funding from the U.S. Agency for International Development (USAID) as one of seven university partners in a newly-launched Higher Educa- tion Solutions Network. The network aims to engage institutions of higher education in addressing global de- velopment challenges. USAID Ad- ministrator Rajeev Shah hopes this initiative will “recapture the legacy of science, technology and innovation as core drivers of development — as well as inspire and support the next generation of development leaders.”

MIT’s involvement in the USAID program consists of two initiatives and will feature participation from various departments, centers, and schools around the Institute.

First, the Department of Urban Studies and Planning will lead the Comprehensive Initiative on Tech- nology Evaluation (CITE), dedicated to developing a methodology for evaluating technological solutions for the developing world. This en- terprise will be supported by D-Lab, Engineering Systems Division, the Sloan School of Management, the Department of Mechanical Engi- neering, and the Public Service Cen- ter. The CITE project will utilize a

USAID, Page 6

IN SHORT

The Senior Gift Challenge kicks off this Thurs- day at 7:30 p.m. in the Tech Room! Details at http://web.mit.edu/senior.gift.

Did you miss MITHenge this weekend? You have another chance to catch the sunset in the Infinite today at 4:22 p.m.

Want to meet the MIT students who inspired the film 21? Check out LCS’s free screening of the film tonight at 7:30 p.m. in 26-100, hosted by Jeff Ma and Ben Mezrich.

Have you ever wanted to spend a year study- ing in England? The final Cambridge-MIT Ex-change info session will be held this Wednes- day at 7:00 p.m. in the Masseth Private Dining Room.

If you take the Red Line between Harvard Square and Alewife on weekends, shuttles will replace train service between these stations for the next four weekends, ending on December 9.

Send news information and tips to news@tech.mit.edu.
Money market pioneer cleared of fraud

Regulators failed Monday to win a clear victory over the father-and-son team whose mutual fund failed in one of the signal events of the 2008 financial crisis. It was the latest in a series of efforts to hold individuals responsible for the risks taking that nearly brought down the U.S. economy.

A Manhattan federal judge, on the Securities and Exchange Commission that Bruce Bent, the inventor of a popular investment vehicle called a money market fund, defrauded investors by allowing its price to collapse in 2008 by piling an interest on ordinary investors.

The judge held that the fund, the Reserve Primary Fund, run by Bent and his son, Bruce Bent II, was pitched to investors as a nearly risk-free alternative to a bank account. Instead, it imploded, losing the billions of dollars bonds issued by Lehman Bros. that became worthless with Lehman's bankruptcy on Sept. 15, 2008.

The prosecutors accused the men of misleading investors and the company's trustees as the fund's investments lost value, allowing more people than allowed to withdraw their funds than the fund could sustain.

Just as the ex-neighborhood friends produced snow in MA in clear skies and temperatures in the BEijing Olympics, and has practice has been used to induce precipitations in Cambridge will cool down after a cold front passes through this morning. For the rest of the week, high pressure will dominate the weather, with clear skies and temperatures in the 40°-60°F range.

This is what in 1946, scientists produced snow in MA in the "best modern-day cloud seeding experiment" (The Weather Channel). Cloud seeding involves spraying small particles that serve as cloud condensation nuclei into the atmosphere; this increases the probability that clouds will form in certain areas. The practice has been used to induce precipitation, to rain out pollutants, and mitigate the impact of climate change, such as the Beijing Olympics, and has been proposed as a mechanism to temporarily alter the climate by warming the atmosphere.

Extended Forecast

Tonight: Mostly cloudy, Low of 36°F (2°C). N wind at 10 mph.
Tuesday: Cloudy, High of 46°F (8°C). N wind around 10 mph.
Wednesday: Partly cloudy, High of 44°F (7°C). N wind less than 20 mph.
Thursday: Mostly sunny, High around 46°F (8°C). Low around 33°F (1°C).
In a turnaround that would have been unfathomable a few years ago, the United States is projecting that Saudi Arabia, not the United States, will be the world's top oil producer by 2020 while cutting its own energy use, the administration's national security strategy, the International Energy Agency reported.

The agency's World Energy Outlook 2012, published Monday, projects that the U.S. will remain the world's top oil producer until the late 2020s but that it will be an economic boon for the Saudi royal family and the Houston area.

The strategy, which cites a combination of industry innovations and a new focus on efficiency, dates for the coming changes in the U.S. far different from the era of shrinking oil production and gas-guzzling SUVs in the early 2000s.

Still, world oil demand was forecast to grow steadily, reaching 97.7 million barrels a day by 2035, up from 87.4 million barrels in 2010.
LETTERS TO THE EDITOR

Chronic stress

I am haunted by the conversation that MIT Admissions blogger Krishna Kasturi-nuker’s “I’d Like to see” has started with her “Meltdown” blog post. MIT’s problem.

I was originally a member of the Class of 2013, but I was forced to graduate last year after I suffered a concussion in my senior year. Three years later, I still have not successfully returned to normalcy. I have been driven people in one place, MIT. Chronic, self-imposed stress is a major health problem among MIT students. I am confident we can be a leader on this issue.

Katie Elison ’12 is a Course 2 alumnus.

The president enjoyed almost all of the advantages of incumency and none of its drawbacks.

The president enjoyed almost all of the advantages of the presidency, which is the best of all possible worlds. Even in office, he was able to cultivate a public goodwill that can be used as a public giveaway to car manufacturing corporations and their organized union. In office, he enjoyed the presidency in the president’s record were off-limits: Republicans tapped a man almost uniquely unable to mount an attack on either the issue of healthcare (because of his record), or on the issue of economic bailouts (due to his background in private equity).

The campaign became exactly the sort that both Republicans and challengers wish to avoid. It was an election focused almost wholly on the economy, offering the very little opportunity to highlight national security issues where the Republican brand has strength. Meanwhile, Obama faced a strong challenger and ran one of the most negative campaigns in U.S. political history — the standard recipe for retaining the status quo.

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“I’m so hosed this week—I have two psets, a quiz, and a paper.”

“Yeah? Well, I’ve got three psets, two papers, a project presentation, two exams... and I have to go into lab.”

Sound familiar?

The Tech wants to hear about your experiences with stress at MIT.

Send us your stories at surveys@tech.mit.edu.
I actually took those guys out of Dropbox accounts and auto-
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Burton-Conner hacked the
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a couple of students from
Burton-Conner hacked the
system by creating thousands
of Dropbox accounts and auto-
mating the process of scoring
points in the Space Race. Soon,
MIT was back at the top of the
leaderboard. "I love the creative
spirit. I actually took those guys
out for dinner when I was in town
about a week or two ago," he
told The Tech yesterday. "We
have to preserve the integrity of
the contest — we don't want to
let people just cheat," he add-
ed after a pause. "But if these
kinds of shenanigans were to
happen with Space Race, I had
hoped that they would come
from MIT first." Houston also
hopes that
MIT students will come out
of school with larger goals
in mind. "I don't think MIT
students realize how much
the world needs them to go
out and build things, and how
well trained they are to do so," he
said.

Houston credits some of his success
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Solution to Techdoku

Visiting Artist
TOMÁS SARACENO

Moving Beyond Materiality
A panel discussion with the artist and
Nader Tehrani, Professor & Department Head
Antón García-Abril, Professor
Department of Architecture Faculty

Thursday, November 15, 2012
6:30 PM | MIT Building 10, Room 250

Take on a Columnist

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Write for The Tech's Opinion section.

We're looking for writers who want to talk about issues of national and local importance.

Interested or have an idea?

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Bicycles chained up outside the student center combined with a shallow depth of field provided for an interesting sight last Sunday. The fall colors in the background lend a colorful atmosphere to the photo, much as the changing leaves have done to all of campus this fall.

Emma L. Frank ’15 and Stephen D. Johnson ’15 perform during Roadkill Buffet’s “A Show of Hands” on Friday night.

Emma Forrester — THE TECH

Are you interested in graphic design?
Data analysis?
Applying technology to journalism?

The Tech is looking for data geeks and news developers to join its interactive team.

Email join@tech.mit.edu

Institute Double Take

By Jessica L. Wass

Bicycles chained up outside the student center combined with a shallow depth of field provided for an interesting sight last Sunday. The fall colors in the background lend a colorful atmosphere to the photo, much as the changing leaves have done to all of campus this fall.

Aperture: f/1.4
Exposure Time: 1/5000 sec.
Sensitivity: ISO 400
Effective Focal Length: 34 mm
On Sunday afternoon in the third floor hallway above the Infinite Corridor, onlookers experienced “MIThenge,” the twice-yearly phenomenon in which the setting sun aligns with the Infinite Corridor.

Members of MIT Swara perform at the Diwali Night celebrations held in Kresge on Sunday. The instrument pictured is the Veena, a plucked string instrument that is an essential component of India’s classical Carnatic music.

Want to know what’s going on between issues of The Tech? Find out what’s happening right now at http://techblogs.mit.edu.
MIT could see up to 10% cuts in federal research funding

Associate provost says MIT can weather fiscal cliff, but urges researchers to plan for budget cuts

Fiscal cliff, from Page 1

package passed in 2009. The Institute has fared rather well despite the research spending reductions in the federal budget in 2011 and 2012. According to slides from an October faculty meeting, MIT had a 8.7 percent jump in fed-

eral funding (without ARRA fund-

ing) in the last three years. With the sequestration, funding will be reduced to levels similar to those from two to three years ago, not including stimulus funds. MIT’s projected federal research budget after the sequestration is $428.8 million, down from $473 million. According to Canizares, the faculty expects current grants will be cut either 9.4 percent or 8.2 percent.

Canizares said that the Insti-
tute should be able to weather the changes, though individuals should remain cautious. “The se-

questration is not a catastrophe. We can survive and have healthy and vibrant research for graduate students, UROPs,” said Canizares. “It could be devastating for individual faculty who might lose their awards, but it will not be a catastrophe because the institute overall given the recent growth in research from all sources.”

In the best case, the federal budget would be capped at current levels, adjusted only for inflation.

According to MIT Facts, about 3,315 researchers work at the Insti-
tute during the academic year on projects funded by foundations, industry, and the government. Roughly 2,460 out of the possible 4,530 enrolled graduate students are appointed as research assistants.

“We know the government has pressure to come up with a com-
promise,” Canizares said. “There is bipartisan recognition that research is important in longer term.” He conceded, however that even a limited reduction would probably also reduce federal re-

search funding. The best-case sce-
nario would be research funding extending. PIs who have federal funding should not make large commitments when the money might not be there.” This includes being more cautious about hiring, or simply monitoring spending more closely.

The amount of federal funding across MIT’s schools is uneven. Federal funds dominate 83 percent of the School of Science’s budget, whereas they are 21 percent of the Sloan School of Management’s. MIT currently receives its largest federal grants from the National Institutes for Health, the Depart-

ment of Defense, and the Depart-

ment of Energy. $133.7 million, $175.7 million, and $90.9 million in fiscal year 2012, respectively.

At the faculty meeting, Canizares outlined several sce-
narios the government could take. In the best case, the federal budget would be capped at current levels, adjusted only for inflation. In the worst case, the national defense budget would be kept constant, forcing the mandatory cuts to af-

fect other agencies disproportionately.

According to the Budget Control Act, there will be a seques-
ture of $400 billion in 2013, poten-
tially totaling $1.2 trillion by 2021 if no compromise is enacted. The sequestration is modeled after the Balanced Budget and Emergency Deficit Control Act of 1985, which mandated broad, sweeping cuts.

However, despite the threat of a reduction to MIT’s research funds, Canizares said that “nothing is re-

ally known” about the how the cuts would be applied. It is unclear which programs would specifically suffer. For example, the sequestra-
tion could affect anticipated grant awards. According to slides from the faculty meeting, deans should leave extra funding for hardship cases in case any grants or awards are not honored.

However, increased industry funding is not a panacea.

In addition, MIT is trying to di-

versify the sources of its research funding, namely, with funds from industry and individual donors — in 2011, $300.8 million came from industry collaboration, according to MIT facts.

However, increased industry funding is not a panacea. Canizares said, “industry doesn’t tend to fund basic research,” referring to research that does not necessar-
ily translate into short-term profits because it may involve more theo-

retical work. Overall, Canizares urges the Institute be “reasonably prudent” in moving forward in light of the potential fiscal cliff.

Do you want to be like Sherlock Holmes? The Tech is looking for investigative reporters.

Do you like asking tough questions? Do you enjoy nosing around and collecting evidence? If so, we want you on our team!

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SMBC, from Page 13

The Barry M. Goldwater Scholarship

The Barry M. Goldwater Scholarship and Excellence in Education Program was estab-

lished by Congress in 1986 to honor Senator Barry M. Goldwater, who served his country for 30 years as a soldier and statesman, including 30 years of service in the U.S. Senate. The purpose of this program is to provide a continuing source of highly qualified scientists, mathematicians, and engineers by awarding scholarships to college students who intend to pursue careers in these fields.

The Goldwater Program provides scholarships of up to $7700 per academic year. Sophomore scholarship recipients will be eligible for two years of scholarship support.

If you feel you are qualified for one of these prestigious awards, please discuss this with your academic advisor or your department head.

Nominations must be from YOUR DEPARTMENT and are due at the School of Science or School of Engineering Dean’s Office (as appropriate in your major) by November 30, 2012.

For further information: Contact your academic administrator; School of Science: http://www.act.org/goldwater or http://web.mit.edu/engineering/goldwater.html

School of Engineering contact: Maria Marangiello, x3-8012, mariam@mit.edu

School of Science contact: Lisa Rooks, x3-5951, lrooks@mit.edu
A discussion about the ethical, legal and strategic aspects of UAV use

Tuesday, November 13, 2012
6:30p - 8:00p
Kirsch Auditorium, Bldg 32-123
32 Vassar Street, Cambridge

Speakers include: Barry Posen, Rabia Mehmood, Bryan Hehir & Kenneth Oye

http://web.mit.edu/cis/eventposter_111312_drones.html
Co-sponsored with The Technology and Culture Forum at MIT
Tin-Plated by David Steinberg

ACROSS
1 First name in cubism 50 It may be baking
6 Make into a movie, say 53 Login info
11 Old TV band 57 Hamlet’s obstacle
14 The Jetsons’ younger 59 Liquor flavoring
15 Travelers alternative 60 Take after
16 “I don’t wanna!” 61 Spine line
17 Seattle landmark 62 Make into a movie, say
19 Trial evidence, perhaps 63 Wasn’t colorfast
20 Potential voter 64 Christmas song
21 Strived 67 ABA member
23 Acct. accrual 68 Destroy slowly
24 Hospital professional 69 Ad awards
28 Fictional governess 70 Dog size
31 Feminine force 71 Work on theater seats, perhaps
32 Wagga Wagga welcome 72 Elizabeth I’s dad
33 Allows to proceed 34 Longtime NASCAR sponsor
35 Notice 36 “Of course!”
38 Run a tab 39 Detached, on a score
39 Inconsequential cooing 40 Appliance adjunct
43 Book fair sponsor 41 Any thing
44 Notice 42 Opposite of pale-
47 Brief moment 43 Nitewear
48 Tribe that named a state 44 Notice
50 It may be baking 45 Keg contents
53 Login info 46 Shakes up
57 Hamlet’s obstacle 48 Tribe that named a state
59 Liquor flavoring 49 First rapper to win a Best
60 Take after Song Oscar
61 Spine line 51 Mention with no pretext
62 Make into a movie, say 52 Spine line
63 Wasn’t colorfast 54 Moved slowly (into)

DOWm
1 Goodfellas Oscar winner 56 Black, to Chirac
2 Like some skiing 56 CPR pro
3 Ill-mannered 58 Davy Crockett’s rifle
4 Hubs 59 Liqueur flavoring
5 Bailiff’s word 60 Take after
6 Bureau 61 Move slowly
7 GPA spoiler 62 Clay piece
8 Succori 63 Scoundrel
9 Tethys’ hangout 64 Christmas song

ิกคด

A WEBCOMIC OF ROMANCE, SARCASM, MATH, AND LANGUAGE
by Randall Munroe

[1132] Frequentists vs. Bayesians

DID THE SUN JUST EXPLODE?
(IT’S NIGHT, SO WE’RE NOT SURE.)

THIS NEUTRON DETECTOR MEASURES WHETHER THE SUN HAS GONE NOVA.

THEN, IT ROLLS TWO DICE. IF THEY BOTH COME UP SIX, IT LIES TO US.
OTHERWISE, IT TELLS THE TRUTH.

LET’S TRY.

RLL...

YES.

FREQUENTIST STATISTICIAN:

THE PROBABILITY OF THIS RESULT
HAPPENING BY CHANCE IS \( \frac{1}{6} \cdot \frac{1}{6} = 0.027 \).

SINCE P<0.05, I CONCLUDE
THAT THE SUN HAS EXPLODED.

BAYESIAN STATISTICIAN:

BET YOU $50 IT HASN’T.
Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun Fun

Tuesday, November 13, 2012 The Tech

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.

Sudoku
Solution, page 7

<table>
<thead>
<tr>
<th>6</th>
<th>8</th>
<th>4</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

Techdoku
Solution, page 7

<table>
<thead>
<tr>
<th>10×</th>
<th>3–</th>
<th>1+</th>
</tr>
</thead>
<tbody>
<tr>
<td>12×</td>
<td>15×</td>
<td>5–</td>
</tr>
<tr>
<td>48×</td>
<td>7+</td>
<td></td>
</tr>
<tr>
<td>50×</td>
<td>54×</td>
<td></td>
</tr>
<tr>
<td>12×</td>
<td>2+</td>
<td>11×</td>
</tr>
<tr>
<td>2–</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

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.
Endless forms most irregular
Measuring plankton volume causes computational headache

By Emily A. Moberg

In the viscous, tiny world of plankton, there is endless, beautiful variation.

There are tiny organisms that look like panes of stained glass. There are phyto-
plankton that can swim. There are phyto-
plankton that can form groups and do
these calculations for each piece, but being
even a couple of pixels off on the intersec-
tion can result in huge errors. And teaching
a computer to break shapes ever so perfect-
tly was proving very computationally dow-

Unfortunately for me, this dazzling array of
shapes makes it hard to calculate certain
properties — namely volume.

We could get the computer to automati-

We had hundreds of millions of pictures
of different tiny photosynthetic marine
organisms that we wanted to get volume
from, which meant that doing anything by
hand was prohibitively time-consuming.
You can break the shape into pieces and do
these calculations for each piece, but being
even a couple of pixels off on the intersec-
tion can result in huge errors. And teaching
a computer to break shapes ever so perfect-
tly was proving very computationally dow-

to iron out all the details — like smoothing
those steps into a line — and show that my
technique worked. But once I stepped out-
side my mental bubble and explored new
options, the rest seemed easy.

But once I stepped outside my mental
bubble and explored new
options, the rest
seemed easy.

Overall, my insight changed how I per-
ceive the research process. That defining
"eureka" moment was not at all how I had
imagined. I didn’t know at first if my crazy
new method would work. The critical part
was trying out my new idea and not giving
up on it. Now, I try to give myself the flex-
ibility to follow new ideas, no matter how
strange they may first appear.

This is a new column and a space for
students and researchers to share their ex-
ploits, experiences, and knowledge. If you
are interested in contributing, please con-
tact Emily Moberg at emoberg@mit.edu
and cs.cgh@tech.mit.edu.
Women's Soccer heads to third round of NCAAs
Kuo's goal in second overtime leads team past the College of New Jersey on Sunday

By Charlotte Brackett

MIT Women's Soccer, ranked seventh in New England, topped the College of New Jersey 1-0 in double overtime in a high-paced NCAA Championship second round match on Sunday afternoon at Haverford College. Senior Emily Kuo scored the game-winning goal in the first minute of the second overtime period, heading the ball into the net, sending the game into overtime.

With a score of 0-0 going into the second period, the Cardinal and Gray continued to fight. In the first 10 minutes, Wright made two vital saves just eight seconds apart. Twenty seconds later, the Lions had two of their best chances but the opposition net after deflecting off a TCNJ player but it was eventually saved. With one second remaining in the half, O'Brien shot from 20 yards out but hit the lefpost, sending the game into overtime.

In the second overtime period, Lindacher shot just past the left post, narrowly missing the net. With four minutes left on the clock, Kuo headed the ball into the net, ending the game.

It was an aggressive game right from the very beginning.

The College of New Jersey outshot MIT, 31-15. Griffith made seven saves, while Wright had 13.
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