

Students present at Seminar Day

NEERA SHAH
Editor-in-Chief

On Oct. 18, Caltech students who participated in the Summer Undergraduate Research Fellowship (SURF) program presented their research at the annual SURF Seminar Day.

Of the 392 students that were awarded a SURF this year, 318 were Caltech students. Every year, some non-Caltech students are given a SURF to participate in research on campus. Similarly, a few Caltech students use the opportunities of the SURF program to pursue research interests at other locations. (More detailed statistics can be found in the table.)

Senior Daniel DeFilippis completed his third SURF this summer—he has done research both on campus and at JPL before. This year, he worked with Professor Jon Swift in astrophysics on campus. Comparing his past experiences with this year's, DeFilippis said, "All of the [previous] projects have been various forms of data analysis, but this was the first one where I actually participated in creating source lists for observing and also being in the observing room all night."

The culmination of his SURF was a project titled "Characterizing M-dwarf Eclipsing Binaries in the Kepler Field." DeFilippis explained his research as a focus on using the Keck telescopes to observe eclipsing

observing these objects on different nights throughout the summer, we measured radial velocities for each of the stars to accurately calculate their masses and radii (also using light curves from the Kepler



Kayané Dingilian explains her project to a SURF Seminar Day attendee.

Photo Courtesy of Neera Shah

binaries. According to DeFilippis, "Eclipsing binaries are stars that orbit each other in such a way that they pass in front of each other at regular time intervals when viewed from Earth. In this case, both of the stars in the eclipsing binaries were M-dwarfs, a small, cool type of star which are very common in our galaxy but not well understood. In

mission). Doing so would triple the number of measured M-dwarfs and provide a big step towards better understanding these stars."

As most students do, DeFilippis learned a lot about both his field and about research in general throughout his SURF: "I sort of

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Moon Festival Gala offers food and fun

NANCY WEN
Contributing Writer

Laughter would be the best word to sum up this year's 2014 Moon Festival Gala hosted by the Caltech Chinese Association (CaltechC). It was more than polite chuckles; the auditorium was ringing with belly-aching laughter. Gala organizers made a smart move to make this year's performance focused on fun and humor, rather than the nostalgia of spending the Moon Festival away from home.

On Oct. 18, the CaltechC hosted the 2014 Moon Festival Gala in Ramo Auditorium to celebrate the Moon Festival and to welcome new incoming students. It was a night filled with delicious Chinese food, and delightful performances. The Moon Festival is an important holiday in the lunar calendar that symbolizes the joy of family reunion. For many of the new international students here at Caltech, this year's Moon Festival was the first one they spent away from their families. The goal of the Moon Gala was to bring people together and welcome them to the bigger Caltech family. The CaltechC

Auditorium to nearly full capacity, to watch the free performance.

The performances showcased the many talents of Caltech students, from opera to K-Pop, from Chopin to crosstalk. The majority of the performances were by Caltech students or by Caltech-affiliated people. However, there were also notable guest performers from other schools in Southern California, including Tonghui Zhu, a talented Guzheng player from UC Irvine who was discovered by Ji Yun (Ivy) Xiao, the current CaltechC president, at a different performance and invited to come perform at the CaltechC. Her song *Snow Mountain in Spring* was the only performance that showcased a traditional Chinese instrument.

Many of the other musical performances had an interesting fusion effect of playing Chinese songs on Western instruments such as piano, guitar, and violin. The audience was treated to a virtuosic rendition of Chopin's *Fantasia Impromptu* by 11-year-old Shanshan Wang. Her calm stage presence and passionate performance at such a young age earned murmurs of approval

What is going on in Hong Kong?

CASEY HANDMER
Contributing Writer

Hong Kong is one of the most vibrant, prosperous cities in the world. Rising to power and prominence under British colonial rule, it was formally handed over to the People's Republic of China in 1997. Despite being part of China, Hong Kong has always enjoyed a privileged administrative status under the One Country, Two Systems model with a substantially different economic structure and a vibrant political life. Hong Kong is ruled by a Chief Executive (something like a governor) who is elected by an Election Committee of (today) 1200 entities, representing individuals, districts, large business interests and other organizations, and serving up to two consecutive 5-year terms. Not unlike the governing structure of a modern multinational corporation, economic power carries real political power.

In 2007, the Chief Executive at the time, Donald Tsang, published the Green Paper on

Constitutional Development which was subsequently ratified by the National People's Congress Standing Committee, the relevant governmental body in mainland China. Since the end of British rule there have been only three Chief Executives. They preside in a responsive way over the rapidly-developing economy and political climate, leading to a much more dynamic constitutional framework than that to which we are accustomed in the US. This Green Paper was seen as a compromise between mainland China and the Pan-Democratic movement, which enjoys the support of about 60% of the population, as it ruled out the possibility of a general election by universal suffrage in 2012 but allowed for the possibility of election of the Chief Executive and Legislative Council (something like the US Senate) by universal suffrage in 2017, then a decade away.

Fast-forward to 2014, and it is now time for the National People's Congress (the Chinese governing assembly) to decide how to

implement the recommendations of the Green Paper. To the original wording they added the stipulation that the Election Committee must preselect two or three candidates who "love the country and love Hong Kong," and that any election by universal suffrage must contain institutional safeguards for this purpose. While historically all elected Chief Executives have been Nonpartisan (pro-Beijing), a general election may upset this balance and lead to the legitimization of separatist policies. Beijing worries that this would set a dangerous precedent. The proposed vetting of candidates by >50% approval from the (mostly pro-Beijing) Election Committee largely obviates this concern, as does the process by which Beijing must officially appoint the Chief Executive for the duration of their term.

It is thus important to realize that the resulting protests are not pro-democracy in the sense that Beijing is removing pre-

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Chen Ma is dancing to the Guzheng song Snow Mountain in Spring.

Photo Courtesy of Michael Wong

aims to bring together members of the Caltech Chinese community while promoting Chinese culture on campus.

The Moon Gala was widely attended with around 350 tickets sold for the \$5 dinner buffet from 5-7 p.m., according to Taokun (Xander) Zheng, vice president of CaltechC and one of the lead organizers of the Moon Gala. A local Chinese restaurant called Oriental Express catered the dinner. The food featured more recognizable dishes such as pork chops and crispy chicken, as well vegetarian options such as braised tofu. It was well-received by the attendees, as many went back for seconds and thirds. More people arrived at 7 p.m., filling up Ramo

throughout the audience.

The funniest performance of the night was the Two-Man Act with Lingxin Liu and Yefei Wang. Dressed in similar Chinese robes and both bespectacled, Liu and Wang were a formidable comedic duo. They began their act as if was stand-up comedy, with Liu as the funny man and Wang as the straight man. But soon they launched into Shuang Huang (which literally means "double yolk"), in which the person who is speaking hides behind the other person who is lip-synching and acting. The result was so hilarious that even the non-Chinese-speakers in the audience were cracking up with laughter.

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Caltech Y Column

CALTECH Y

The Caltech Y Column serves to inform students of upcoming events and volunteer opportunities. The list is compiled by Neera Shah from information given by the Caltech Y and its student leaders.

More information about the Caltech Y and its programs can be found at <https://caltechy.org>. The office is located at 505 S. Wilson Avenue.

Upcoming Events:

1. Caltech Y - Washington DC Science Policy Trip

December 14 - 18 (five days)

Cost is only \$585 (with round trip flight to DC and back to LA) or \$350 (with one way flight to DC) - Space is limited.

Applications are available now at www.caltechy.org and due to the Caltech Y - by Tuesday, October 21st. Join us for an exploration into Science Policy on an exciting trip to the Nation's capitol. The five day trip includes flights, lodgings, and most meals; discussions with those who have played a role in setting and implementing science policy for the United States including: Academics, Lobbyists, Scientists, Politicians, and Caltech Alumni ... and of course the opportunity to see Washington, DC landmarks like the White House, the Memorials; Smithsonian Museums; the National Archives; and the Capitol. Don't miss this opportunity!

The Washington, DC Science Policy Trip is coordinated by the Caltech Y with generous support from the George Housner Fund. Questions and applications may be directed to caltechy@caltech.edu

2. Caltech Y Social Activism Speaker Series (SASS) Committee Meetings

Every Other Tuesday (started October 14) | 11:00 AM - Noon | Caltech Y

The Caltech Y Social Activism Speaker Series (SASS) was developed to promote awareness of global issues and to challenge members of the Caltech community to seek ways of addressing world needs. SASS organizes a variety of campus lectures as well as a Science Policy Lunch Series. The SASS Committee is open to any students interested in planning events with this purpose in mind. The SASS Committee meets twice a month at the Caltech Y. Please join us. Contact Brenna Krieger at bkrieger@caltech.edu for more information.

3. Caltech Y Outdoors Committee Meetings

Every Other Tuesday (started October 14) | 1:00 - 2:00 PM | Caltech Y

The Y-Outdoors Committee is open to any students interested in planning group-focused outdoor adventure trips for students. The Y-Outdoors organizes a wide variety of outings for students of all skill levels that have included hiking, camping, biking, sea kayaking, and backpacking as well as Adventure 101 educational talks on a variety of outdoor adventure topics. The

Y-Outdoors Committee meets twice a month at the Caltech Y. Contact Jeremy Sandler jsandler@caltech.edu for more information.

4. Caltech Y ExComm Meetings

Every Thursday (started October 16) | Noon | Caltech Y
RSVP to caltechy@caltech.edu

The Caltech Y Student Executive Committee (ExComm) oversees all Caltech Y programs - which includes a wide variety of Community Service, Outdoor Adventures, Cultural Events, Social Activities, Activism and Leadership opportunities - and plans many events as well. Participation in ExComm Meetings is open to any students interested in helping to coordinate programs or learning more about the Caltech Y. Please RSVP for lunch to caltechy@caltech.edu if you are interested in attending.

5a. Hathaway Sycamores

Every Thursday | 5:30-8:30pm | Highland Park

Volunteer at Hathaway-Sycamores, a group that supports local underprivileged but motivated high school students. There are a variety of ages and subjects being tutored. The service trip includes about an hour of travel time and 2 hours of tutoring. Transportation is included. For more info and to RSVP email Sherwood Richers at srichers@tapir.caltech.edu.

5b. Pasadena LEARNS

Every Friday | 3:00 - 5:00pm | Madison and Jackson Elementary School | Pasadena

Come volunteer at Madison and Jackson Elementary School! We are partnered with the Pasadena LEARNS program and work with their Science Olympiad team or do regular tutoring along with occasional hands-on science experiments. Transportation is provided. For more information and to RSVP, contact vkumar@caltech.edu

Ongoing Volunteer Opportunities:

1. Pasadena Unified School District Tutors Needed

Pasadena High Schools have started after-school tutoring programs coordinated by teachers. Tutors are needed at each school to help out with the tutoring. This is a great way to work directly with teachers and students. Tutors may volunteer on any days for which they are available. High School tutoring/homework help hours are as follows:

- Blair High School M-F 3:20-4:30 (Math) contact Ronaldo Hunter at (626) 720-2578

- Marshall High School M-F 3:05-4:30 (All Subjects) contact Cati Acevedo at (626) 720-2587

- Muir High School M-Th 3:20-6:00 (All Subjects) contact Nicole Stephens (626) 720-2567

- Pasadena High School 3:20-6:00 (All Subjects) contact Arman Ter-Grigoryan at (626) 720-2589

If you have any questions feel free to contact the Caltech Y at caltechy@caltech.edu.

Caltech students discuss SURF research projects

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already knew this, but observing can be very frustrating! For one of our observing nights, fog came in about 3 hours before the night was over, which caused them to close the dome before we could get all of the data we wanted." In addition, being part of a research lab allows students to participate in conversations with peers about similar research. DeFilippis was a part of the weekly group meetings in the lab he worked in.

"I actually really enjoyed listening to what research other people were doing at the weekly group meetings. Since this is Caltech, all of it was really cutting edge and neat," he said.

Junior Emily Jensen worked in a completely different field, humanities and social sciences. Her project, "Effect of Social Influence on Human Risk-Preference: An fMRI Study," was funded by the Mary Vodopia SURF scholarship. She worked with John P. O'Doherty, professor of psychology, and Shinsuke Suzuki, postdoctoral

scholar in neuroscience, to study social influence on decision making. This was Jensen's first SURF and said, "I had the best lab group that I could have gotten into. Everyone was very friendly and reasonable in what they expected of me as a first-time SURF student. They were always patient in describing new techniques or general methods of doing things." She also sat in on the lab group's meetings and was

able to gain even more exposure to the field by talking with post-docs in the group.

Jensen needed an MRI machine to collect some of her data, which she said was a great experience: "I got to use really powerful machines, which made me feel like I had more

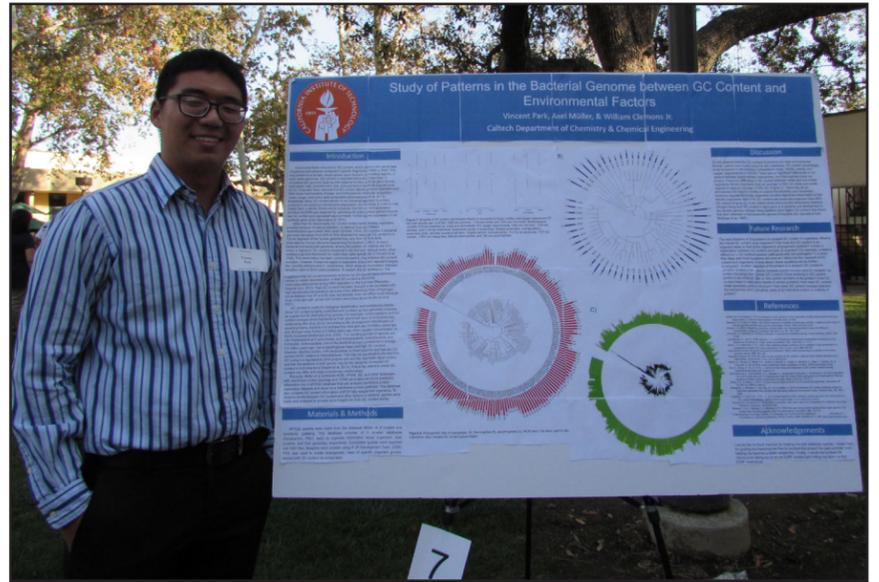
experiment. "I got to meet a lot of really cool, random people. I really enjoy talking to strangers in short conversations, so I had a blast meeting each of our subjects and just talking about what they did for a living. I heard everything from an elementary school teacher,

to [a] student studying psychology, and to a part-time 'professional subject,'" Jensen added.

Senior Ratnalekha Viswanadham also did a SURF in humanities and social sciences, but instead of doing a direct behavior study she worked more with data. She did her research off-campus at the Haas School of Business at University of California, Berkeley. Although Viswanadham found

living there relatively inconvenient, as it is easier and more simple to arrange for housing at Caltech, she was able to pursue a new interest in research. During a previous SURF, she had also studied decision making but her research this year was a new approach: she used genetic analysis and data from a "strong vs. weak opponent" strategic game from 217 subjects to identify parameters for a reduced linear fit model to show how genetic variations can affect an individual's decisions.

Sophomore Vincent Park was a first-time SURFer this summer and studied temperature, motility, and oxygen requirements of bacteria to make a phylogenetic tree and decide whether there was an evolutionary advantage that may arise from having a certain GC content in DNA. He worked with staff scientist Alex Müller and Professor William Clemons, Jr., in chemistry and chemical engineering. "[The experience] made me into a better scientist and more inquisitive, and I learned a different field—this was more about data, and my previous experience was in biology.



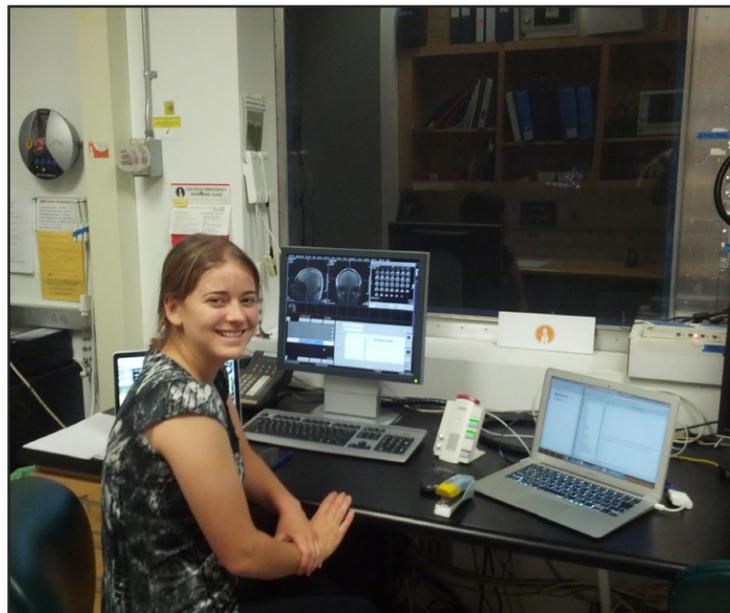
Vincent Park studied GC content in bacterial DNA for his SURF.

Photo Courtesy of Neera Shah

Field	# Students
Biology and Biological Engineering	33
Chemistry and Chemical Engineering	54
Engineering and Applied Science	70
Geological and Planetary Sciences	16
Humanities and Social Sciences	10
Physics, Math, and Astronomy	63
Jet Propulsion Laboratory (JPL)	37
Off-Campus SURF	26
International SURF	9
Total	318

The table shows the field distribution of the 318 Caltech SURF students. Statistics Courtesy of Student-Faculty Programs

authority than I actually did. But, truly, I had a fun time learning how to use the MRI machines and watching the scans as they occurred." Something she learned that surprised her was that taking a hammer within 3 feet of the magnet (MRI machine) would rip the hammer right out of your hand. She also encountered some interesting people as her study involved 26 subjects who participated in the



Emily Jensen used behavioral studies to determine the social influence on decision making.

Photo Courtesy of Shinsuke Suzuki

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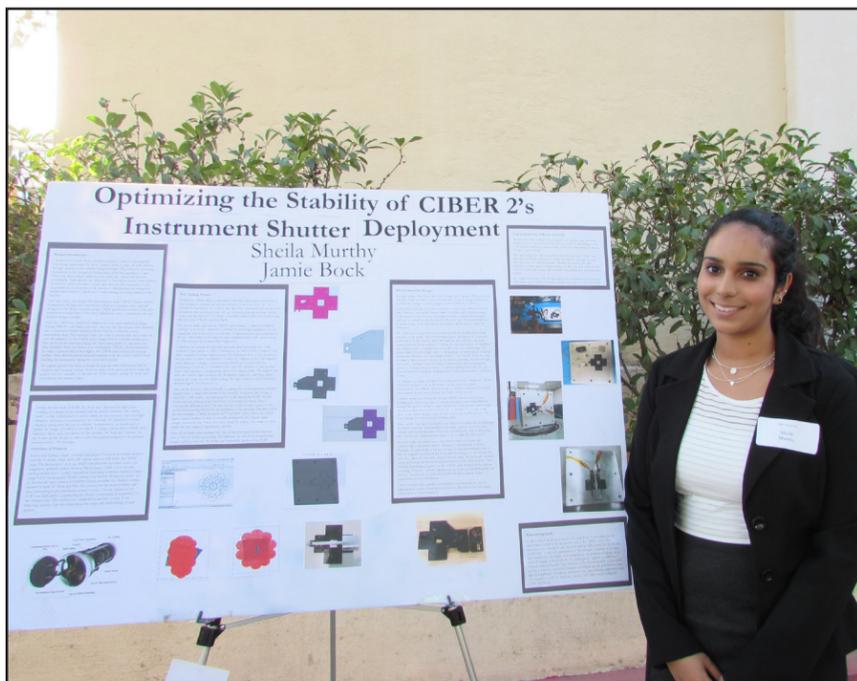
Student-Faculty Programs hosts SURF Seminar Day

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It opened my eyes to how I could incorporate the two in the future and inspired me to keep looking for new things," Park said.

In the field of mechanical engineering, sophomore Sheila Murthy spent her summer designing the shutter assembly for CIBER2, which "measures the cosmic microwave background radiation, and compared it for vibration testing which ensures that the more fragile components will be stable in space-like conditions." Murthy was especially interested in this project as she "wanted to build skills in solid works" and found the research intriguing.

Also in chemical engineering, junior Kayané Dingilian had an emphasis in environmental research during this first SURF



Sheila Murthy spent the summer working on CIBER2's shutter assembly.

Photo Courtesy of Neera Shah

experience. Her research on studying the effect of different pressures of air on 50-100 nm nanoparticles stuck to a surface earned her a trip to the International Society of Exposure Science conference in Cincinnati during the week of Oct. 13.

Candace Rypisi, director of student-faculty programs, reflected on the 2014 SURF program and thought it went well: "For a few years we've been working on increasing the number of Caltech students who SURF at JPL. Last fall we began

the Explore JPL Seminar Series. This is a lunch series where JPL scientists and engineers come down to campus to talk about their work and available projects for interested SURF students. It was well attended and this summer we jumped from 25 to 37 Techers SURFing at JPL. We are continuing the series this fall on Mondays at noon and hopefully the numbers of JPL SURFs will continue to grow."

The SURF program began in 1979 and continues as the primary way students get involved with research at Caltech. Some students presented their research earlier this summer at the end of the 10-week SURF period, but most presented at Seminar Day. All presenters were eligible to compete to become a semi-finalist in the Doris S. Perpall Speaking Competition, which will be held in January 2015.

Nak Won House: a reasonable choice for late-night meals

HELEN EVANS
Contributing Writer

It's 12:30 a.m. Seven hours have passed since you last had sustenance—or has it been longer than that? The hunger is starting to cloud your mind; you can scarce remember 10 minutes ago now, let alone 10 hours. You wonder faintly if you would really miss a couple of toes or if that is just society's conditioning talking. And all the while, the growling is growing louder.

Yes, we've all been there: the late night hours of desperation, when scrounging up an odd, otherwise thoroughly unattractive brew of fast food seems the only way to stave off starvation. For those with non-pedestrian modes of transportation and a few free hours, though, there are many decent late-night restaurants.

One such place is Nak Won House, a small 24-hour restaurant about 15 to 20 minutes from campus. Located in LA, it is tucked into a complex of other small Asian restaurants that is on the popular side, which can make parking difficult, but Nak Won itself is usually not too busy late at night, aside from maybe a smattering of people occupying a few tables.

Little is striking about the place as you enter. The décor looks as though it was lifted straight from a B-list Korean drama: small wooden tables, their surfaces covered in panes of glass, are laid out neatly across the room, matched with inexpensive wooden chairs; the walls are plastered in menus with pictures of their food to make you salivate and full-length mirrors to

make you self-conscious—a sound business strategy, all in all.

Upon arrival, the waitresses are fairly quick to seat your party at a table and begin taking orders; while their English is slightly lacking, they are genial and generally provide good service. They begin by serving a round of barley tea, a dull orange-brown liquid, in plastic pitchers with a matching set of cups. The tea has a vaguely dusty flavor that can be strange and off-putting on first blush, but after a sufficient quantity is imbibed, it is a most quenching drink indeed. This is followed by several small, cold dishes of appetizers, including a spicy daikon kimchi, a green bean jelly slathered in a vaguely spicy soy sauce, creamy white potato salad, and mild bean sprouts. As these dishes are meant to be shared across the table, it is perfectly reasonable to grab your chopsticks and dig right in. Additionally, both the appetizers and the tea offer

unlimited refills, so feel free to fill up on them to your heart's content before the "actual meal" shows up.

With the appetizers and tea to tide you over, the wait for your food to come is less excruciating than it might otherwise be. The primary novelty of many dishes is that they come still in their final stages of cooking, sizzling in their pots as steam rises from the depths with a high probability of fogging many pairs of glasses. For example, a common favorite is the BBQ beef, a rich, sweet meat dish that is complimented well by the onions and separate rice it comes served with. On my most recent visit, I ordered their dumpling

soup made with potato, leek, and beef, a first for me. While warm and comforting, it was otherwise unremarkable, but nonetheless a solid purchase for the wee hours.

Best of all, particularly considering their reasonably large portion sizes, Nak Won won't burn too big of a hole in your wallet. At \$13.99, the BBQ beef dish is on the expensive side of their prices, but it

is also a very filling dish. However, the majority of their menu options like my dumpling broth dish fall around \$8.99, quite reasonable given the plentiful appetizers and, for those with small- to moderate-sized stomachs, the significant amount of leftovers that is often achieved. I highly recommend Nak Won House to those on the prowl for delicious late-night food.

Now Filling Vacancies!

Crown City Ringers, Pasadena's premier community Handbell choir, is seeking musicians with advanced skills to join its ranks this fall.

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Various groups lead peaceful protests in Hong Kong

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existing rights, but that they are punting promised progress on the issue. Hong Kong has never had anything like representative democracy. It is also far from clear that a populist majority government would naturally serve the best interests of the people, who enjoy prosperity borne by the freewheeling economic nature of the city, a prosperity certain to be harmed in any chilling of relations with the mainland.

The resulting protest is not by a singular group, but actually involves representatives of four distinct groups. The first participants in the protest were student-led groups who announced and executed a weeklong class strike. Comprised of Scholarism, representing secondary school students, and Hong Kong Federation of Students, representing tertiary school students, they began their protest by ditching school for a week to really get their point across. Of course, no longer in school, these students sought to occupy public spaces and subsequently had antagonistic encounters with police. While tame by the standards of the Arab Spring or even Occupy Wall Street, the use of pepper spray and tear gas against secondary school students galvanized the movement, leading to the accelerated involvement of the third group, Occupy Central with Love and Peace, a non-violent local branch of the Occupy movement. The fourth movement, the pan-democracy camp, is an alliance of the many pro-democracy political factions in Hong Kong. They must be the most patient advocates of democracy in existence.

The student-led groups have stated their goals are

- universal suffrage

- resignation of the incumbent Chief Executive CY Leung, partly in response to perceived disingenuous statements and actions as the protests proceeded

- the withdrawal of the decision of the National People's Congress

- the submission of a new electoral reform plan that includes civil nomination of candidates for the Chief Executive

This is not your garden variety protest. International coverage focused on the largely peaceful nature of the protests. To date there has not been a single death, and a relatively tiny fraction of injuries. The protests, which have consisted of disruptive occupation of central arterial streets, have been exceptionally well organized, with guest lectures, homework, decentralized distribution of food, water, clothing, shelter, and the development of mobile medical facilities. Communication has also stepped up—lessons learned during Egypt's short-lived revolution now translate to dedicated apps for encrypted peer-to-peer mesh networks, although many participants' phones were also compromised by phishing attacks distributed by SMS. The protests became known as the Umbrella Movement due to the innovative use of umbrellas to deflect tear gas canisters, which were, as protesters noted, often manufactured in the US.

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Protesters in Hong Kong occupy Harcourt Road in September.

Photo Courtesy of Wikimedia Commons

As usual, mainstream media coverage has downplayed the size of the protests, especially in mainland China, but the protests regularly drew around 100,000 participants, easily occupying several blocks of the city with multi-leveled roads recognizable in the astonishingly prescient film *Pacific Rim*. Confrontations between police typically escalated

school children, all recorded and instantly shared on the Internet. This blunder is probably the single greatest contributor to the current detente, especially in contrast with the overworked Hong Kong police, who have also protected the pro-democracy protesters from violent attacks by pro-business or Triads-linked counter protesters. As of this week, many protesters

communication tools of extreme efficiency have a strong interest in gaining unfettered access to the political process both within Hong Kong and China more generally. Although the state has a jealously guarded monopoly on violence, it is likely that any suppressive response is likely to spawn matching unrest on the mainland, with the possibility of future Tiananmen Square-like trouble. Although the main sources of endemic unrest on the mainland—perceived economic inequality—are less relevant in Hong Kong, the possibility of a forged common cause is likely to lead to some tense meetings in the halls of power. At the least, token concessions carefully measured to avoid encouraging disruptive protest action are nonetheless likely to materialize in order to appease ongoing frustration in the youngest generation.

Perhaps the least terrible hypothetical outcome is the eventual formation of a second, lower house of government, a chamber of the people, elected by universal suffrage, to complement a senate-like body of the Election Committee and Legislative Council, where the Chief Executive becomes in essence a powerful Secretary of the Treasury. Meanwhile a Secretary of State elected by the lower house leads the government and bargains hard for Hong Kong's ongoing semi-autonomy and ensures that Hong Kong's continued prosperity is adequately shared. If moves in this general direction are not made officially, it is only a matter of time until app-based consensus gains enough legitimacy to claim a seat at the table of real power, with or without the approval of the existing governance structure.

to the firing of tear gas and arrests of dozens (but not hundreds) when protesters or police managed (often inadvertently) to surround each other. Arrested protesters have consistently been released soon after detention. As the protest has developed, protesters and police have generally interacted with a great deal of mutual respect, as the politically unaligned police clearly work long hours to keep the peace and have largely eschewed the earlier tactical error of appearing in riot gear and wielding batons. Perhaps the greatest strategic error and outbreak of violence occurred when police unfamiliar with social media were brought in from the mainland and beat up a bunch of

have returned to school, but still return to the streets in substantial numbers in rapid response to progress or lack thereof during ongoing negotiations.

What is the outcome? In many respects the protests have been atypical. Protesting about a proposed political process three years in advance is unprecedented. The key stakeholders, consisting of entrenched business interests aligned with Beijing, as well as a Beijing extremely wary of local movements for separatist or autonomous political innovation, are unlikely to budge. On the other hand, a new generation of youths educated with relatively unfiltered access to the Internet and personal

CaltechC celebrates Moon Festival with community



CaltechC members (Jiyun Xiao, Chujun Lin, and Hao Zhang) try their hand at a K-pop dance to the song "The Boys" from the band SNSD.

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In addition to musical and comedic performances, the audience also received some words of wisdom from Professor Yuk Yung of Caltech's Department of Planetary Science, who performed two of his original pieces of poetry with the latter poem written for his wife in celebration of their ruby anniversary (40 years of marriage). He offered this gem: "To be successful in academia, you

must write papers. To be successful in love, you must write poetry."

According to Xiao, the Moon Gala has a rich history as it has been held every year since 1995. Preparations for the Moon Gala start even before classes at Caltech begin. Auditions are held the first weekend of the fall term, after the new members of the CaltechC have gotten to know each other. The auditions are fairly informal, and performances are sometimes adapted or combined in order to give everyone a chance

on stage. The result is a close-knit group of performers who have fun while rehearsing and share their joy with the audience through their performances.

The CaltechC was founded in 1985 and currently has over 200 members, including undergraduates, graduates, postdocs and faculty members.

The CaltechC also hosts an event for the Spring Festival Gala to celebrate the Chinese New Year. In addition to these celebrations, the CaltechC organizes events such as the campus-

wide Badminton Tournament, Table Tennis Tournament, and various hiking excursions throughout the year.

More information on events and activities hosted by the CaltechC can be found on their website at www.its.caltech.edu/~chinese/.



Lingxin Liu acts out and lip-synchs the words being said by Yefei Wang, who is hidden behind Liu. Their "Double Yolk" act relies on accurate synchronization of their words and actions.



Tonghui Zhu, dressed in ethereal white, plays Snow Mountain in Spring on a Guzheng, a traditional Chinese musical instrument. Photos Courtesy of Michael Wong

Soccer team plays very well, other team plays better

GOCALTECH.COM
Actual Sports Content Editor

PASADENA, Calif. (Oct. 15, 2014) - Sophomore John David Feist (Dallas, Texas / Jesuit College Prep) and the rest of a resurgent Caltech men's soccer team pushed the University of the Redlands to the edge before falling by the narrowest of margins in a 1-0 Southern California Intercollegiate Athletic Conference defeat on Wednesday afternoon.

The Bulldogs improve to 8-7 overall and retain their third-place position in the SCIAC at 7-4, while the Beavers are now 0-13-1 (0-10-1).

Having cruised through the teams' last meeting, Redlands struggled to get anything going against what has been one of the top defenses in the conference over the past month. Redlands enjoyed the majority of possession and had

several chances go begging in the first 45 minutes, but were unable to break through against the Caltech rearguard anchored by impressive sophomores Jared Reed (Miami, Fla. / Westminster Christian) and Feist, who made 10 saves on the day.

The halftime scoreline of 0-0 marked the fifth time in the last six games that Caltech has recorded a first half shutout. A formation change looked to improve on the Beavers' first 45 minutes and, when the second half began, it was clear that while Redlands continued to hold onto the ball, they were being denied any serious opportunities by the Beavers.

A tactical change by Head Coach Rolando Uribe 15 minutes into the half nearly paid off as a counterattack down the right side ended with a low cross that found sophomore Kevin Gao (Los Alamos, N.M. / Los Alamos) unmarked at

the top of the penalty box, but his shot went right into the hands of the Bulldogs goalkeeper.

Six minutes later, the Bulldogs' Nico Johnson swung in a looping cross that found the head of Charles Izydorek at the back post for the game's only goal.

"I am very proud of the team's performance in the last six SCIAC games," Uribe said. "I have been here a long time and never experienced the great soccer and fight this team has shown over this period. We can compete with any team in the SCIAC and our results show that. It is a remarkable improvement from last year, and to have given up 22 fewer goals than last season at this same point is awesome."



JD Feist is blown away by his team's dedication and what the power of friendship can achieve.

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We did the thing and we did it well: Cross Country Edition

GOCALTECH.COM
Actual Sports Content Editor

LA MIRADA, Calif. (Oct. 17, 2014) - Led by new school records in both the men's and women's races, the Caltech cross country teams turned in many strong performances at the SCIAC Multi-Duals at La Mirada Park on Friday evening.

Junior Aditya Bhagavathi (Plainsboro, N.J. / West Windsor-Plainsboro) paced the squad with a third-place finish as every men's runner recorded a personal-best time. Bhagavathi posted his second successive career-best performance, shaving another 28 seconds off his time to finish with a program-record 25:38.18, which bested the previous mark of 25:44 set in 2001 (records kept since 1999).

A quartet of seniors followed Bhagavathi across the finish line in quick succession, with Ian Koss (Fort Collins, Colo. / Poudre) coming in at 27:27.79, Eric Martin (The Woodlands, Texas / The Woodlands College Park) finishing with a 27:39.74, Jared Forte (Lake Elsinore, Calif. / Elsinore) posting a 27:54.85 and Juan Adame (Sylmar, Calif. / Sylmar Math/Science Tech. Magnet) rounding out the scoring at 28:11.45.

Caltech earned sizable wins against Chapman University, California Lutheran University and the University of La Verne while coming up just short against the University of Redlands, 27-28, for a dual meet record of 3-5, marking the most wins in over a decade (2003).

Junior Elliot Simon (Alexandria, Va. / Thomas Jefferson) and

sophomore Joel Kosmatka (Encinitas, Calif. / Cathedral Catholic) also turned in strong varsity performances with big time-drops of 45 seconds (29:29.91) and 1:26 (29:47.90), respectively. Sophomores Nick Haliday and Rishabh Pipada continued the trend with each dropping over one minute to post times of 30:06.77 and 30:59.23. Freshman Mason MacDougall (La Mirada) recorded the biggest improvement of the day, dropping 2:25 to come in at 34:09.76, while freshman Gene Vaughan (Sharyland) finished up with a 31:31.55 and senior Alex Port (Denver, Colo. / George Washington) rounded out the squad with a 37:39.28.

Not to be outdone, the women's squad continued the Beavers' record-breaking efforts with nine out of 10 runners posting seasonal

bests. Senior Stephanie Reynolds (Tallahassee, Fla. / Lawton Chiles) dropped over one minute from her time just two weeks prior to establish a new 6k school record of 23:00.45, and finish 21st overall.

Freshman Caroline Atyeo (Marjory Stoneman Douglas) improved her previous time by 1:23 to run a 24:05.58 and move up to fourth on the all-time list. Racing together for the first time, sophomores Emily Mazo (Bala Cynwyd, Pa. / Harriton) and Gauri Shastri (West Lafayette Jr-Sr) displayed excellent teamwork, pushing each other to strong performances 26:48.55 and 26:49.85 to finish in 87th and 88th overall as Shastri dropped 1:14 and Mazo shaved 26 seconds from last year. Freshman Gillian Kopp rounded out the scoring for

the women, finishing in 29:06.17, a 24-second improvement from two weeks prior.

Junior Sheila Lo (Arcadia, Calif. / Arcadia) had a breakout performance with her 29:55.68, an improvement of 2:18. Freshman Caroline Howard, competing in the first cross country race of her life, rounded out the top seven, finishing in 29:57.54. She was followed by junior Emily Jensen (Modesto, Calif. / James C. Enochs) at 30:45.18, senior Carla Watson (San Diego, Calif. / Westview) in 31:11.41 - a 33-second improvement - sophomore Kate Evans Suwane (Ga. / Lambert) at 31:13 - a 1:08 improvement - and freshman Tiffany Zhang, who made her cross country debut in 32:31.53.

We were running a little low on pictures



The important parts of this picture are 1) the winning score and 2) jazz hands.

-gocaltech.com



I was perusing the website and I came across this groovy photo of Beems.

-gocaltech.com

Scoreboard

Women's Volleyball

Tues. Oct. 14 vs. CMS - L, 3-0
Fri. Oct. 17 vs. Redlands - L, 3-0
Sat. Oct. 18 vs. Chapman - L, 3-0

Men's Soccer

Wed. Oct. 15 vs. Redlands - L, 1-0
Sat. Oct. 18 vs. Cal Lutheran, L, 5-1

Cross Country

SCIAC Multi-Duals
Men's Score - 3-5
Women's Score - 0-8

Upcoming Games

Women's Volleyball

Fri. Oct. 24 @ 7:30p - La Verne
Sat. Oct. 25 @ 6p - Whittier
Tue. Oct. 28 @ 7:30p - Cal Lutheran

Men's Water Polo

Wed. Oct. 22 @ 5p - La Verne
Wed. Oct. 22 @ 7p - Chaffey College

Men's Soccer

Wed. Oct. 22 @ 4p - Chapman
Sat. Oct. 25 @ 11a - Pomona-Pitzer
Mon. Oct. 27 @ 7p - La Verne

ASCIT Minutes

ASCIT Board of Directors Meeting

Minutes for 12 October 2014. Taken by Sean McKenna.

Officers Present: Catherine Jamshidi, Nima Badizadegan, Connie Hsueh, Patrick Nikong, Annie Chen, Sean McKenna

Guests: Elliott Simon, Ellora Sarkar, Chris Dosen

Call to Order: 9:05

Agenda:

President's Report (Cat):

- Dean Dabiri has announced that he will be moving to Stanford on July 1st. The BOD will be working hard to complete "wishlist" items in the few months that remain. Contact a member of the BOD if you suggestions for what should be finished before Dean Dabiri's term expires.

Officer's Reports:

- V.P. of Academic Affairs (ARC Chair: Nima):**
 - Student-Faculty Conference planning is still happening.
 - Vice Provost's office would like to work with the ARC on experimental teaching (MOOCs), improving TQFRs and other evaluations, and scientific writing.
 - The Honor Code committee will present a preliminary report to the Faculty Board soon, which will be made available to students sometime in the future.
 - ARC Frosh Reps will be selected on Wednesday. Signups will be taken down on Monday.

V.P. of Non-Academic Affairs (IHC Chair: Connor):

- We're still in a drought! Water conservation is important. Particularly, if you notice that a sprinkler is positioned incorrectly and is watering the sidewalk or something, report it to sustainability@caltech.edu.

Director of Operations (Connie):

- Club Funding is happening on Sunday the 26th. Applications are due on Monday the 20th.

Treasurer (Patrick):

- Patrick is going to get ASCIT's budget for 2014-2015 finished this week.

Social Director (Annie):

- 40 people signed up for Annie's Socteam. She'll be using them as her support staff and has chosen not to set up an Executive Social Committee in addition to the Socteam.
- Annie is still working with administration on setting up a timeline and financial details for Big I, but this information will be distributed to the houses as soon as it's available.
- Tom is working with the Alumni Association to set up an Interstellar event at the beginning of December.
- ASCIT projector and SAC Courtyard ping pong table have been approved.

Secretary (Sean):

- ASCIT now has a twitter account! Follow @ASCITtweets.

If anyone has any questions or concerns about a section of the minutes please email the appropriate officer. We are happy to answer any questions. The next meeting will take place on October 19th, 2014 at 9pm in SAC 15.

Meeting Adjourned: 10:00



Thursday, October 23, 8 p.m.
Beckman Auditorium

Panel Discussion

"Science and the University-Government Partnership"

Come hear what a panel of distinguished scientists and leaders has to say about the future of innovation at places like Caltech.

Friday, October 24, 2 p.m.
Beckman Mall

Inauguration

The ceremony starts at 2 p.m., and all students are encouraged to attend. An **all-campus reception** on the Olive Walk will follow.

In honor of inauguration, and to make it easy for all students to participate in this very special event, October 24 has been declared an academic holiday. For information about the ceremony and related events, please visit inauguration.caltech.edu

**All Students
Are Invited to
Celebrate the
Inauguration of
President
Rosenbaum!**

NOMINATE YOUR FAVORITE PROFESSOR FOR THE FEYNMAN TEACHING PRIZE!!!

Here's your chance to nominate your favorite professor for the 2014-15 Richard P. Feynman Prize for Excellence in Teaching! You have from now until January 5, 2015 to submit your nomination package to the Provost's Office to honor a professor who demonstrates, in the broadest sense, unusual ability, creativity, and innovation in undergraduate and graduate classroom or laboratory teaching.

Additional information including guidelines for the prize and FAQ may be found at <http://provost.caltech.edu/FeynmanTeachingPrize>. Further information can also be obtained from Karen Kerbs (626-395-6039; kkerbs@caltech.edu) in the Provost's Office.

**REMINDER FROM THE
COUNSELING CENTER:
Meditation Mob (drop-in
mindfulness meditation group)
meets every Tuesday
Bottom floor of Winnett from
12:00-12:50 pm**

The California Tech

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Cirque Zuma Zuma awes at Beckman

PARUL PUBBI
Contributing Writer

Performers from Africa (representing the countries of Ethiopia, Kenya, and Tanzania) landed in sunny Pasadena for a performance on Oct. 18 called Cirque Zuma Zuma, a Cirque du Soleil-inspired demonstration of human talent.

The high-energy show began with vocalists in bright ensembles: graphic leopard print pants made way for a tribal dance in zebra print. The first demonstration of human talent came with limbo, when a performer gave “How low can you go?” another meaning by bending backwards and walking under a pole about a foot above the ground.

physical demands performing places. I had a chance to speak with the girl whom I’d watched move her body like putty after the performance; she was just 22 and had been working to increase her flexibility since she was 12. It took five years of focus to reach a point where she could perform. I don’t think five years would be sufficient for me to be near the point where I could remotely bend like that, even though I’ve danced for years. It only took about five minutes of watching her perform to drop my jaw to the ground, though! I didn’t know it was possible to walk circles around yourself while keeping your head upside down in the same place. Around Fleming house, I’ve been pushing for yoga Saturdays. If this show wasn’t motivation to



Photo Courtesy of Cirque Zuma Zuma

The next act began with an unassuming green chair: as a female vocalist crooned soothing beats, an acrobat showed the audience what the phrase “To the top!” really means by performing handstands on one, then two, then three, then four chairs (easily over 20 feet above ground). This was followed by a juggling dance; if the Caltech men’s basketball team was as good as dribbling one ball as the performer was with seven, we might actually win a few games. This was closely followed by pushups and handstands to beats; this alone would be impressive, but it was heightened by the fact that this was done while jumping rope. A line of performers taking turns somersaulting through two small hoops brought and balanced on stage seemed superhuman. Whether or not America has talent is debatable, but these African performers definitely did.

The next act was perhaps my favorite of the night: a female body contortionist named Salaam from Ethiopia who slinked to the stage in a bright yellow suit and bended to poses that put the Kama Sutra to shame. The introduction pamphlet given at the event claimed that many members of the African Acrobats International Academy, the group behind the feats demonstrated, typically can’t perform onstage after the age of 30 due to the

follow through, I’m not quite sure what is. Watching a man balance a candelabra on a small stick held in his mouth made me very aware of my lack of coordination as well.

Next on stage was a comedy act with a man who was more expressive with a whistle than many people are with words. Acrobats who made poses that didn’t begin to compare to my high school’s cheerleading team were up next, closely followed by a performance of gumboot, a traditional dance that originated in the mines. By definition, cirque involves “adding theatricality” to circus acts, but this part felt a bit gimmicky for my taste.

One of the best indicators of how compelling a show is, is how much the audience feels involved and engaged, and the show’s capacity to make an audience lose themselves, if only for an hour. The answer-and-call session that followed, as well as the concluding high-energy number that brought most of the audience to their feet, dancing along, served as pretty compelling evidence for considering the cirque quite a successful show. The acrobats behind the show also specialize in club and fire juggling, which wasn’t on display at Beckman; all in all, though, it was quite a spectacular show with charismatic performers that entertained from start to finish.

Crossword

1	2	3	4		5	6	7	8		9	10	11	12	
13					14					15				16
17					18					19				
20				21		22			23		24			
25				26	27				28	29				
			30					31				32	33	34
35	36	37					38					39		
40						41					42			
43				44	45				46	47				
48				49				50						
			51				52					53	54	55
56	57	58			59	60				61	62			
63				64		65			66		67			
68						69					70			
	71					72					73			

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Across

- 1. Yore
- 5. Curved masonry construction
- 9. River duck
- 13. Horrible looking
- 14. Uncommon
- 15. Impressive display
- 17. Snare
- 18. Leg joint
- 19. Saltwater
- 20. Religious doctrine
- 22. Seaweed
- 24. Betting ratio
- 25. Up to now
- 26. Shout
- 28. Paddle
- 30. Large woody plant
- 31. Written record of events
- 32. Summit
- 35. Security group
- 38. Wan
- 39. Vine with evergreen leaves
- 40. Not present
- 41. Gratuity

- 42. A great distance
- 43. Annoy
- 44. Male red deer
- 46. Smother
- 48. Cereal grass seed
- 49. Sense organ
- 50. Ale
- 51. Jinx
- 52. Singe
- 53. Perform
- 56. Reverberate
- 59. Scintilla
- 61. Lesser in scope or effect
- 63. Mentally responsive
- 65. Ceremonial staff
- 67. Wander
- 68. Pester
- 69. Metallic element
- 70. Notion
- 71. Liberate
- 72. Look after
- 73. Transmitted

- 2. Concur
- 3. Angle
- 4. Variety
- 5. Biblical boat
- 6. Make resentful or angry
- 7. Wicker fish basket
- 8. Part of a shoe
- 9. Restaurant bill
- 10. Mistake
- 11. Desiccated
- 12. Bring ashore
- 16. Affirmative
- 21. Novice
- 23. Consortium
- 27. Fish
- 29. Historic period
- 30. Attempt
- 31. Circuit
- 32. Petty quarrel
- 33. Ellipse
- 34. Funeral mound
- 35. Brace
- 36. Askew
- 37. Receive something given
- 38. Domestic swine

- 41. Seaman
- 42. Atmosphere
- 44. Understand
- 45. Cab
- 46. Large body of water
- 47. Limited period of time
- 50. Lighthouse
- 51. Gymnastic apparatus
- 52. Gaze
- 53. Positively charged electrode
- 54. Gathering of witches
- 55. Delicacy
- 56. Consume
- 57. Musical notation written on a staff
- 58. Take heed
- 60. Leave out
- 62. Part of the eye
- 64. Golf peg
- 66. Conclusion

Sudoku

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

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Caltech student sets academic record

TIM SINCLAIR
Contributing Writer

“It was like no one was even trying to beat me.” Cody Smarts, 18, makes everything seem easy when he’s in his zone. That particular zone is Baxter Lecture Hall, from 10 a.m. to 11 a.m. on Mondays, Wednesdays, and Fridays. Through the first two weeks of classes, Smarts holds the highest in-class score in Math 1a. But Smarts’ performance so far is not just amazing; it is historic. No student has ever asked as many questions, or pointed out as many mistakes on the board as Smarts has through the first two weeks of any Math 1a class.

“I’m a competitive person by nature,” Smarts tells us. “Most Caltech students don’t understand that class is a competition, not a learning environment.” Yes, interrupting class comes naturally to Smarts, but he does set his record under different circumstances than the previous record holders. We asked Jon Buscutti, a senior math major who has tutored Math 1a since he was a sophomore, what was different this year.

“Usually, math professors won’t call on students this often. Nets Katz, who started teaching the course last year, seems to be calling on students at a higher-than-average rate. We started seeing signs that a record could be set soon when, after the midterm last year, Katz explained one of the problems in class, and answered 15 questions on that problem alone.”

When Smarts first arrived at Caltech, he was full of talent. Bored in high school one too many times, Smarts decided to have more fun by interrupting class whenever he could. “I’ll admit that at some point I realized that if I slow down class enough, I could actually do better against the curve, because the teacher wouldn’t be able to get through all the material in time. I learn better from books anyway. I quickly realized that was unethical and stopped using it to my advantage. It’s like betting on a professional sports game as a player. I felt it distracted from the spirit of the game.” Since attending an introductory organic chemistry class at a local community college over the summer before his senior year of high school, Smarts’ skills as a student have matured. Bobby Jenson, another student in Math 1a, explained why Smarts has been so successful.

“He’s completely changing the game. Cody knows how to get the professor’s attention in a million different ways. He can get the professor to call on him with just a facial expression.

“He can believably both understand a lecture well enough to ask a question that demonstrates how much he knows, and also get baffled by a tiny mistake on the board that wasn’t important. I mean, obviously he’s not confused by most of the mistakes he finds because they take a lot of knowledge of the subject to notice; he just sells it so well.”

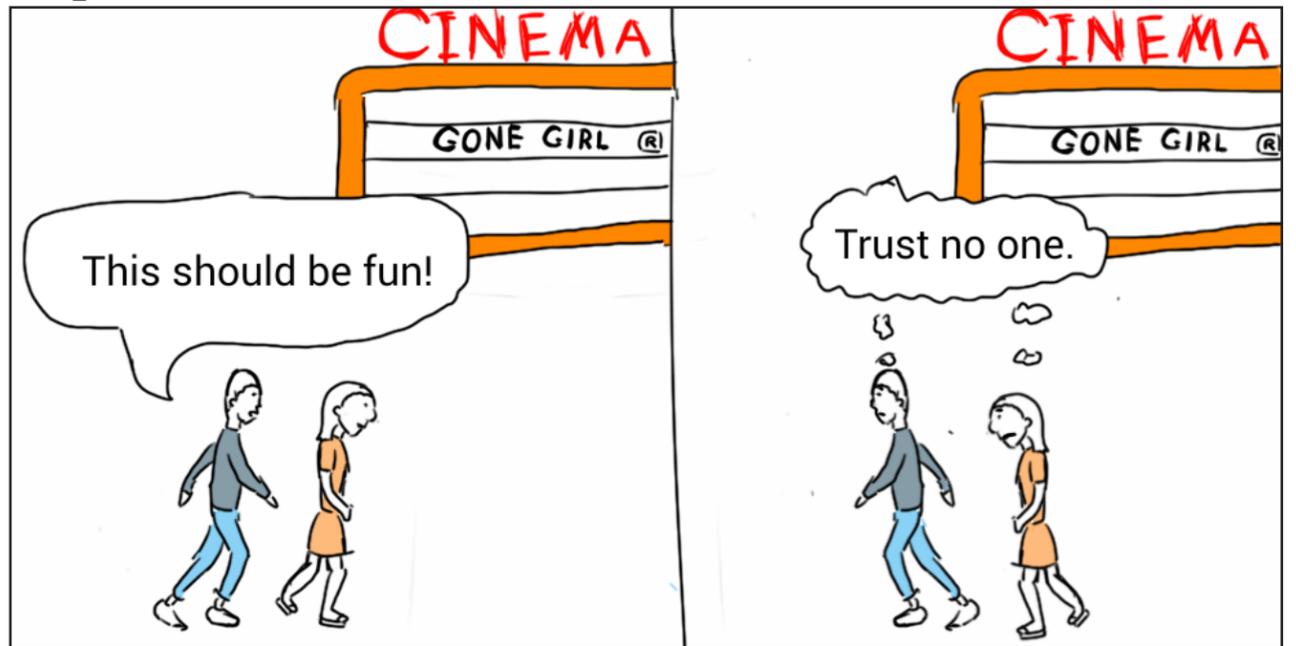
The last student to record the most class interruptions during the first two weeks of Math 1a went on to record the most class interruptions during the entire term of any Math 1a course. That student, of course, was Georgia Fu, who set her record exactly a decade ago in Fall term, 2004. Fu is the first international student to hold the record and represents a growing academic super-power: China.

“I think the other students are a little more accepting of Smarts’ interruptions than they usually would be,” Buscutti explained. “It’s like they want to bring the trophy back to America. Our education system might be behind China’s in math, science, and reading, but we can at least show our dominance in forcing all the other students to pay attention to us. It’s the American way.”

To get updates on Smarts’ progress throughout the year, follow @Sh**CaltechSays on twitter.

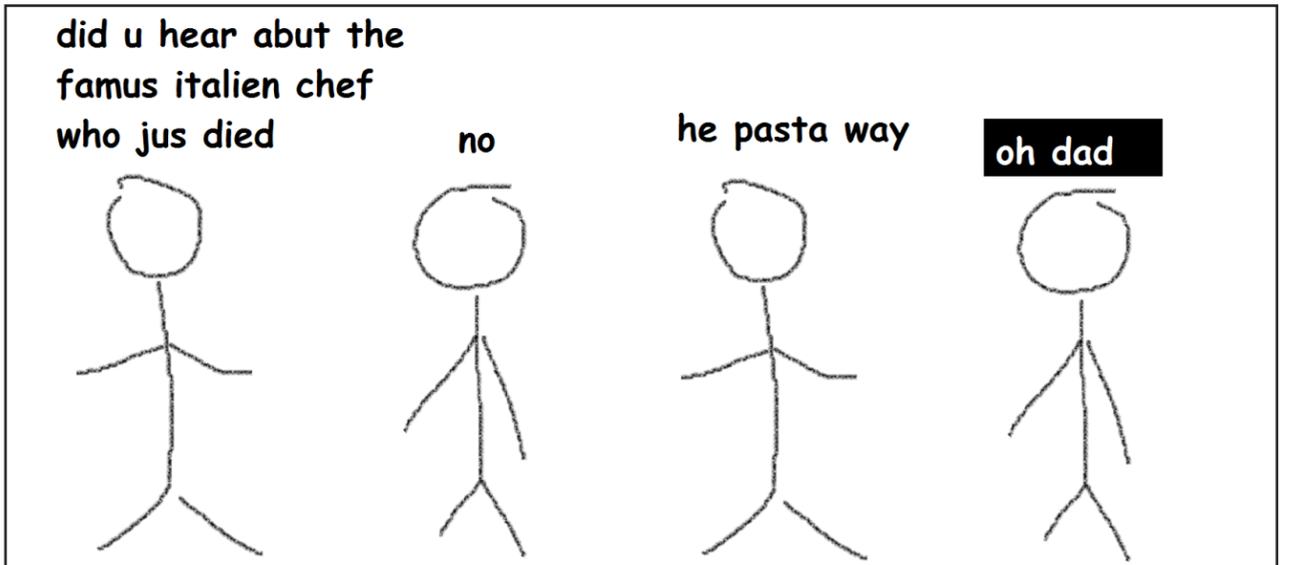
The Iterated Manifold is a weekly column by Timothy Sinclair, who liked Caltech so much he matriculated before going to prefrosh weekend.

Acquired Taste



Dr. Z

Turtle Lover



Answers to previous Sudoku

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

Answers to previous crossword

G	O	N	G	T	A	R	S	H	O	P			
A	B	O	U	T	A	G	O	S	C	O	P	E	
M	E	T	E	R	L	E	D	P	A	N	E	L	
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			T	O	E	R	O	A	R				
A	R	C	P	I	L	E	T	I	R	A	D	E	
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P	L	E	A	S	N	E	A	K	N	O	N	E	
L	E	A	V	E	K	I	L	N	D	O	O	M	
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			G	O	A	T	V	A	T				
S	P	E	C	I	E	S	T	E	R	R	I	F	Y
W	I	D	E	N	S	P	Y	V	I	O	L	A	
A	N	G	L	E	E	R	R	A	L	T	A	R	
P	E	E	L	T	O	O	L	A	W	N			

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