



# the PIPER

CMU'S NEWS SOURCE FOR FACULTY & STAFF 2/16 ISSUE

Carnegie Mellon University

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## In It To Win It

### CMU Team Floats Airtight Design In Hyperloop Pod Competition

■ Kelly Saavedra

When Elon Musk first made public his idea for the Hyperloop — an ultra-high speed ground transportation system that would rocket passengers hundreds of miles through a tube — some thought he'd gone off the rails.

But Anshuman Kumar, who was in India preparing to embark on a Carnegie Mellon education, leaped at the opportunity to do something groundbreaking during his time as a student.

Musk, the CEO of SpaceX and Tesla Motors, called on universities around the world to compete to design and build the

CONTINUED ON PAGE FOUR

### Money Matters: Small Changes Equal Big Returns

■ Shilo Rea

It is estimated that roughly seven million Americans each year — or 25 percent of those eligible — fail to claim the Earned Income Tax Credit (EITC), the primary channel through which the government supports the working poor.

Economists and policymakers have long been puzzled over why millions voluntarily forego credits worth, on average, a month of income.

To shed new insight into why so many people fail to sign up for valuable government benefits, and to identify strategies to improve participation, Carnegie

CONTINUED ON PAGE FIVE

## Coollest Ride In Town



Tanuj Apte takes Prashant Bhardwaj for a ride through Shadyside in an "Autopod," a micro-taxi service that takes passengers on jaunts of about two miles or less. The three-wheeled, battery-assisted bicycle, which is also an advertising tool, is the brainchild of CMU graduates Apte and Deepak Vidhani. READ ABOUT AUTOPODS ON PAGE 5.

PHOTO BY COOPER KOSTELIC

## Crime and Punishment

### Students Analyze Risks, Benefits of New Marijuana Law

■ Emily Stimmel

Cities and states across the U.S. are changing laws on marijuana, and Pittsburgh has joined the movement.

Drawing inspiration from Philadelphia's attempts to decriminalize possession of small amounts of the drug, City Councilman and Carnegie Mellon alumnus Dan Gilman commissioned a study on the feasibility of doing the same in Pittsburgh. Gilman turned to Dietrich College students to examine the issue, and five seniors majoring in ethics, history and public policy (EHPP) rose to the challenge.

"I always like soliciting research from the students at Carnegie Mellon whenever possible," said Gilman, who also majored in EHPP and worked with EHPP seniors last year on a project involving government surveillance.

"They are the best and the brightest, and their work product is consistently fantastic."

The students — Jack Devine, Daniel Kusbit, Stephen Nimalasuriya, Lisa Tu and Gabriel Vegh-Gaynor — did the work for their senior capstone project. Based on analyses of other

cities, states and countries that have decriminalized marijuana possession, they determined that the health and social risks posed by decriminalization are small enough to be insignificant, particularly when compared to the potential benefits of decriminalization.

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# Trading Places

## Faculty Exchange Opens New Chapter in Creative Writing Program

■ Amanda King

Jim Daniels is teaching a nonfiction writing course called “Life Writing” and another course in which he works closely with creative writing students as they complete their senior projects.

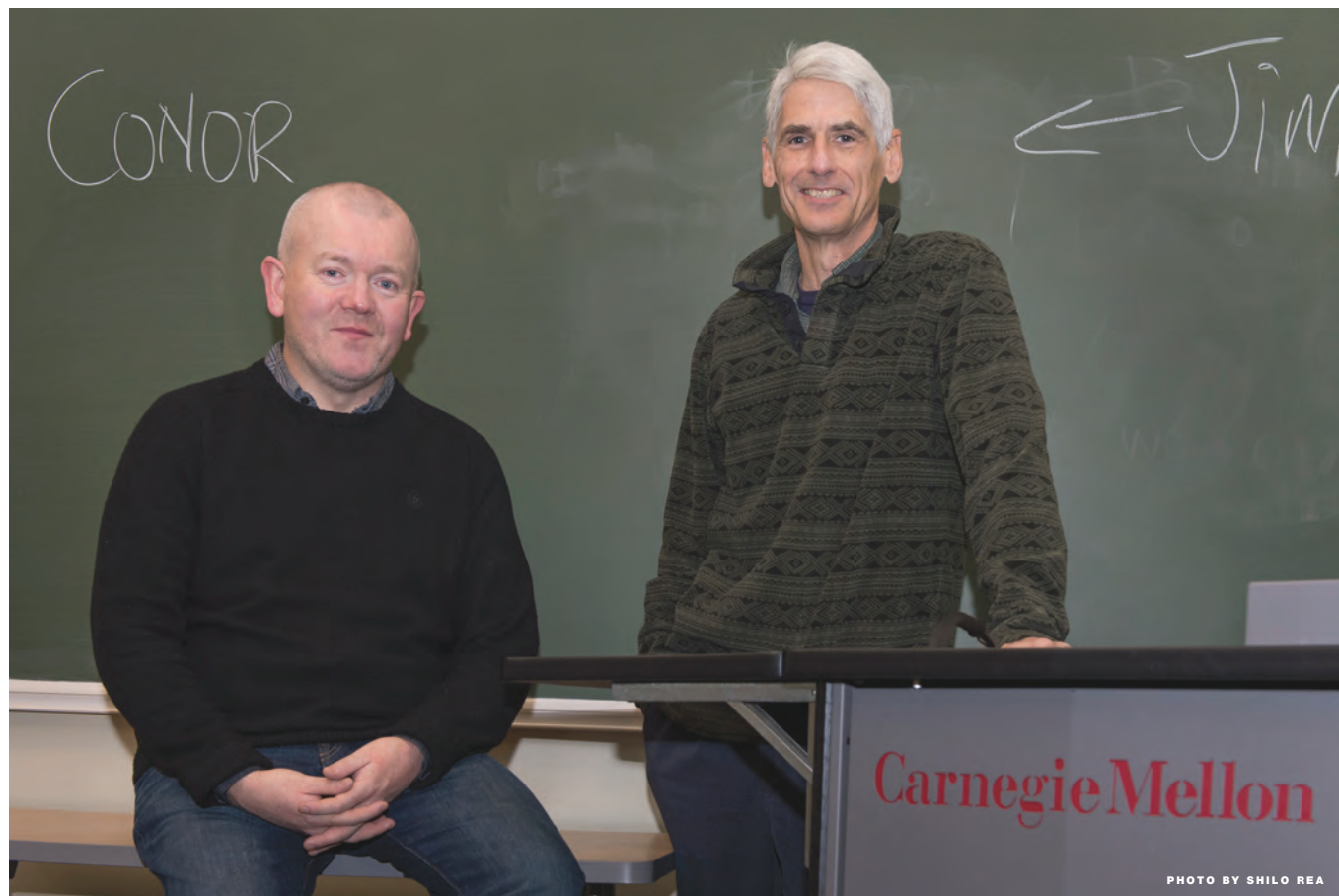
But, you won’t find Daniels at CMU. Instead, he’ll be teaching them at Sheffield Hallam University (SHU) in the United Kingdom as part of the English Department’s first faculty exchange with SHU.

The exchange complements the creative writing program’s undergraduate student exchange with SHU, which is now in its sixth year.

“All of our students who have participated in the exchange have come back energized and enthusiastic about their experiences at Sheffield Hallam, and I am very excited about having the opportunity to spend a semester there myself,” said Daniels, the Thomas Stockham Baker University Professor of English.

Taking Daniels’ place at CMU is Conor O’Callaghan, an Irish poet and senior lecturer at SHU who is teaching “Reading in Forms: Fiction” and the “Beginning Poetry Workshop.”

“Conor is a fine writer and teacher, and we are lucky to have him partici-



Sheffield Hallam University’s Conor O’Callaghan (left) and CMU’s Jim Daniels are trading places this semester in the English Department’s first faculty exchange.

pating in this exchange,” Daniels said.

Both cities and creative writing programs share similar characteristics — the City of Pittsburgh established a “sister city” partnership with Sheffield and are both “steel cities.” CMU and SHU have established creative writing programs, which O’Callaghan said is what makes the schools the perfect match for a student and faculty exchange.

O’Callaghan said he’s looking forward to exploring Pittsburgh — making sure to attend a Pirates game or two — and meeting his new colleagues and students.

“For me and Jim, it will be fun to have the chance to be elsewhere and maybe get some writing done in a new environment,” said O’Callaghan, who has been teaching at SHU since 2007.

Daniels said he hopes the faculty exchange will strengthen the student exchange program by bringing more awareness to it on both campuses. Daniels will be talking to SHU students, faculty and administrators about Carnegie Mellon, the creative writing program and Pittsburgh, while O’Callaghan does the same at CMU.

The exchange also will be useful for both professors when they return to their home institutions to advise students. They will be able to give first-hand accounts of what the classes, universities and towns are like.

O’Callaghan has authored four collections of poetry. The most recent are “The Sun King,” which was shortlisted for the “Irish Times” Poetry Now

Prize, and “Fiction,” a Poetry Book Society Recommendation. His work also has appeared in the Harvard University Press’ “An Anthology of Modern Irish Poetry” and “Poetry” magazine.

Along with poetry, O’Callaghan’s comedic memoir, “Red Mist: Roy Keane and the Football Civil War,” was published in 2004. The book, which recalls the public furor surrounding Ireland’s 2002 soccer World Cup team, was adapted into a one-hour film for UKTV.

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**“All of our students who have participated in the exchange have come back energized and enthusiastic about their experiences at Sheffield Hallam, and I am very excited about having the opportunity to spend a semester there myself.”**

**— Jim Daniels**

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“I am pumped to be in Professor O’Callaghan’s classes this semester,” said Sarah Hodgson, a junior double majoring in creative writing and professional writing. “I didn’t get the chance to take classes with him when I studied at Sheffield Hallam last year, but I had the opportunity to read some of his wonderful work in my poetry class. When I heard he was coming to CMU this year, I wanted to take advantage of both opportunities to learn from him — and the classes just sound so fun!”

Daniels work often crosses genres as well. He has authored 15 poetry books and five collections of short fiction. His most recent are “Apology to the Moon” and “Birth Marks,” which was named to the 2014 Michigan Notable Books List and won the 2014 Independent Publisher Book (IPPY) Awards’ Poetry Gold Medal and the Binghamton University Milt Kessler Poetry Book Award.

He has written four films, including “The End of Blessings,” which was recently selected for the 35th annual Black Maria Film Festival for 2016, an international touring festival of short films sponsored by the Thomas A. Edison Media Arts Consortium.

His 2010 film, “Mr. Pleasant,” appeared in more than a dozen film festivals across the country.



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# The Honor Roll

## Four Faculty, Two Alums Lauded for Outstanding Achievement



### Whitacre Elected to National Academy of Inventors

Jay Whitacre, professor of engineering and public policy and materials science and engineering, has been named a 2015 Fellow of the National Academy of Inventors (NAI). He'll be inducted April 15 at the United States Patent and Trademark Office in Alexandria, Va.

Whitacre joins four others at CMU who have achieved this high professional distinction: Krzysztof Matyjaszewski, José M.F. Moura, Raj Reddy and President Subra Suresh.

Whitacre has more than 30 patents issued or pending and has been recognized with numerous

awards, including the 2015 Lemelson-MIT Prize, which honors outstanding inventors committed to mentorship in STEM fields.

Whitacre founded the startup Aquion, which markets his invention, the Aqueous Hybrid Ion (AHI™), an environmentally friendly, sustainable and inexpensive saltwater battery. The AHI™ uses its unique saltwater composition to store solar and wind energy for residential and off-the-grid applications. Nicknamed the “edible battery,” this non-toxic energy storage system has minimal environmental impact.



### Krishnan Honored for Data-Driven Research

Ramayya Krishnan, dean of the Heinz College and the William W. and Ruth F. Cooper Professor of Management Science and Information Systems, is the 2015 recipient of the Nayudamma Centre for Development Alternatives' (NCDA) Nayudamma Award.

The NCDA presented the award to Krishnan at his undergraduate alma mater, the Indian Institute of Technology Madras (IIT-Madras) in Chennai, Tamil Nadu, India.

The Nayudamma Award honors individuals for their significant contributions around the world in areas of sustainable development. Krishnan is being honored for his research and leadership in making data-driven decisions in key societal domains, including transportation, smart cities

and living analytics.

Provost Farnam Jahanian praised Krishnan for his work at the intersection of information technology, public policy and management, for having a significant impact on organizations in the public and private sectors, and for his commitment to improving the human condition.

The NCDA ceremony marked Krishnan's second trip to India this year to share his expertise on sustainable development. In July, he moderated the Smart Cities Panel at CMU's Integrated Intelligence Showcase in New Delhi before the largest gathering of CMU alumni, parents and future students outside of the United States.



### Alumnus, Trustee Earns Highest National Honor

DNA pioneer Jonathan Rothberg will receive the National Medal of Technology and Innovation at the White House this year.

The medal is the nation's highest honor for achievement and leadership in advancing the fields of science and technology. The award recognizes those who have made lasting contributions to America's competitiveness and quality of life. Rothberg is one of seven winners.

Rothberg, a member of the Board of Trustees, is best known for pioneering high-speed, massively parallel DNA sequencing. He created the technology that sequences DNA to allow researchers and doctors to identify, diagnose and potentially develop treatments for genetic diseases.

Rothberg has led or been a major part of well-known sequencing projects — including the first human genome (of Nobel laureate Jim Watson), the Neanderthal genome and incorporation of sequencing technology on semiconductor chips.

Rothberg, a 1985 CMU engineering graduate, is founder of a string of successful companies, including 454 Life Science, CuraGen, Ion Torrent, Raindance Technologies, Hyperfine Research, Butterfly Network Inc., LAM Therapeutics and 4Catalyzer.



John Lehoczky



“Raj” Rajkumar



Lui Sha

### Lehoczky, Rajkumar and Sha Praised for Technical Leadership

IEEE, the world's largest technical professional organization, will award John Lehoczky and Ragunathan “Raj” Rajkumar and CMU alumnus Lui Sha with the 2016 IEEE Simon Ramo Medal, which recognizes technical leadership and contributions to fundamental theory, practice and standardization for engineering real-time systems.

The trio is being honored for revolutionizing how systems handle tasks with deadlines under serious weight, power and space constraints. Their work has been used on the original Mars Rover, NASA's Space Station, submarines, military jets and GPS satellites. They will receive their medals, sponsored by the Northrop Grumman Corporation, at the IEEE Honors Ceremony in New York City on June 18.

Lehoczky, the Thomas Lord University Professor of Statistics and Mathematical Sciences, has been on the CMU faculty since 1969. In addition to his work studying stochastic processes and how they can be used to model real applications, he is well known for applying stochastic modeling to problems in finance. He helped create CMU's unique master's degree program in computational finance — a joint program between the departments of Statistics and Mathematical Sciences, the Tepper School of Business and the Heinz College. The program has been ranked number one among financial engineering

programs by QuantNet three times.

Rajkumar is the George Westinghouse Professor of Electrical and Computer Engineering and the co-director of the General Motors-Carnegie Mellon Autonomous Driving Collaborative Research Lab. He also directs the Center for Technologies for Safe and Efficient Transportation (T-SET), one of five U.S. Department of Transportation National University Transportation Centers.

Rajkumar founded Ottomatika, a CMU spinoff that was acquired by Delphi. Ottomatika's software acts as the brain powering Delphi's advanced network of sensor technology for autonomous vehicles, creating a platform that enables vehicles to make safe, highly complex decisions in an instant.

Sha, the Donald B. Gillies Professor of Computer Science at the University of Illinois, received his Ph.D. from CMU in electrical and computer engineering in 1985 and was a student of Lehoczky. From 1986-1998, he was a senior member of the technical staff at CMU's SEI. His research includes leading the creation of the generalized rate monotonic scheduling theory (GRMS), as well as work in real-time computing and safety critical system integration.

Lehoczky and Rajkumar join CMU faculty member William “Red” Whittaker as recipients of the prestigious Simon Ramo Medal. Whittaker was honored in 2012.





The Hyperloop, as envisioned by SpaceX CEO Elon Musk, would turn a six-hour road trip into a 30-minute commute.

best Hyperloop pod. One month before Kumar even arrived in Pittsburgh, he'd already recruited half a dozen team members eager to accept the challenge.

"The real motivation is the impact this will have on people, cities and society," Kumar said of the Hyperloop, which has the potential to turn a six-hour road trip into a 30-minute commute. "Right now it's a 'vacation' when a mother and father in Pittsburgh want to visit their daughter at college in New York. With the Hyperloop, it becomes as simple as 'dinner in the city tonight.' This is really about relationships and bringing people closer together."

Musk envisions the system to be a cross between the Concorde jet, a rail-gun and an air hockey table. Extremely low air pressure inside a network of tubes spanning hundreds of miles would allow pods filled with people to zoom through them at transonic speeds.

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**"The real motivation is the impact this will have on people, cities and society."**

**— Anshuman Kumar**

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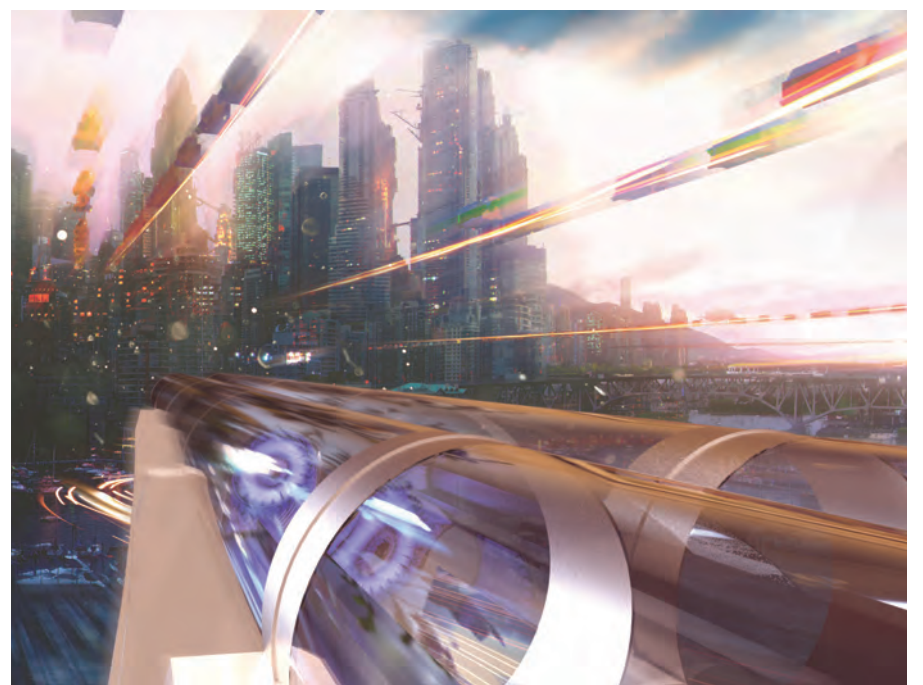
The pod designed by CMU's Hyperloop team, which has grown to 50 engineering, design and business students at Carnegie Mellon, made it to the semifinal round of the Official SpaceX Hyperloop Pod Competition based on a document they submitted detailing aspects of their pod's levitation, propulsion, structures, navigation, communication and safety. SpaceX deemed it as a "solid and impressive" design briefing.

Next, the team hopes to secure a spot in the top 10 on Jan. 29-30, when they present their final design package to engineers from SpaceX and Tesla Motors and university professors at Texas A&M. But first, they need to conduct some preliminary research.

"In our efforts to design a truly scalable Hyperloop pod, we find ourselves dealing with questions that even industry experts have trouble answering," said Karthik Chandrashekaraiyah, the structure lead engineer. "The most pressing issue is that of the air bearings we intend to use. Even the most promising alternative for our levitation system — an air caster style bearing — has never been tested at the extreme conditions that have been proposed for the final event."

A crowdfunding campaign helped the team raise the money they needed for prototyping and testing.

"We need to simulate the conditions for levitation of the assembly. We need to put together a test rig that will allow



us to generate quantitative proof to substantiate our designs before we can move to the final round and actually build our pod," said Shishir Gupta, the team's air bearing expert.

Once the team determines the pod can float, they'll need to slow it down. That will require the use of magnets, since the pod is not actually touching anything in the tube.

So far, the team has been primarily sponsored by CMU's Mechanical Engineering Department, which has provided space for them to work. Integrated Product Design Professor Julian Lion Boxenbaum has been guiding the team

with design strategy and administration from the start. Assistant Teaching Professor of Mechanical Engineering Satbir Singh is the team's official SpaceX adviser, helping out with technical issues.

The competition is being held at half scale, primarily to reduce the cost and complexity of the designs. However, a full-scale pod would hold around 20-30 people.

Kumar will graduate from Carnegie Mellon in 2016 with a master's degree in Integrated Innovation for Products and Services.



# Cooler Ride in Town

## Micro-Taxis Give Riders, Advertisers a Lift

■ Bruce Gerson

It's the coolest ride in the neighborhood.

The three-wheeled, battery-assisted bicycle with a lime green, sleek, aerodynamic fiberglass shell surrounding the driver and back seat for two is the brainchild of Carnegie Mellon graduates Tanuj Apte and Deepak Vidhani, co-founders of Autopods.

The Dubai natives' "micro-taxi" service that takes passengers on jaunts of about two miles or less is now operating through Shadyside, but by April their fleet will be traversing the South Side, Strip District and downtown neighborhoods as well. And in February they'll make their debut in "almost heaven" Charleston, W.Va.

Rides are free on weekends and only \$5 during weekdays. Drivers, who keep the fares and tips, lease the "cabs" for \$25 per day. During weekends, Autopods pays the drivers \$10 per hour to accommodate for the free fares.

During the holiday season, Autopods partnered with the Shadyside Chamber of Commerce, which sponsored the weekend rides for shoppers.

"They're fun, the color is great and they're very practical," said Chamber Director Tori Mistick. "You could park your car for free a few blocks from Walnut Street and take an Autopod. We saw a lot of people taking rides from Walnut to the

shops on Ellsworth Avenue and back."

Parts of the street-legal electric bicycles are produced and assembled by six manufacturing companies in Guangdong, China, and shipped to the U.S. at a cost of about \$3,500 each. But Apte and Vidhani, who took shipment of their prototype just one week after graduating last May, said they recoup the cost pretty quickly.

"It's profitable. The pods pay for themselves in less than one-and-a-half months. It all comes down to advertising," said Apte, who thought of the idea for the company during the winter of his junior year.

"It got too cold for me to walk to class so I thought if only there was a way to get a quick short distance ride — something a taxi wouldn't do," he said.

Apte, who earned his bachelor's degree in information systems, is the CEO and handles the advertising and apps through which riders access the vehicles and view advertisements. Ads also are placed on the exterior of the taxis and companies can run video ads on an iPad that faces the back seat passengers.

Businesses pay a premium to advertise.

"When you see these on the streets, people's heads turn," Apte said.

iPad video ads run \$150 per month; black and white exterior ads are \$650 per month; and color exterior ads are \$850 per



Color exterior ads on the Autopods are \$850 a month.

month. Rates are on a per pod basis.

"We want to bridge the gap between a taxi and an advertising tool," Apte said. "We want it to be something in which people can connect to the community, and the community connects with them."

Mistick said the vehicles garnered a lot of attention in Shadyside.

"Everyone loved them. Several chamber members thought it was very fun. When I was riding around I saw many people pointing. They're great because it's like riding in a big mobile billboard," she said.

Vidhani, who earned his master's degree in mechanical engineering, is the COO and engineer of the company. Also on the team are Arya Tabatabai, another 2015 CMU mechanical engineering

master's degree grad, and Prashant Bhardwaj, who graduated from Arizona State in supply chain management. Tabatabai runs the product development side of the house.

Modifications now underway include rolled glass and canvas jeep-like doors that snap onto the shell; a lighter aluminum shell that would cut the vehicle's weight from 400 to 225 pounds; and iPhone mounts created by 3-D printers. Apte and Vidhani credit much of their success to the entrepreneurial culture at CMU.

"CMU and Pittsburgh are great communities that welcome entrepreneurship," Vidhani said. "The

CONTINUED ON PAGE TWELVE

## Money Matters: Small Changes Equal Big Returns

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Mellon's Saurabh Bhargava led a first-of-its-kind field experiment with the Internal Revenue Service. Published in the recent issue of the *American Economic Review*, the study strategically modified the appearance and content of tax claiming notices and worksheets in such a way that it permitted a better understanding of how confusion, informational complexity and program stigma affected the decision not to claim.

The IRS distributed the redesigned mailings to over 35,000 eligible non-claimants in California to determine which mailings led to the highest response. The study found that small changes to the appearance of the tax notices, such as a cleaner layout, a modestly shorter claiming worksheet or displaying the amount of the potential credit in the headline, led significantly more individuals to claim than mailings with typical government complexity.

"Many government policies are shaped by standard economic theories that assume people are rational and self-informed," said Bhargava, an assistant professor of economics in CMU's Department of Social and Decision Sciences. "This study suggests that complexity and small administrative burdens or 'hassles' can deter regular people from acting in their own interest, even when the stakes are large."

The authors examined the low participation rates for the EITC because the costs of claiming — merely filling out and returning a form — appeared to be low, while the benefits — some were eligible for credits over \$5,000 — can be substantial. The field study, along with additional surveys of thousands of low-income individuals, suggested that the absence of claiming is not the result of stigma or the amount of time required to apply for a credit — explanations favored by traditional economic theory — but

instead the result of "psychological frictions," such as low levels of program awareness, confusion regarding eligibility and inattention to program information.

Intriguingly, across recipients of all of the new mailings, 22 percent claimed a credit, despite these individuals having already received an earlier, but complicated, notice from the IRS. This indicates that a mere reminder can lead a substantial number of individuals to claim benefits.

Overall, the study led to additional claiming of about \$4 million in credits among a group owed about \$26 million in benefits. The study estimated that redesigning and expanding the distribution of notices could lead to several hundred thousand additional claimants in a population not highly

sensitive to traditional incentives.

Since the completion of the study, the IRS has begun to circulate redesigned notification forms. And, because other government assistance programs have even more severe challenges getting eligible individuals, often in dire economic need, to sign up for benefits, Bhargava sees this type of work as having widespread relevance.

"This study demonstrates the value and need for rigorous evidence-based approaches to public policy. It also suggests that, in an increasingly complicated world, simplicity and a commonsense recognition of how individuals make decisions can play a critical role in the ultimate success of policies like the EITC," Bhargava said.



# 17th Annual MLK Jr. Writing Awards

## Students' Poetry, Prose Express Personal Experiences with Racism, Discrimination

■ Emily Stimmel

Seventeen Pittsburgh-area high school and college students were recognized for their poetry and prose at Carnegie Mellon's 2016 Martin Luther King, Jr. Writing Awards Ceremony on Jan. 18.

The writing awards program — now in its 17th year — is a highlight of CMU's Martin Luther King, Jr. Day celebration. In addition to readings, guests enjoyed a performance by the School of Drama's Gospel Ensemble and a light dinner. Throughout January and February, CMU will celebrate King's legacy with special programming.

Associate Professor of English Rich Purcell has judged entries for three years, but this is his first year directing the MLK Writing Awards.

"Every year I am struck by the maturity and insight these high school and college students express. Each student is all too aware of the way they are either targets of or witnesses to the way racism and other forms of discrimination shape our social world," Purcell said.

"The MLK Writing Awards remind me that art is one way for young adults to process and understand this sad but all too real element of our social world."

Founded in 1999 by Jim Daniels, the Thomas Stockham Baker University Professor of English, the

program established a safe haven where students can create an honest and open dialogue about their experiences through poetry and prose.

"Their essays give me hope because it seems like many of them are not alone in dealing with it. They have peers, family and teachers who help them deal with their personal experiences with discrimination, organize their words on the page or organize politically and collectively to try and do something about racism and discrimination," Purcell added.

At the high school level, students from Pittsburgh CAPA 6-12 took first, second and third in the poetry category.

"Our students are interested in poetry and what poetry can do. They care about social justice and human rights issues, and how these connect to their own lives," said Christa Romanosky (DC 2006), a poetry instructor at CAPA. "They have worked hard to craft poems that speak about the truths of identity, race and ethnicity; poems that have something to say and poems that want to be heard."

Romanosky, who holds bachelor's degrees in psychology and creative writing from CMU, first became familiar with the writing awards as an undergraduate student. "This is always an inspiring event," she said.

Read excerpts of four entries from students at CMU.

I HAVE A DREAM  
MARTIN LUTHER KING  
THE MARCH ON WASHINGTON  
FOR JOBS AND FREEDOM  
AUGUST 28, 1963



### First Place, College Prose

#### *Acceptance*

Kelly Kim, Freshman

Recalling my past experiences and viewing them in retrospect, I realized that my entire life as an Asian living in non-Asian countries was about proving myself to other people: when my peers didn't think I would be good at English, I vowed to prove them wrong by participating constantly in class discussions, writing for the school newspaper and magazine, and taking the AP English tests. When they told me that the reason why many Asians don't join sports is because they spend all their time in the library studying, I signed myself up for both rowing and squash.

But, what were my efforts for? As the Editor-in-Chief for the school newspaper and the school magazine, a fourth-year member of varsity crew and equipped with 5's on both of the AP English tests, I still didn't feel like I conquered English or was "good enough" for my white peers. Even after I received both the school's Journalism and Literary awards in front of the whole school, I was disappointed to find out that many classmates and teachers assumed I was going to major in STEM.

While I was proving my American-ness, I was struggling to prove my Asian-ness. I spent many weekends in my dorm room, hovering over SAT books because the Korean ajummas ("aunts") told me "Asians need higher test scores than most college applicants." I nibbled raw carrots and ate tofu when I really wanted to be popping French fries into my mouth and biting burgers, because the Asian culture lionized skinny 90-pound girls who had thigh gaps and 24-inch waists. I wasn't sleeping because I was studying until 4 or 5 a.m. to receive all As, only to beat my tired self down when I didn't.

I realized how lonely living a life like this was. Feeling like an outsider to both American and Asian cultures, living a life that didn't feel like my own, pretending to be a multitasking, organized girl who was perfect by both American and Asian standards, when really inside I was breaking down. I began to conceal my true self from others in an effort to shield myself from vulnerability and imperfection.

### Second Place, College Prose

#### *What's in a Name? Quite a Lot*

Hyunho Yoon, Sophomore

I've had new friends, with the best of intentions, go out of their way to tell me how much they enjoy eating rice, as if some solidarity could be formed on the basis of those sticky grains. Of course, I would appreciate it more if they treated me like their other friends who go nuts for bacon cheeseburgers and Chipotle, but the fact is I do like rice as much as I like burgers (a lot), and I hardly think the Asian-Americans who worked on the railroads and sugarcane fields a century past would have been offended if a white person went up to them and tried to be friendly, albeit relying on a racial crutch for lack of situational familiarity. So I seldom get annoyed when it happens.

I've had others politely ask, "Are you from Pittsburgh?" in lieu of "What country are you from?" But based on the type of people who mostly ask the former question, I can tell it is the latter that they are curious of. Of course, more times than not, if you ask a Carnegie Mellon student with a foreign sounding name, he or she will not be from the United States; nor am I, so I can't say that they're unjustified. And besides, I work with elderly patients at the local hospital—some of whom affectionately remember the "oriental gentleman" they had a nice conversation with—so I learned not to get offended even by the more direct variation of the question.

Then there are the several enthusiastic bus drivers who yell out "Nihao!" when a large group of my Korean friends get on. I don't know what they expect to do if we really spoke the language and replied something back to them in Mandarin, but I know they're being nice. I resist the urge to jokingly reply "Guten tag" when they're Caucasian, or "Hola" if they're darker skinned. I just smile and nod my head in a respectful half-bow, as I would to a bus driver in Seoul.

### First Place, College Poetry

#### *Sushi at Yunioshi's*

Kevin Lee, Junior, Electrical & Computer Engineering

You probably think you've seen me sipping bubble teas, walking Pekingese and other small breeds across these city streets Kicking it with Mr. Miyagi in the back seat of my Honda Accord SE, puffin poppy seeds bumpin' Far East, and always acting accordingly. I'm that young Bruce Lee with the buckteeth and Coke bottle frames, that don't know he don't know how to sing. But you know I know when that "Hotrine Bring" I'm that Karaoke King with that four-inch thing. I'm that chink in the back pew trading Yu-Gi-Oh cards for Pikachu's. I'm that dude with the kimchi stains on his Canada-Goose-Fu-Manchu, dripping down to his Jimmy Choo shoes. For some reason, I'm not the person you know but the guy that you see. But if you ever want to get to know the real me, I'll be sippin soju like it's iced tea on the corner of Mott Street eating sushi with Mr. Yunioshi.

### Second Place, College Poetry

#### *How I Came to Be American*

Charu Sharma, Graduate Student, Human-Computer Interaction

And I was born with ten toes  
and I was born with ten fingers,  
two eyes and two ears,  
and one heart, or so they say.  
And I was born red in the heart  
and I was born blue in the brain  
like police sirens,  
like a box of rocket popsicles,  
like a true American.  
And it betrayed my brown skin,  
colored  
like the monsoon mud,  
like the dry cracked earth,  
like July in Rajasthan,  
like Cadbury Dairy Milk chocolate  
bars from the Indian store,  
like mehendi, like henna  
on a new bride's arm,  
elbow-deep in commitment,

like my mother and her mother  
and her mother  
who learned to choke  
before she learned to speak,  
like the temples we've inscribed our  
histories into,  
like brown paper bags  
so used  
to expanding  
for the deep breaths  
of others.  
And my heart shouted at that skin,  
my brain chanted over its delicate  
and carefully crafted  
Sanskrit script—  
U-S-A. U-S-A. U-S-A.  
And so my parents named me  
American. Or so they say.



# Keeping Fighters Safe

## Air and Ground, Unmanned All Around

■ Byron Spice

Two very different autonomous robots — a Black Hawk helicopter and a Land Tamer® ground vehicle — combined their unique capabilities to perform reconnaissance of a potentially contaminated remote site in a demonstration this fall for the U.S. Army.

The joint demonstration by Carnegie Mellon's National Robotics Engineering Center (NREC) and Sikorsky Aircraft, a Lockheed Martin Co., proved that ground and air robots can perform complex missions that would otherwise put soldiers at risk.

"We were able to demonstrate a new technological capability that combines the strengths of air and ground vehicles," said Jeremy Searock, NREC

technical project manager. "The helicopter provides long-range capability and access to remote areas, while the ground vehicle has long endurance and high-precision sensing."

The Oct. 27 demonstration for the Army's Tank Automotive Research, Development and Engineering Center (TARDEC) took place at Sikorsky's Development Flight Center in West Palm Beach, Fla.

In the demonstration, a Black Hawk helicopter equipped with Sikorsky's Matrix™ autonomy kit flew NREC's Land Tamer all-terrain vehicle, slung beneath the aircraft in a specially designed cage, 12 miles to a remote area.

Once the helicopter lowered the

vehicle to the ground, the Land Tamer drove itself off of its transport platform to commence its leg of the mission. The vehicle, equipped with sensors for detecting chemical, biological, radiological or nuclear contamination, then found and surveyed several potentially contaminated sites, autonomously traversing six miles in the process.

When the vehicle sensors detected potential contamination, operators were able to switch the vehicle from autonomous operation into a tele-operated mode for a more detailed exploration of the site.

"The teaming of unmanned aerial vehicles and unmanned ground vehicles, as demonstrated here, has enormous potential to bring the future ground commander an adaptable, modular, responsive and smart capability that can evolve as quickly as needed to meet a constantly changing threat," said Paul Rogers, TARDEC director. "The cooperative effort between the Army labs, academia and industry to bring solutions to the warfighter is exciting to see."

NREC led the 19-month project, which was called Extending the Reach of the Warfighter Through Robotics.

NREC has extensive experience in unmanned ground vehicles, having developed the unmanned Crusher off-road vehicle for the Defense Advanced Research Projects Agency (DARPA), the Advanced Platform Demonstrator for TARDEC and a tactical unmanned ground vehicle, called Gladiator, for the U.S. Marines, as well as advanced off-road autonomous driving technology. NREC also was part of CMU's Tartan Racing Team that won the \$2 million 2007 DARPA Urban Challenge robot race with its autonomous



The autonomous Black Hawk carrying NREC's Land Tamer vehicle to a remote site in West Palm Beach, Fla.



NREC's Land Tamer vehicle performed environmental sensing at a remote site as part of the demonstration.

SUV called Boss.

The Black Hawk helicopter used in the demonstration was a UH-60MU model, equipped for "fly-by-wire" operation. Sikorsky installed its Matrix technology, which it has been developing since 2013.

"We invested in Matrix technology because we knew it would mean that, in certain scenarios, the warfighter can be kept out of harm's way and would be able to perform more missions and perform them more effectively," said Mark Miller, vice president of research and engineering at Sikorsky. "This demonstration indicated just that."

"This project was a great partnership between Carnegie Mellon and Sikorsky Aircraft," Searock said. "It was rewarding for our engineers to work with Sikorsky's team to create a new capability that will benefit our military forces."

## Crime and Punishment CONTINUED FROM PAGE ONE

The students interviewed a diverse sample of the local population, including Pittsburgh police officers, faculty from CMU and the University of Pittsburgh, attorneys, social workers, clergy and an East Liberty-based rapper. Throughout their research, they paid close attention to a complex network of interrelated issues, including racial disparities in arrest rates, and how those dynamics influence community relationships with law enforcement and public opinion of drug use.

For example, African-Americans — particularly young black men — are arrested for possession at higher rates than individuals from other races; in 2014, 70 percent of those arrested for marijuana possession in Pittsburgh were black.

"Social problems are not kind enough to live within narrow disciplinary boundaries. They are complex and multifaceted," remarked Alex John London, professor of philosophy and director of CMU's Center for Ethics and Policy and the EHPP major. "The history and politics



Throughout their research, the CMU students discovered an overwhelming majority of Pittsburgh residents were in favor of decriminalization of marijuana. Pictured (L-R) are Danial Kusbit, Lisa Tu, Stephen Nimalasuriya, Gabriel Vegh-Gaynor and Jack Devine.

of drug laws shape the environment in which we live now, and to some degree shape how proposals for reform will be received."

Presenting their findings to 40 members of the campus community, the group explained that from an ethical standpoint, Pittsburgh's current stance on marijuana possession is too harsh. Possession charges for even small amounts of marijuana can haunt

individuals for years, affecting access to social services and limiting housing and employment opportunities.

"The punishment doesn't fit the crime," Tu said.

Pittsburgh's current penalty for possession is up to 30 days in jail and a \$500 fine. Under a new ordinance proposed by City Council, however, police will have the option to issue a citation and a fine ranging from \$25 to

\$100, saving time and resources.

Throughout their research and at a local hearing, the students discovered that an overwhelming majority of Pittsburgh residents were in favor of decriminalization.

"City Council ended up thoroughly discussing and passing marijuana decriminalization legislation, and the research that the capstone students produced was part of the robust





Academic All-American Sam Benger scored a school record 22 touchdowns last season.

## Winning in Life

### CMU Celebrates Its Student-Athletes

■ Andrea James, Heidi Opdyke

Student-athletes at Carnegie Mellon set the bar high for themselves in sports and the game of life.

Their performance in the classroom has been a significant point of pride for the community. During the fall, 74 student-athletes finished the semester with 4.0 GPAs. Sixty-eight were perfect in the classroom during the spring 2015 semester.

CMU President Subra Suresh praised student-athletes for their work in the classroom while recognizing that participation in athletics can be a transformative experience for students.

During the second annual Student-Athlete Academic Achievement Celebration, he thanked the students for the way they represent the university. Of the students who attended, nine students have unblemished academic records with perfect 4.0s.

“It’s not just about playing a game or a sport. It’s not just about winning. It’s about lifelong lessons that you pick up and will serve you very well,” President Suresh said. “It’s about winning in life that comes out of such an experience.”

Director of Athletics Josh Centor said CMU’s student-athletes represent the best of intercollegiate athletics.

“Participation in intercollegiate athletics must complement the learning that takes place in the classroom and you all live that philosophy each and every day,” he told the assembled student-athletes at the celebration.

Amanda Broderick (S 2016), a member of the women’s soccer team, said the support of faculty and coaches has helped her succeed. The team finished the season with a 17-2-1 mark and was ranked as high as No. 3 in NCAA Division III.

“Whenever we have review sessions or meetings with professors during practice, our coaches allow us to leave early. Likewise, professors are flexible in rescheduling tests while we are away at games or allow us to take tests on the road while proctored by coaches,” she said. “Many professors also come watch our games, which is really cool to see.”

A senior in the Mellon College of Science, Broderick said some of her favorite CMU memories involve her teammates. During her first year at CMU, the team went to New York City for a game and had a bonus of getting to see “Wicked” on Broadway. Her sophomore year, the team traveled to Germany, Belgium, France and Holland to play semi-professional teams during spring break.

“My favorite overall moment was when we learned this year that we

would be hosting the NCAA tournament and playing the same first-round team [Cabrini College] as we did my freshman year,” said Broderick, who plans to attend medical school. “It was a really good way to come full circle.”

A member of the University Athletic Association, CMU has 18 intercollegiate teams. Like all Division III schools, athletic scholarships are prohibited, so students compete for the joy of the game. The students study in a wide variety of undergraduate programs that represent the entire university.

Christopher Herrera (E 2016) was a wide receiver on the football team who recorded eight receptions for 137 yards and four touchdowns. The senior civil and environmental engineering major said the balance between academics and the Athletics Department is a driving force for the students and the program.

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**“It’s not just about playing a game or a sport. It’s not just about winning. It’s about lifelong lessons that you pick up and will serve you very well.”**

**— President Subra Suresh**

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conversation at the hearing,” Gilman added. “As always, working with them was rewarding and beneficial to City Council and the citizens of Pittsburgh.”

Based on its research findings, the student team made several recommendations that would enhance decriminalization policy. Chief among them are public health awareness campaigns addressing the risks of marijuana use, monitoring for adverse effects and ensuring police support and accountability.

The group is quick to stress that decriminalization would be a positive step forward, but not a silver bullet solution.

“Something more needs to be done to address the larger issues,” said Vegh-Gaynor.

The students were advised by Jay D. Aronson, associate professor of science, technology and society in the History Department. Aronson was struck by the professional quality of their work.

“It was an absolute pleasure to work with this year’s EHPP seniors — they took ownership of the project very early on in the semester and made my

job easy. I was able to step back from the research process and provide them with feedback and guidance more as a colleague or mentor than as a professor,” Aronson commented. “They ended up producing a final product that one would expect from seasoned policy analysts with several years of professional experience.”

London, too, was impressed by the way the students tied history and ethics to an ongoing local issue.

“Good ethics and sound policy are about moving us from where we are now to a better state of affairs. The work of the students in this year’s EHPP capstone course exemplified this multi-disciplinary approach and the relevance of history and ethics to a live policy issue for Pittsburgh residents,” London said.

The EHPP major in the Dietrich College of Humanities and Social Sciences is administered jointly by the History and Philosophy departments. It focuses equally on the historical understanding of how modern-day problems have evolved and the importance of developing clear criteria for ethical decision-making.



# Inside the Lines

## Illustrator Draws on Nostalgia To Create Pittsburgh Coloring Book

■ Kelly Saavedra

Keeping the pace in today's modern tech world has left many longing for a simpler time, or at the very least, a "time out."

To unplug and recharge, an increasing number of adults are reaching for coloring books.

Pittsburgh Magazine's top picks for holiday gift buying last year included a new Pittsburgh-themed coloring book illustrated by Rick Antolic, a 1993 graduate of Carnegie Mellon's School of Art.

It features many of the city's local charms — such as the Gateway Clipper, the Farmer's Market, Kennywood, even Carnegie Mellon's Hunt Institute — and local businesses are lining up to get it in stock.

"Originally, I wanted to do a Carnegie Mellon University coloring book," Antolic said. "I was very involved with the Thistle yearbook as a student when someone pointed out to me that Crayola had a lavender crayon called 'Thistle.'"

Antolic proposed to create a 10-12 page coloring book of Carnegie Mellon scenes, give the yearbook staff a booth at Spring Carnival, and ask Crayola to donate a bunch of Thistle crayons.

"But this was in 1991, before on-demand printing — even before the Internet — and it was incredibly expensive to have anything printed then," Antolic said.

A recent rise in the popularity of coloring books for adults spurred Antolic to revisit the idea. This time he decided to broaden his scope, choosing to fill its pages with many of the treasured hometown memories that fill his head.

Gracing the book's cover is his partially colored line drawing of the city from the overlook on Mt. Washington, a view Antolic says he never gets tired of seeing.

"I loved it when our family would have visitors from out of town, and we'd take them to the overlook. Taking visitors to the top of Mt. Washington is still one of my favorite things to do in Pittsburgh. It's always nice to witness the reaction of someone who is experiencing it for the first time," he said.

Inside the book, drawings of neighborhoods that reflect the local flavor, such as Polish Hill and Deutschtown, are nestled between mouth-watering memories like Dave and Andy's Ice Cream on Atwood St., and a popular pizza shop in Ambridge, Pa., where Antolic grew up. The Original Italian Style Pizza place, better known throughout Beaver County as Police Station Pizza, was established in the

early 1950s and is still going strong.

"They only sell pizza — and only one kind of pizza — and they continue to thrive after 60+ years. No white pizza, no hoagies. Salads? Are you kidding me? You go to the counter and it's 'how many slices?' There are no seats or tables, so people sit and eat their pizza on the steps of the old police station next door, hence the name," Antolic said.

Another page-worthy memory he shares is strolling around downtown Pittsburgh as a kid right before Christ-

mas for friends and family, remembering, as Dorothy did in "The Wizard of Oz," there's no place like home.

"I lived in Pittsburgh for 21 years," wrote Amy Price Lee, who moved to Florida in the mid 1990s. "I love this book because Rick captured the heart of Pittsburgh, and pieces of Ambridge where I grew up, too. I still visit my hometown every year with my daughter. She is 15 and loves the coloring book. There are lots of memories for her in it as well."

Lee added, "We're never too old

"They're not dismissing all the cool technology today; they're just saying it's nice to take a break from it now and then."

The coloring book is available at a number of locations throughout Pittsburgh and online through Amazon.



Rick Antolic (A 1993)

mas with his parents and two siblings, looking at all the holiday scenes in the storefront windows.

"The highlight was always Kaufmann's windows," Antolic said of the former department store. "What Kaufmann's did with their Christmas window displays was a dying art. I'm glad I got to experience Kaufmann's windows into adulthood, where I could really appreciate them as an artist."

Nancy Reynolds, manager of VisitPittsburgh's Welcome Center at Fifth Avenue Place, likes that Antolic included the city's neighborhoods, identifiable landmarks and lots of details in each scene's background.

"I chose to sell it at the Welcome Center because it will make a great souvenir for folks to take home and show off some of the places they visited while they were here, and to remember the flavor of Pittsburgh," Reynolds said. "Locals also will find it entertaining, coloring their favorite neighborhood landmarks."

Some locals who have been away from the 'Burgh for many years have scooped up multiple copies of the book

to color. It is soothing, and you can nurture your creative side."

As an illustrator, Antolic has done a lot of art for products and advertisements for other people's businesses. The coloring book marks the first time that the actual product is his, something that he hadn't considered until the end of the project, but once he realized it, felt remarkably satisfying.

"We love our smartphones and tablets and video games on our 52-inch flat screen high-definition TVs, but there is a trend now to reach back to simpler times," he said. "We miss the 'old stuff' — things that don't rely on batteries or need to be plugged in or charged."

He noted that despite the popularity of iTunes, music downloads and streaming services, vinyl records also are making a comeback.

"So, I think the current coloring book trend is really just a part of a larger picture, one where we see adults taking a break from our modern tech world in favor of something more sentimental. And I think it's really quite nice," he said.

PHOTO BY NAN DAWN ALEXANDER



**Color Our World**

Break out the crayons, colored pencils or markers and take a few minutes to color a page out of CMU alumnus Rick Antolic's Pittsburgh coloring book. The Hunt Institute at CMU is just one of Antolic's favorite local scenes to draw for others.



**Hunt Institute**  
**for Botanical Documentation**  
*Carnegie Mellon University*

<http://huntbotanical.org>





Patrick Wilson was nominated for a Tony Award for his performance in "The Full Monty." Above, Wilson conducts a reading of the script with Peter Cooke, Don Wadsworth, and alumnus Matthew Stocke (L-R).

## "The Full Monty"

### Patrick Wilson Returns To Make Directing Debut

■ Erin Keane Scott

Patrick Wilson is back at CMU, again. But this time it's different.

He's not giving a commencement address and receiving an honorary doctorate in fine arts. And he's not here to talk to students about making a career in acting.

This time the 1995 Drama School graduate is here to direct "The Full Monty" as a director-in-residence in the John Wells Directing Program.

"The Full Monty," by Terrence McNally with music and lyrics by David Yazbek, is a production Wilson knows well. He earned a Tony Award nomination for best leading actor for his performance as Jerry.

This return to "The Full Monty" marks Wilson's directorial debut and what better place to make this entrée than the training grounds he used for his career as an actor. Most recently, Wilson was nominated for a Golden Globe Award for his role as Lou Solverson on the second season of FX's hit series "Fargo."

"Conservatory training is not for everybody," Wilson said. "The School of Drama treats the arts as a career and not a hobby and allows you to enter the business with more tools in your belt."

He attributes this "tool belt" — a handy metaphor when relating back to the blue-collar steel workers featured in "The Full Monty" — to his longevity in the business. Now in his 40s, Wilson has been working steadily in film and on stage since graduating from CMU.

"I've been talking with [professors] Gary Kline and Don Wadsworth about finding or making time to direct for years," Wilson said. "Gary suggested this was the perfect fit because I know the show and we had the right class for it."

Wilson is interested in bringing a completely fresh take to the show and has been collaborating with a production team that comprises School of Drama design and management students for the better part of a year. They are working together to create a world familiar to many Pittsburghers — a '90s Rustbelt city (in this case Buffalo, N.Y.) befallen by layoffs. The men of the story take their cue from the famed male dancers called the Chippendales to create a revue that both pleases their wives and bolsters their own self-esteem.

Wilson knew the timing was right for this new challenge and chose to carve out the time for the project.

"It worked perfectly, and I was just hoping nothing great came along, and nothing that outweighed this experience did," Wilson said. "I've reached a point in my career where I want to do what makes me happy and push myself artistically."

"The Full Monty" will run from Feb. 18-27 at the Philip Chosky Theater in the Purnell Center for the Arts.

For more information and to buy tickets, visit [drama.cmu.edu/50/](http://drama.cmu.edu/50/) box-office.

## Coollest Ride in Town CONTINUED FROM PAGE FIVE

city and school set you in that business mentality."

Apte noted several CMU courses that he found instrumental.

"A lot of the courses at CMU, like the entrepreneurship practicum, business development and business marketing, really helped to form the initial business model from where we could progress," Apte said. "The professors and staff were extremely helpful. You could approach them anytime and they would help you."

Autopods recently received a \$50,000 investment from AlphaLab Gear for a 9 percent share of the company. AlphaLab Gear is an accelerator program that helps entrepreneurs in the early stages of product and customer development. It provides startups with free office space, thousands of dollars in perks and discounts, such as free legal and accounting services, and educational programming. It also provides mentors who help startups with their business

models, marketing and sales.

AlphaLab Gear selects startups based on its ability to develop and launch a winning product and/or service, the technology's market potential and the concept's originality.

"We took Autopods into the program because we believe they have an idea and underlying technology that, with the proper business model, can completely disrupt short-distance transportation, especially in the U.S.," said Assistant Program Manager Chris Millard.

"They also have a great team. Tanuj and Deepak have the perfect blend of technical talent and business smarts to makes this company successful. Like all our companies, we took them because their success means a healthy return on our investment, which goes right back into funding more of the emerging talent in this region," Millard said.



Passengers view video advertisements on an iPad.