Alumni News

Alumni Spotlight: From WPI to the Hubble Space Telescope

Profile of Edward Cheung '85

Edward Cheung is used to going far to reach his dreams. A native of Aruba and grandson of a Chinese immigrant, Edward came to WPI to earn his bachelor's degree in electrical engineering. However, Massachusetts was just one stepping stone on a journey to the far reaches of outer space. In 1991, he completed his doctorate in electrical engineering at Yale (where he had earned his master's degree in the same field). He then turned to NASA and the Goddard Space Flight Center in Greenbelt, Md. His first job involved robotics research. After five years, Edward was moved to the Hubble Space Telescope (HST) team. Edward currently serves as the HST's principal engineer. One of his greatest accomplishments has been the construction of the Wide Field Camera 3 which was installed into Hubble during the most recent servicing mission in 2009. It improves by at least a factor of 10 the "discovery factor" of the space telescope. This metric is roughly equal to the increase in size of the detectors (in terms of pixels) and the level of sensitivity of each of these pixels. More than half of the observing proposals now use this new camera on Hubble, a significant portion considering that there are a total of six instruments on HST. Because of his work, Edward has been praised at WPI. He will receive the Robert H. Goddard Alumni Award for Outstanding Professional Achievement during 2010 Homecoming events, and previously received the Ichabod Washburn Young Alumni Award for Professional Achievement in 2000.

Edward's creativity and brilliance doesn't stay at NASA, however. Over the years, he has made various improvements to his home that would make any engineer blush. His house, featured in multiple magazines for over a decade, contains automation technology including monitors and alarms, motorized window shades, modified wall switches, and even a heated toilet seat. In addition to scientific augmentation, Edward has also redesigned his yard to include a koi pond and pergola, as well as a wide array of trees, flowers, and other horticultural improvements. When he isn't making his home a self-run garden paradise, Edward enjoys collecting pinball machines and sometimes modifying them or turning the playing board into furniture. Clearly, Edward has taken the lessons of Lehr und Kunst to heart, applying them in his everyday life. For his work, both in NASA and at home, Edward has been chosen as our current Alumni Spotlight.

The WPI experience helped me in my career path because ... it was quite by chance, but for our MQP, we had the opportunity to build something for NASA and that was flown on a Space Shuttle mission. We ended up on the GASCAN project, which I was surprised to see actually sitting in the electrical engineering building right now. GASCAN was a project of three teams. The first did the preliminary design, the middle team did the actual work with the designs to create the device, and the third team packaged it for flight. I was in the middle team that built the flight hardware. It provided me with exposure to NASA and space flight, and really caught my interest. After I graduated and I had the opportunity to work for NASA, I was very eager because of the nice introduction to space that my MQP gave me.

The biggest risk I've ever taken in my life is ... when I made the decision of which NASA Center to pick as my work location. I had a choice of a couple different centers, and each have a different flavor. One was Kennedy Space Center, the famous one in Florida. Sometimes I go there for shuttle launches and it's a surreal experience, because I look at my coworkers there and think, "I could be you." But I wanted to be part of making flight hardware that is sent into space and stays there as opposed to going back and forth, so it wasn't exactly the perfect fit. There was also Johnson Space Center, where they trained the astronauts. But that wasn't quite what I wanted to do either. So I settled on the Goddard Space Flight Center, because it was the best for science and technology. I think it was definitely the right choice.

It was risky, though, because I had to move somewhere new and decide where I wanted to spend my life when I was fresh out of college and didn't have much real world experience. I ended up making a spreadsheet of all the centers and compared how close they were to relatives, how they fit my career goals, etc. In my heart I wanted to choose Kennedy and live in Florida, but the numbers pointed to Goddard. I'm glad I did that, because I have never regretted my decision.

I've helped create change and make an impact by ... working on the Hubble Telescope. I love being able to develop the tools and instruments to help it run. Every time we get pictures from it, I feel glad to have had a stake in that. I feel gratified to be part of such a lasting mission. Kids today have never known life without Hubble. Most telescopes last about five years at most, but Hubble has gone for four times that. We keep fixing it and updating it, swapping parts in so it's new. From that we've been able to create a brand, and have made Hubble the famous name when it comes to space exploration.

Thanks to that, I feel I have been able to bring change to the world. I come from Aruba, and I owe a great deal to WPI for all they've done to help me succeed in the U.S. Because I was able to get my education at WPI and move on to working at NASA, I am able to influence change through education outreach back at home. For bringing science and technology education to children there, I was even awarded a knighthood from the Queen of Netherlands. That wouldn't have been possible without my preparation at WPI and my work at NASA on HST.

My favorite campus memory is ... Now that's a tough one. I'm going to pick a few from my freshman year because it was my transition from living in the Aruba to the United States. I think my favorite memory is the first snowstorm. One of the streets in campus between Institute and Salisbury is really steep, and it became a perfect ramp for sledding. So some of my friends and I grabbed trays from the dining hall and went sledding down the hill. It was fun, but you had to get just the right speed. The trick was that you had to be careful to stop in time, or you would end up in the street. At one point, we ended up taking an unhinged bathroom door that was randomly around and used that to go down a few times. We were going so fast and veered off the center, scraping against the curb stone. This produced bright sparks from the edge of the door. It was just so much wild fun.

Another time we had a beach party. I was a freshman in '81 and in May we had a snowstorm. So the guys at Morgan plugged all the drains in the shower, turned the hot water on full blast, and steamed up the place. We had a four inch deep "pool" in the big communal shower and we splashed around in it like we were in the ocean or something.

We also had golf tournaments in Morgan Hall. My friend lived near the Auburn golf course, where Robert Goddard did some of his famous rocket launches, so we decided to keep playing even while we were in school. We would start in one place, maybe on one of the middle floors, then go up the stairs, down the stairs, in people's rooms. Very funny stuff.

I support WPI, and encourage all alumni to get involved with WPI because ... I remember when I was admitted to the school. As I said before, I'm from Aruba, which is far from WPI and has a very different educational system. The only thing that's the same is that we take the SAT, which I thought I did fairly well on. I applied to many top-tier schools in the U.S., without thinking about backups, but I kept getting rejected from them. Only one college accepted me, and that was WPI. They took a chance on me even though my grades were obviously not that good. I will never forget how grateful and indebted I am to WPI for being able to see beyond the report card and think that I was worth it. I think that I've done all right for myself after leaving, and I encourage others to get involved with WPI because they are doing things the right way, and they deserve my support and the support of others.

Alumni Bio

Name: Dr. Edward Cheung

Class Year: 1985 (B.S.)

Major: Electrical Engineering

Family: Married to Agnes Cheung. They have two children, Christopher and Stephanie.

City: Mitchellville, Md.

Job Title: Hubble Space Telescope Principal Engineer

Claim to Fame: Has been instrumental in maintaining the Hubble Space Telescope

September 16, 2010