
The University of Texas at Austin
Cockrell School of Engineering

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# contents

## Letter from the Editors.

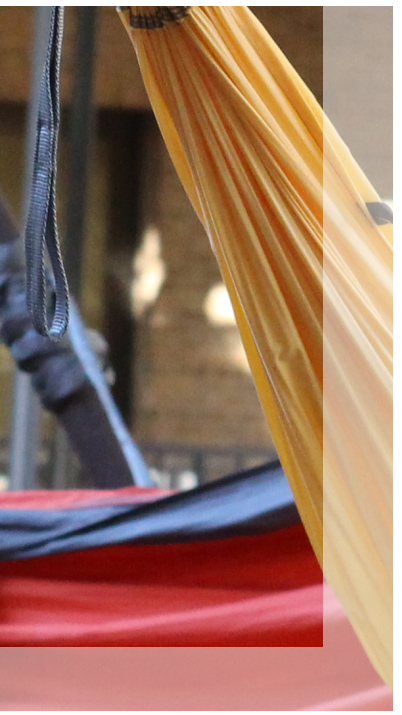
When discussing what types of work engineers do, there are such vast and seemingly endless applications to the industry. The phase 'engineering' acts somewhat as an umbrella to encompass a limitless number of practices and applications. Students within Cockrell dive deeper into their degrees as they discover their niches within different fields. Most individuals can name the broad engineering disciplines, though branching from those are unique concentrations that impact people's daily lives.

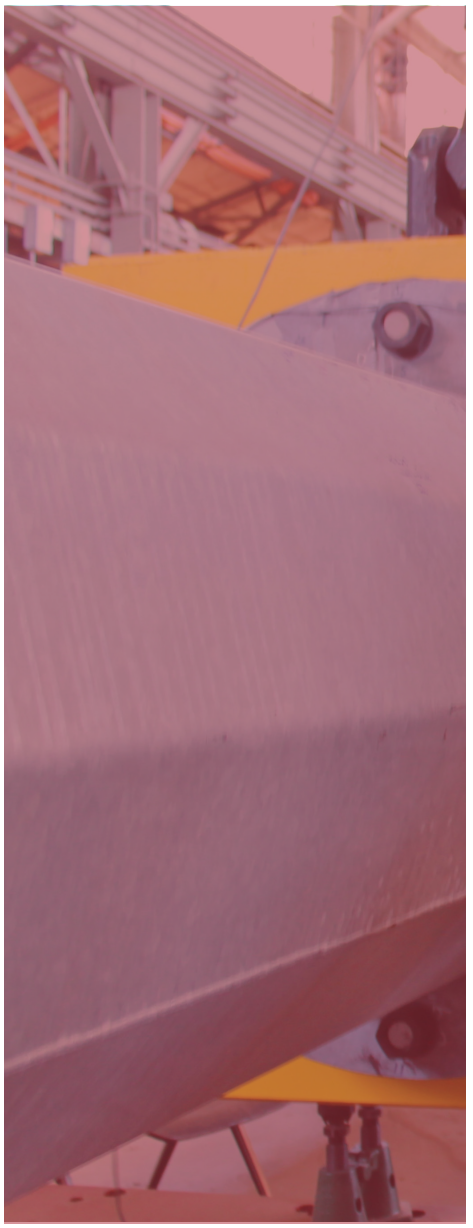
In this issue, Vector Magazine explores a variety of engineering niches, from furniture and earthquake engineering, to UT's newly established majors of computational and environmental engineering. Aside from the numbers and facts, engineering requires an exercise of creativity, which we will explore in articles about engineers who are artists, game developers, and hammock structure designers. Another prominent engineering niche found in this issue, which once seemed futuristic but now is becoming a reality, is the use of drones. Whatever your niche may be, we hope that you further explore it to do incredible things.

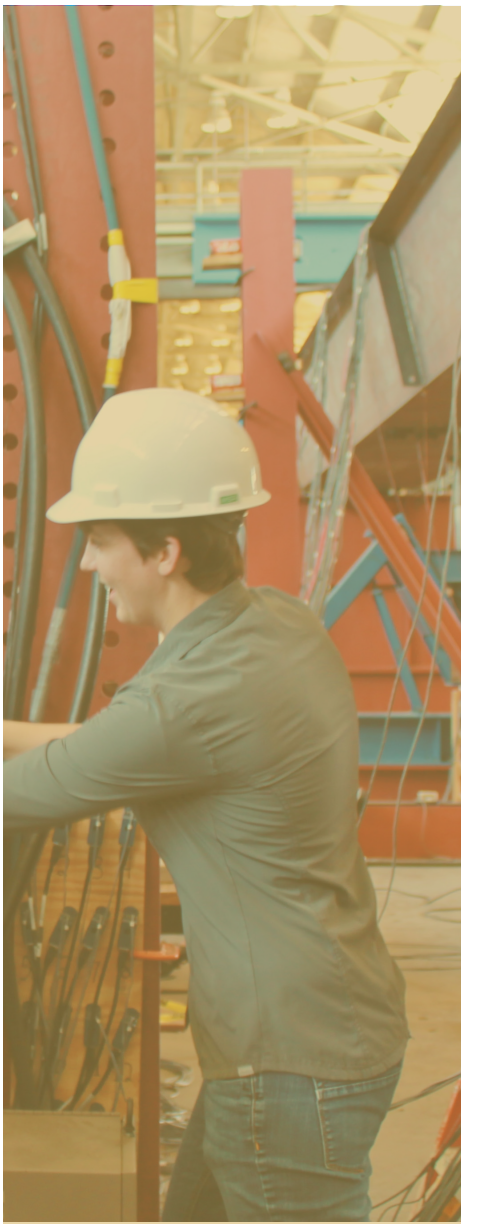
Best,

Rachel Scott and Emily Crowell-Stevens

## Staff.







# SHAKY BUSINESS

## *Earthquake Engineering 101*

Earthquakes - they happen, we feel them, but do we truly know how they happen? From Earth Science 101, earthquakes happen because of the tectonic plates in the earth that move relative to each other. While these plates are trying to move, they build up stress along fault planes, their planes of contact. The stress builds to a point that even friction cannot resist, which causes the rupture of a fault. During the rupture, stored energy is released from this stress buildup. This energy then comes up to the surface, causing shaking, which is felt on the surface and inside buildings. The time that each earthquake lasts varies widely with its magnitude. The magnitude of an earthquake indicates the amount of energy released from the built up stress in the faults--the longer the earthquake the more energy is released. Therefore, it is important to be well informed about earthquakes in order to take necessary precautions.

Earthquake engineering looks at various sides of an earthquake ranging from the geotechnical to the structural aspects. A geotechnical engineer looks at how soils amplify earthquakes, and how to design foundations for buildings in earthquake prone areas as opposed to non-earthquake prone areas. Additionally, a structural engineer looks at how buildings and bridges are affected by an earthquake. "The goal of a structural engineer is to make buildings safe according to the building codes so they don't collapse and kill people," said Patricia Clayton, civil engineering assistant professor . Structural engineers design buildings in a way that even if they get damaged, the buildings can safely handle the swaying motion caused by the earthquake.

Clayton is doing some research in this area, focusing on buildings that can rock. "As the building wants to rock, let it rock. By providing post tension elements such as metal rods or cables. We can then restrain the building from rocking too much," Clayton said. By using this approach, the post tension elements can be lifted and will yield, which will dissipate the energy of the earthquake. An example of this approach is the Orinda City Hall in California.

Another approach that structural earthquake engineers use is called base isolation, where rubber bearings are put underneath buildings. This serves to protect the building above because as the ground moves, the base isolation shakes around the building, keeping it mostly intact. The Salt Lake City Courthouse uses the base isolation technique.

The University of Texas at Austin has an opportunity for students to directly get involved through the Seismic Design Competition (SDC). SDC is an undergraduate organization where students learn of the effects of shaking on a building by designing a model, testing it, and then taking it to competitions at different cities in the United States. "SDC has given students the opportunity to work together with a team and present our project in a professional setting,... I learned valuable communication and presentation skills and will always be grateful for the opportunity to participate in such a prestigious competition." said architectural engineering senior Jordan Galloso. Civil engineering senior Erin Hynes stated "I got interested in earthquake engineering during the CE 301 class when I learned about how earthquake safety was engineered into tall buildings like Taipei 101."

Earthquake engineering is a budding topic as research in many areas is still relatively new, and an important topic worthy of greater advocacy. UT Austin students can become more involved in this area, as any advancement in earthquake engineering will leave future generations the tools to build a safer world. We can build a safer world by predicting the occurrence of earthquakes faster now and successfully taking safety measures and precautions.

*written by: Arqa Mast*

*layout by: Zelenny Lozano*

*photos by: Leslie Zhang*

"The goal of the structural engineer is to make buildings safe according to the building codes so they don't collapse and kill people."
- PATRICIA CLAYTON

# ENVIRONMENTAL ENGINEERING

written by: Nyle Ashraf / layout by: Jared Cormier / photo by: Allie Runas

On Christmas Eve of 1967, Martin Luther King Jr. stressed the idea that all life is interconnected – a lone action can alter the destiny of many others.

In the same way, people, cities, and countries are all intertwined in the global environmental issues that we currently face. The new environmental engineering program within the Cockrell School of Engineering places a heavy emphasis on this idea of interconnectedness, delving far beyond environmental regulations and into the deep-seeded consequences of our environmental actions.

The first two semesters will closely follow the civil engineering curriculum. Specialization begins in the second year, and one of the most vital courses, Sustainable Systems Engineering, is taught during this time. This course provides the framework for the systems-oriented way of thinking that dictates environmental engineering. Richard Corsi, professor and chair of the Department of Civil, Architectural, and Environmental Engineering, said that "environmental engineers must think about the intangible benefits of their actions downstream", rather than simply adhering to environmental regulations. Environmental issues must be placed within proper context, and because many of these issues have such a large effect, social and economic conditions must be considered. With such courses within the curriculum, students will be prepared to tackle environmental problems from all perspectives.

Since environmental engineering can be applied in a number of different industries and situations, students in their fourth year will select a track to specialize in a certain area. The first option is the Air, Energy, and Climate track, which provides a holistic view of energy production and the air pollution associated with it. The Water Resources in the Environment track deals with the issue of providing water to cities that experience intermittent drought and do not have direct access to clean water. In the Sustainable Water systems track, students learn about the production of clean drinking water from waste water that results from various processes. The Contaminant Fate and transport track deals with the cleanup of contaminants that may be accidentally released into the environment. These tracks allow students to declare the specific field they plan to pursue after graduation.

The Department of Civil, Architectural, and Environmental Engineering aims to promote these sustainability concepts through hands-on experience whenever possible. To reach this goal, the department has recently issued their first annual Sustainable Resilient Doghouse Challenge. As explained by Corsi, "the doghouses must be designed and built to meet a number of requirements", which includes the ability to carry a load, thermal comfort, aesthetics, and sustainability. Although it is only open to students within the department, the competition could potentially expand to all of Cockrell if it is successful!

The environmental engineering program looks set for success in the years to come – its emphasis on interconnectedness is crucial to tackling the complex environmental issues we currently face. The students who graduate from this program have the chance to alter our global environmental destiny.

# COMPUTATIONAL ENGINEERING

written by: Nyle Ashraf / layout by: Jared Cormier/ photo by: Allie Runas

The first of its kind and poised to take the engineering industry by storm, the undergraduate computational engineering program is the newest addition to the Cockrell School of Engineering. Many of the engineering problems we face today cannot be solved by experimental or analytical means, and that's where computational engineers thrive – modeling and simulating the physical world.

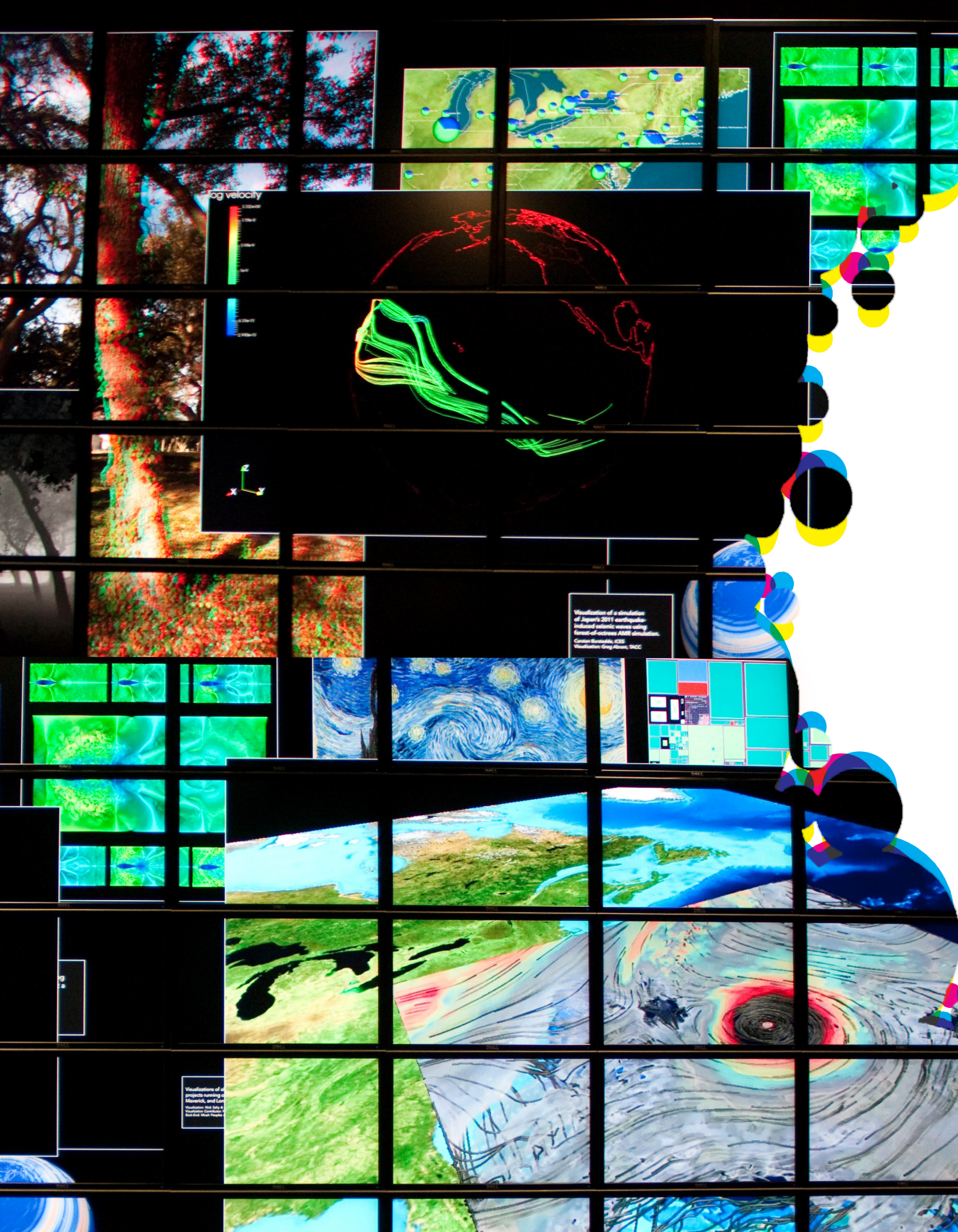
While computational engineering may sound similar to computer science and computer engineering, they are not interchangeable terms – they simply build on each other. Computer engineers design the hardware within computers. Computer scientists create the operating system and networking software that computers use. The computational engineer makes use of the computer and math-based algorithms to simulate engineering problems and make predictions. These engineering problems run the gamut, covering a wide range of engineering applications and even include finance and neurological modeling. Despite the long list of engineering problems that computational engineers work on, the curriculum does not include specific classes covering these applications. This program instead provides the computational tools to analyze and solve complex engineering problems, and this gives students the versatility to work in a variety of industries, says Clint Dawson, an ICES graduate advisor and leader of the ICES Computational Hydraulics Group.

Take surgery, for example. The behavior of living tissue under different conditions can be encapsulated by computer code. Computational engineers can create and run these subroutines for different surgical procedures and predict their outcome. Before a single incision is made, the surgeon knows the optimal procedure to employ and the probable reaction by the patient's vital organs.

This versatility is made possible by the breadth and depth of courses offered in the computational engineering curriculum. In addition to major-specific courses, students take mechanical engineering courses, aerospace engineering courses, and upper-level mathematics courses, to name a few. These courses give students the mindset and problem-solving skills necessary to approach complex engineering problems. These engineering problems can take any shape and even come in the form of surgical procedures or financial markets – computational engineers have the tools to solve any problem thrown their way.

The job prospects for computational engineering graduates seems extremely promising. At the UT Austin Engineering Expo alone, over 50 companies have expressed interest in recruiting computational engineering students for internships and jobs. Many of these companies are looking for students with "greater computing skills and the ability to perform numerical analysis", says Dawson, and the students within computational engineering fit this mold well.

In a world essentially run by numbers, algorithms, and supercomputers, computational engineers have the opportunity to use their skills to make a tremendous impact in a variety of industries.


log velocity
Visualization of a simulation of Japan's 2011 earthquake-induced seismic waves using forest-of-octrees AMR simulation.

# IS THIS THE REAL LIFE?

## A Look into Game Development at UT

*written by:* Haris Rafiq *layout by:* Audrey Gan *pictures by:* Allie Runas

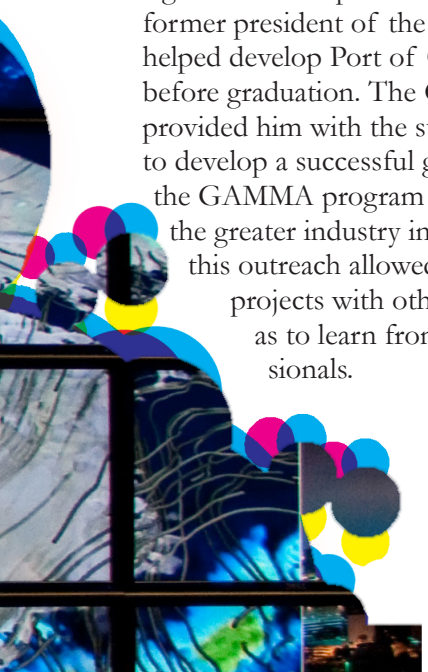
Practice with game development may seem inaccessible to many, and those passionate about programming virtual reality or augmented reality simulations may feel hopelessly unaided. However, game development occurs all over campus and numerous resources are available for students to get involved as a hobby, or, for more serious developers, to pursue a degree with it through the Center of Art and Entertainment Technologies(CAET).

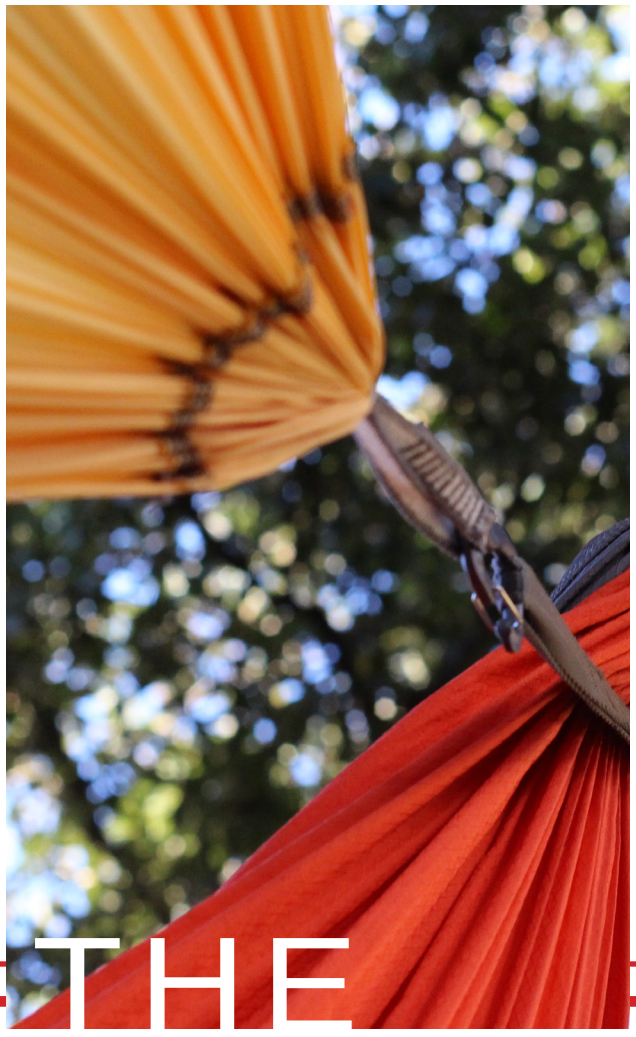
The pioneering Arts and Entertainment Technologies (AET) degree allows students to explore the creation of digital media, honing skills in art, animation, and coding. The degree seeks to guarantee success in the 21st century where the entertainment industry is constantly evolving. "If you know [how] to make a game, you know how to make anything interactive media," explains Paul Toprac, director of the Game and Mobile Media Applications (GAMMA) program,part of the AET degree. The program integrates concepts from art design, Radio-Technology-Film, and computer science so that graduates are acquainted with all facets of game development.

When asked about notable achievements by game developers in the GAMMA program, Toprac mentioned the free-to-play horror game "Port of Call", developed by Underdog Games, a team of UT Austin students. The 3-D, first-person experience was a finalist in the annual E3 College Game Competition. Wilson Villegas, former president of the GAMMA Program, helped develop Port of Call on campus before graduation. The GAMMA program provided him with the sufficient resources to develop a successful game, stating that the GAMMA program was involved with the greater industry in Austin and that this outreach allowed him to work on projects with other students, as well as to learn from industry professionals.

Concerning game development and augmented reality on campus in general, anybody interested in a virtual reality experience is free to tour the Visualization Laboratory, Vislab, at the Texas Advanced Computing Center. The lab has various cluster displays for visual demonstrations, an Oculus Rift setup for virtual reality immersion, and powerful CPU's for computational analysis. Through K-12 outreach and regular tours of the lab, the Vislab exposes the campus to new types of computational equipment. Micah Peoples, computer science and African and Africa Diaspora Studies senior, is the senior proctor. He said that "if this is your first time with virtual reality, it could spark an interest". Peoples, who has worked with the lab for over two years, began his journey at UT Austin without coding experience and without exposure to technical equipment. Through hands-on experience, Peoples used the multitude of virtual resources available at his fingertips to build unique 3D models of discrete data. Although students may not be interested in computational modeling like Peoples, they may be attracted to the multitude of high-performance machines available in the Vislab.

Whether it be through a specific degree plan or through simple recreation, resources are available for all students to program their own platformers, virtual reality simulations, or data models. UT Austin has much to offer to enthusiastic developers!





written by: Tyler Stern
layout by: Emily Hood
photos by: Jacob Stehsel

## YOUR NEW NAPPING SPOT.

# THE WEAVER

Hard to miss, Nido Structures' first prototype has raised many questions and eyebrows since it has begun visiting campus. Since it first arrived on campus, it has lived out in front of the Chemical and Petroleum Engineering building, and more recently, between the Student Activity Center and Gregory Gym. This hulking steel structure, often bearing numerous hammocks, is the brainchild of mechanical engineering senior Daniel Goodwin.

This structure is called the Weaver. It's named after a type of bird which builds elaborate nests. Aptly named, the Weaver is a circular structure composed of 24 steel pipes and 12 joints, which supports eight hammocks at two different heights.

"It looks very permanent, but it's like Lincoln Logs or Legos or something, you know, you can actually take apart the whole thing," mechanical engineering senior Alex Booth said.

Booth became involved with the start up in the Fall of 2016, after hearing Goodwin pitch the idea for a class.

"My goal in that class was to start my own company or get with a group of people who were starting their own company," Booth said.

He had known Goodwin for several years before he had learned about Nido Structures.

"He pitched it one day, and I thought, 'Oh, that's pretty cool,'... so I went and talked to him about, and I thought, 'Yeah, I could add something to this team,' so I started working with them," Booth said of his beginnings with the group.

> "... A HAMMOCKING EXPERIENCE WHICH DOES NOT DAMAGE ANY TREES."

After taking the Weaver to a local music festival, the group began to think that there may be a business in renting out or selling hammocking nests.

It turns out that they were correct. They both rent and sell the Weaver to local businesses and establishments. Most of their business comes from renting them out.

"We rented it out to the Petroleum Engineering department for one of their tailgates, we rented it out to several music festivals; we went out to Utopia Fest, we went out to Sound on Sound Fest," Booth said. "We've even taken it to breweries before; we took it to Hops and Grain a while back."

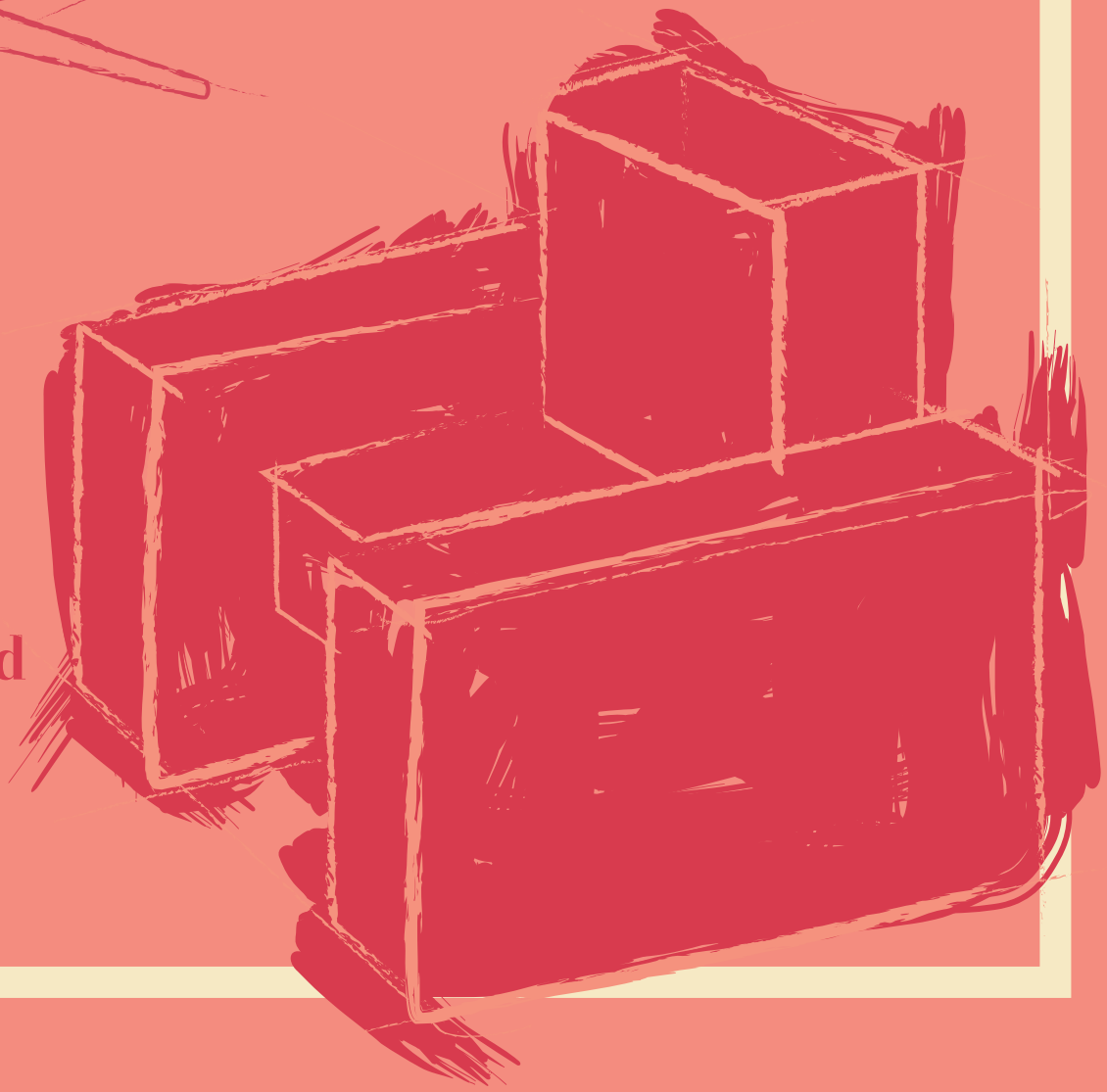
However, they've also had opportunities to sell the product to state and local parks, universities, and more.

One of the primary characteristics of Nido Structures as a company is how environmentally friendly they are. The Weaver was originally designed in order to create a hammocking experience which does not damage any trees. Numerous hammocking bans have been enacted in parks and on campuses in order to protect the bark of their trees from being damaged by hammocks being strung up in the same place over and over. Additionally, Nido Structures build all of their hammock nests with locally sourced reclaimed steel from oil rigs.

The members of this start up, all UT Austin students or alumni, have learned much by their contributions to the team. Alex Booth specifically enjoyed the opportunity to work hands on with the materials and see something through from inception to completion and on to use. He was glad to have the chance to work on open ended problems in the real world.

"Doing something like things allows you to do a bunch of different things and find creative solutions to problems that no one has ever solved before." Booth said. "There's no right answer... there's ten different ways we can do it, and they're all going to lead to different solutions, and we don't know what they are. You just have to find out.

# sitting on art sitting on design



written by :
emily hood
layout by :
vinay soni

Since ancient times, humans have always depended on one thing to add to the comfort of their home – furniture. Like many things in the world, furniture also needs engineers to turn ideas into reality. Meagan Wey, fifth year Mechanical Engineering and French major, spoke about her experiences with working with furniture companies and her passion for the art and engineering of furniture.

During Wey's freshman year at UT Austin, she took a course called History of Architecture which subsequently opened her eyes to not just the art of architecture, but also towards a strange hobby of architects.

"That was the first time I saw furniture as artistic and something you can engineer," Wey said. "It was as artistic as architecture itself."

Many architects designed furniture for their architectural designs, and these furniture pieces became known as works of art as well. Even famous architects like Mies van der Rohe, Frank Lloyd Wright, and Charles and Ray Eames designed furniture, and some pieces, like the Eames Lounge Chair, became timeless.

"It's also a weird obsession of architects too, some of them," Wey said.

Engineering is used and applied in almost every aspect of the world, and furniture is not an exception. "It's pretty global… everyone needs furniture in some sense," Wey said. Furniture requires design, study of material properties, stress tests, manufacturing plants, and many other engineering-related facets, just like cars, robots, or buildings would. Some architects agree that furniture design can be just as difficult as architecture design. Wey quoted Mies van der Rohe: "A chair is a very difficult object. A skyscraper is almost easier."

"There's a huge electrical engineering component that I think is coming with how we're going to start integrating more tech into our furniture." For example, there already exists mechanized arm chairs, tables with built-in electrical outlets, and even new technologies applied to material sciences in regards to furniture.

Meagan had some advice regarding the pursuit of a career in a niche engineering field. First, a strong interest in the field is important in having the motivation to pursue a less-known field.

"I spend a lot of time reading about [furniture]. It's just something I really enjoy, like half of my bookshelf is you know, stuff about furniture," Wey said.

She also struggled in some aspects. "The biggest thing I faced was when I tell people 'furniture' and they just kind of tilt their head and they look at me and pause and they're like, 'Oh… okay?'"

Because there are fewer people to relate to in terms of a career pursuit, it can be discouraging for those who are not sure about pursuing a particular niche engineering field. "You have to be comfortable with the fact that it's weird, but that doesn't make you wrong." Wey said, " With her dedication to the field, she has been able to find internships within the industry by connections and with her ever-growing knowledge about furniture.

**that was the first time i saw furniture as something artistic, something you can engineer.**

**A chair is a very difficult object. A skyscraper is almost easier.**

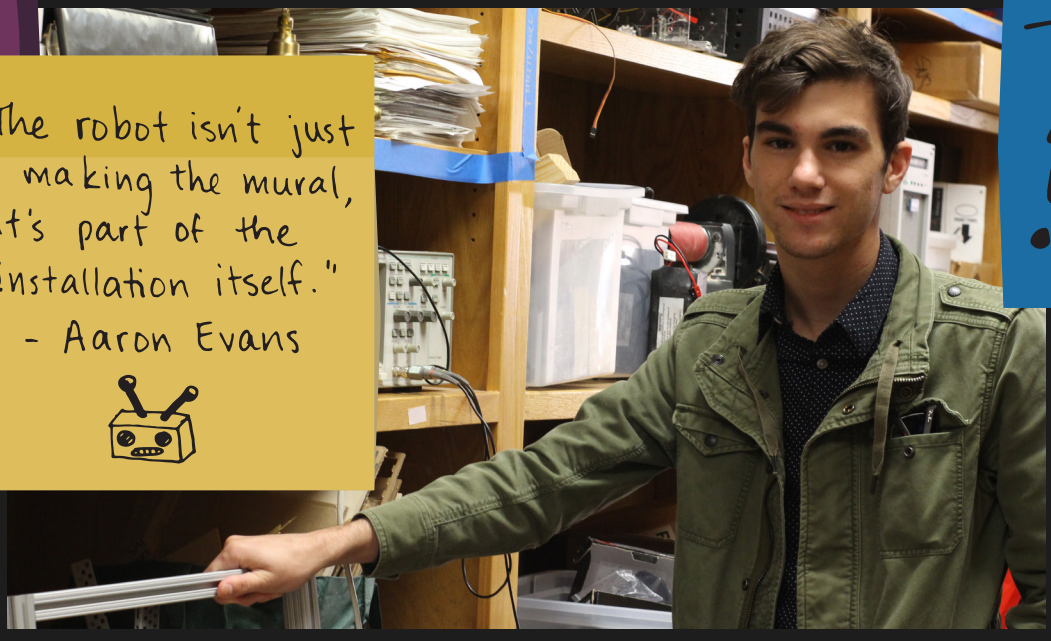
**When I tell people 'furniture' and they just kind of tilt their head and they look at me and pause and they're like, 'Oh... okay?**

# Engineers who are Artists





"The robot isn't just making the mural, It's part of the installation itself."
- Aaron Evans



A ?

Written by: Crystal Huang
Photo by: Brendan Towlson and Jacob Strehsel
Layout by: Zelenny Lozano


# Or, artists who are engineers

Engineers and artists seem like opposites. One is right-brained, the other is left-brained. One deals with numbers and figures, the other in expressive daubs of paint or clay. But just as the right side of the brain doesn't operate completely independently of the left, engineers do have a creative side too. Some engineering students choose to nurture their creative side, melding artistry with engineering.

Take Ismael Marquez, junior electrical engineering student, who takes music composition classes through the Bridging Disciplines Program. "[My goal is] audio engineering," said Marquez. "Say you have a five second clip of birds chirping. How many ways can I synthesize that sound to create new sounds?"

Marquez is not the only engineering student looking to branch out. Mechanical engineering student Peter Lin wanted to take design classes in his final year of college. He found his niche at wkrm (pronounced "work room"), a student-run design studio led by art professor Jiwon Park. "I applied to wkrm using CAD models from my engineering courses," said Lin. "Once accepted, Jiwon matches [students in wkrm] with prospective clients."

While Lin's design work caters to clients in the Austin area, Aaron Evans' client is the City of Austin. Evans, is a computer science student in the Robotics and Automation Society (RAS). "A couple years ago, at [RAS'] SXSW booth an artist came up to us", said Evans, "and said he had this idea for an art piece for Austin's tech district."

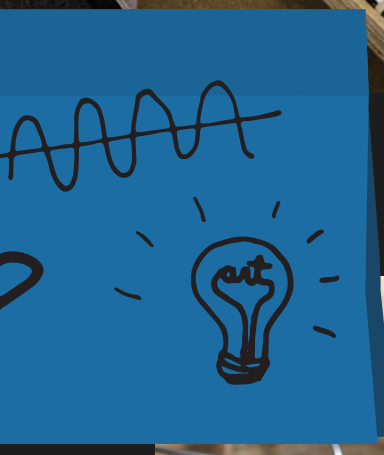
Now, after discussing and coordinating with this artist, Evans heads the RAS project for building a mural-painting robot.
As someone who uses physical, visual mediums, Evans works with a designer's eye. "The robot isn't just making the mural," said Evans. "It's part of the installation itself."

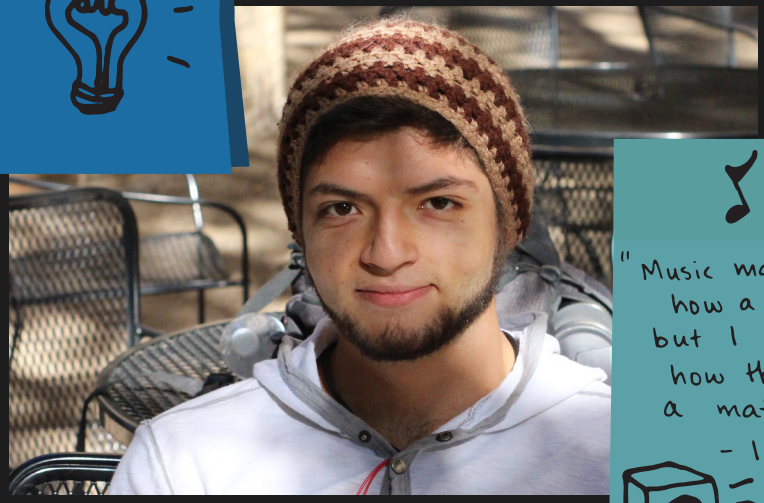
Lin believes in integrating design and engineering too. "Mechanical engineering courses should include industrial design," said Lin. "The designer sets the tone on what the structure looks like. Engineers make sure structure holds together."

Both Lin and Marquez find being an engineer already helps with their artistic work, be it useful skills or a deeper understanding of their work. "[wkrm is] retrofitting a timer with custom gears," said Lin. "So I've been doing a lot of 3D printing for prototypes."

For Marquez, concepts from his ECE classes pop up in his music classes. For instance, his professors in both his Intro to Computer Music class and his Signals and Systems ECE class discussed signal convolution. "Music majors understand how a concept works, but I also understand how things change in a mathematical sense."

Incorporating creativity departs from an engineer's typical roles, but it isn't too difficult. Building an artistic robot that is art itself, fusing electronic sounds to make music, and designing in a studio are all ways engineering students can tap in to their creative side.





"Music majors understand how a concept works, but I also understand how things change in a mathematical sense."
- Ismael Marquez

"The designer sets the tone on what the structure looks like. Engineers make sure structure holds together."
- Peter Lin

# THE UNKNOWN OF DRONES

## *Futuristic technology at our doorstep*

Drones have received mixed reviews. They're used all over the world and across various industries, but the future of unmanned aerial vehicles is anything but decided. Until recently, drone technology has relied heavily on military development, but now that the commercial drone sector is taking off innovators are finding ways to use this technology to solve problems and improve the economy. This technology is poised to completely change the way we do work, shop, and live, so before we write it off as too futuristic or too invasive let's consider all sides of what drones bring to the table.

"You can go on Amazon, order something, and within an hour it will be on your doorstep, I think that's revolutionary," said aerospace engineering senior Blake Younger, when asked what he looks forward to most about a future with drones. Blake is in charge of the Unmanned Aerial Vehicle (UAV) team at UT, where aerospace undergraduates get hands-on experience building a UAV that they'll take to the annual competition in June hosted by the Association for Unmanned Vehicle Systems International (AUVSI). Delivery services like Amazon Prime Air have generated lots of buzz, yet as cool as it would be to have flying robots delivering pizzas, drone delivery still faces serious setbacks that must be overcome before they can be fully integrated into the airspace.

It's important to remember that drones are versatile, and other uses may hold more promise. Even though Blake Younger looks forward to drone delivery, he thinks that drones can do much more. They also can positively impact farmers. "You can monitor the moisture in the soil or the nutrients just by flying over it with a drone," said Younger. "So, farmers can see 'Oh this patch needs more water, ' or this patch doesn't have enough nutrients. Then they can go and fix that. It's going to improve agricultural yields, so more food." It would be relatively inexpensive for farmers, a quality drone with camera and various sensors can be purchased today for less than $1,000. Soon after rural areas get on board, it's expected

**written by: Jonathan Markel**
**layout by: Alex Hopson**
**photo by: Brendan Towlson**

that city airspace will become a hotspot for both commercial and recreational use.

If drones aren't delivering our pizzas, then why would they be flying in the city? Dr. Todd Humphreys of UT Austin's Radionavigation Laboratory has a few ideas. His research focuses on robust and precise positioning of automated vehicles, as well as their cyber-security. "We're one of the labs that knows the most about how to hack a drone," said Dr. Humphreys. If ground vehicles continue their trend towards interconnectivity and automation drones could help eliminate traffic deaths in cities like Austin. "One of the ideas we've been kicking about is to allow drones to hover above problematic intersections, helping to communicate to connected vehicles the presence of pedestrians in the area." Humphreys explained. To do that, you need exact positioning "down to a few centimeters in a global reference frame" and you need technology to be secure against cyber-attacks. Fortunately, that's exactly what Humphreys and his team in the Radionavigation Lab are working on. Admittedly, drones regulating traffic is a long way off, but futuristic ideas have a way of sneaking up on people.

Researchers and businessmen have lots of ideas about how to use this emerging technology, and some of those uses are bound to stick. If we're going to tap the potential of drones, we need to do so responsibly, considering individual liberties like privacy in the process. Drones have a long way to go, and lots of regulations to work around, but they should be taken seriously. On December 7th, Amazon Air made its first commercial delivery in the UK. It took 13 minutes. This technology is a tool for us to use, for better or for worse. The future isn't all flying cars and transporters, it's a gradual improvement in technology, and an even more gradual shift in public opinion. The future is 100 years from now, but it's also tomorrow, and this technology exists today. Let's start having discussions about what tomorrow might look like.

***"Amazon Air made its first commercial delivery in the UK. It took 13 minutes."***

# A Woman's Work

## Illuminating interviews with young engineering moms

written by: Crystal Huang • interviews compiled by: Lianne Martin • layout by: Rachel Scott

Where do you see yourself in five years? *Due to social norms and biology, women may think more than men about how to act in the workplace and how having children will affect their career path. With this in mind, Lianne Martin, chemical engineering junior, sought to understand these differences at her summer internship. Martin spent her summer at a polymer manufacturing plant, in the process technology division. She reached out to female engineers there to understand their stories and experiences.*

*"I wanted to make these conversations [with the women] very personal," Martin said. "I wanted to diversify the topics on what it means to be a female engineer, because [female engineering students at UT] don't really talk about life past graduation."*

*The following are quotes from her interviews with working mothers at the manufacturing company Martin interned at.*

### On day-to-day interactions as a woman engineer:

"At [a small company], particularly, we have a great group of women that were hired in around the same time. And we used to go out to lunch once a month. Having that support system was really good, especially early on. It was a good place to discuss things like, 'so-and-so said this to me earwlier, was it really offensive? Or maybe I just took it the wrong way?'"

"Don't worry about being the only female in the room, or the only young person in the room. Just do your best and think about what you bring to the table, whether it's experience or perspective, you bring something to the table."

"Whether it's experience or perspective, you bring something to the table."

## On deciding to have children:

"It helped that I wasn't that far advanced into my career because I felt like I'd be able to take the time off. You have to have a strong sense of "this is what's right for me right now"

"[I decided to have children] before I was really specialized, [which] gave me the elbow room to relax into my role as a mother."

"I had accomplished a lot in my role the year before and I felt like I had created value for myself in the company. "

## After having children:

"On our leadership team, there are a lot of guys whose wives stay home, so it's hard sometimes for them to relate to 'Hey, I really can't stay until 5:00.' It's hard for them to understand that [I also have] real responsibilities [at home]."

Once I was pregnant, I couldn't go out in the field anymore and I had to be careful about not exposing myself to [chemicals]. For example, if I do go out in the field, I rely more on others that are already out there."

"Sometimes, policies are set into place, and people don't always realize that it may make some lives a lot harder. Shedding a little light on the subject can go a long way."

"I realized that [having children] was going to have a pretty negative impact on my job. In reality, though, I just shifted the way I work."

"At the end of the day I have something beautiful I can come home to. I have a wonderful family and a wonderful job."

THE BEST PART ABOUT BEING A WORKING MOM

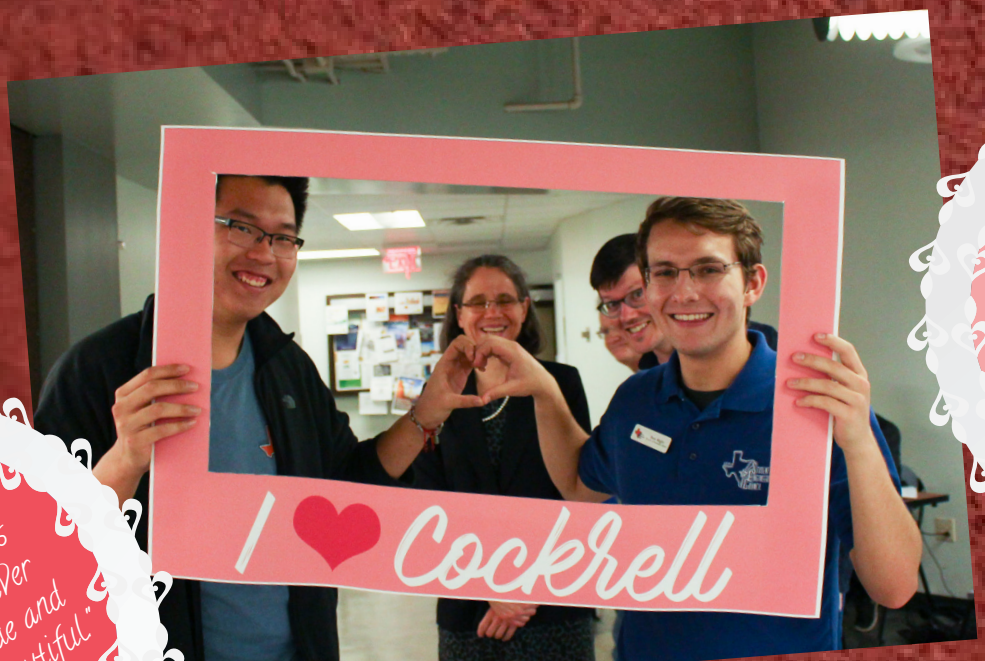
Interested in hearing more from female engineering role models and continuing the conversation? The Women in Engineering Program (WEP) offers a two hour Leadership Seminar course doing just that. It's open to all engineering majors, male and female. Head to engr.utexas.edu/wep/leadership/seminar for more information.

# Hanging out on Mt. Bonnell



Photos by: Allie Runas Jacob Stehsel Agarwal Jacob Stehsel


Runas
Somya Agarwal
Brendan Towlson
Allie Runas
Somya




"The Cockrell School of Engineering boasts some of the greatest individuals I have ever encountered. Our diversity on the outside and inside makes us all truly unique and beautiful."
-Jacob Rodriguez
1st year ASE

# I ♥ Cockrell

Students and staff share their favorite things about about the Cockrell School at Dean's Study Breaks

layout by Rachel Scott
photos by Student Engineering Council Publicity Committee

"I like CSE because it has UT PGE which is No. 1 graduate program in Petroleum Engineering. Additionally, I like that CSE has many student organizations that students can benefit. Finally, I like the available hammocks which were constructed from oil pipes by a group of engineering students."
– Mehmet Zeki Erincik, Graduate PGE student



"The number one reason why I love Cockrell is the people. The challenge of engineering is almost impossible to go through alone... I have realized [What] is unique of Cockrell is its collaborative environment. Since Cockrell is so challenging, students must work together. The competitive nature that most people have is diminished due to the team-oriented approach students have here. Because of this, the bonds that I have made with people I have met will last me a lifetime."
– Mohammad Khan, 4th Year ChE