



CETAC TRAINEE REPORT 2009



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Seattle, WA



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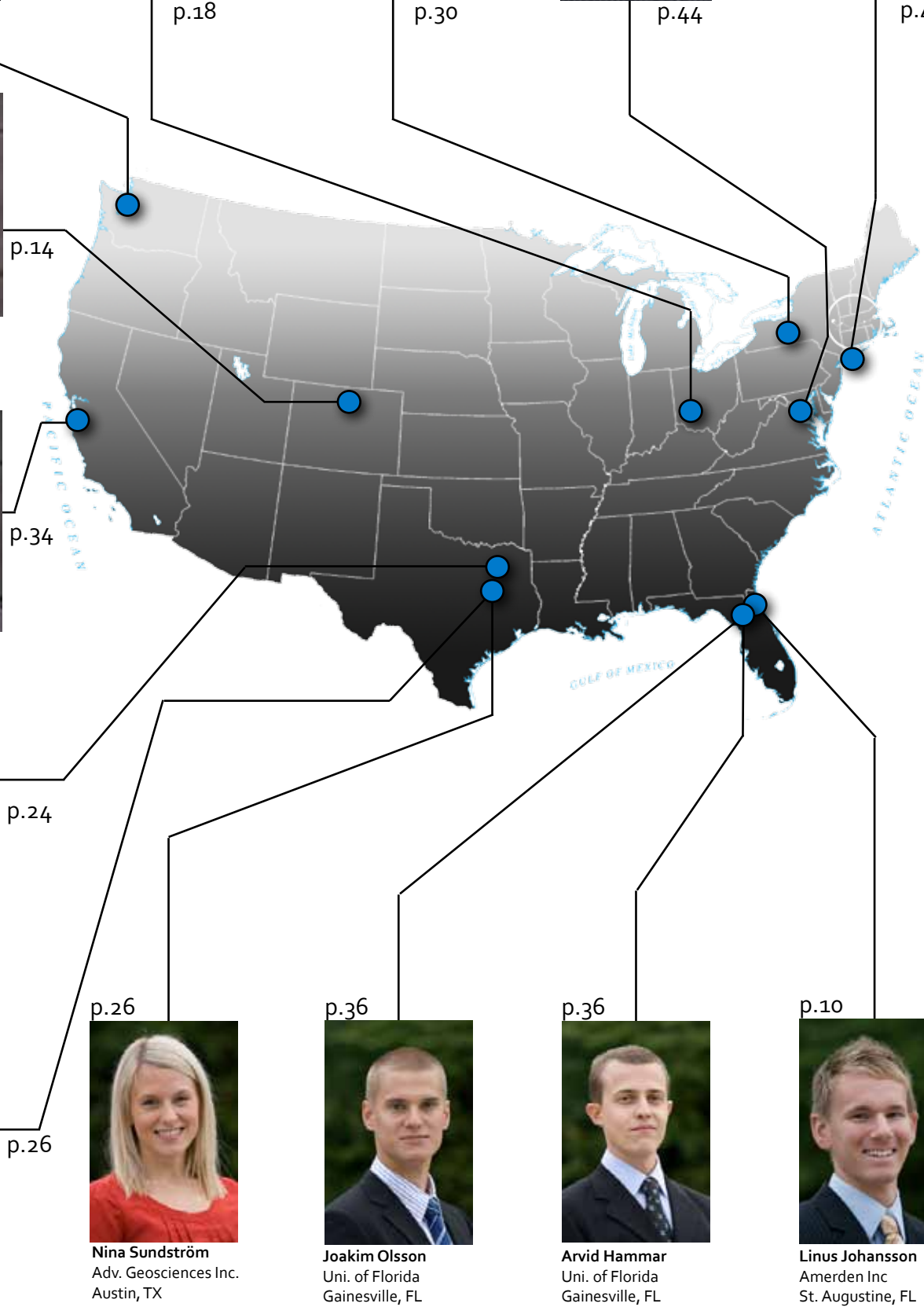
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cetac

Dear Reader,

This is the Trainee Report of Chalmers Engineering Trainee Appointment Committee (CETAC), a student group promoting international work and cultural exchange at Chalmers University of Technology.

In this magazine are printed the collected stories from Engineering students' Internships across the United States during the summer of 2009.

CETAC has been sending students overseas for 43 years and we are happily continuing the tradition, building on the foundation laid down by past CETAC members. We are proud of our legacy and the work we have done this past year, which is echoed in the outcome. 13 happy interns have written reports, one of the greatest numbers of the 21st century.

Chalmers students have a good reputation within Sweden as well as world wide. This is the basis of our continued success in convincing companies, both domestic and foreign, to give us their support for our mutual benefit. We are proud to be associated with Chalmers University and of the opportunities we have been presented and seized.

If you're studying Computer Science, Electrical Engineering, Engineering Physics or Software Engineering you are eligible to apply for membership of CETAC and I would strongly encourage you to do so; the work is directed by your own goals and ambition and the reward is substantial.

I welcome you as a reader to take part of these stories that I hope will make for an inspiring and satisfactory read.

Thank you,

Jakob Ryden
Editor-in-Chief of CETAC 2009

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New York by night

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Address
Elektrotekn. sektionen
Chalmers, 412 96, Göteborg

Phone
+46 (0) 733 700 344


E-mail
info@cetac.se



The board of CETAC 2009



The members of CETAC 2009 in August of 2008



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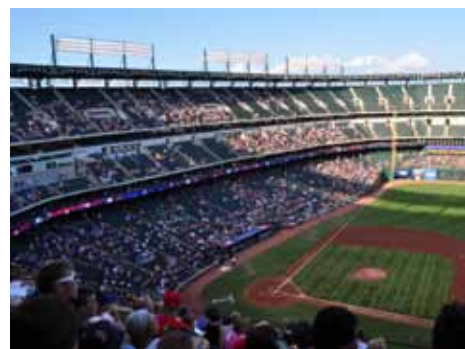
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Att söka **cetac**

Du håller nu en tidning fylld med reseberättelser från chalmerister som har varit i USA sommaren 2009. Läs vad de har upplevt, och ha gärna i åtanke hur det skulle vara att själv flyga över Atlanten, samla värdefull erfarenhet för framtiden och uppleva världens alla kulturer i Nordamerika sommaren 2011!

CETAC lägger stor vikt vid att praktikplatserna är intressanta och kvalificerade ingenjörsarbeten. Vi kan stoltsera med tidigare arbetsgivare som till exempel Siemens, NASA, Apple, Intel, Microsoft, Silicon Power Corp, Merlin Engineering Works och SUN Microsystems. I regel varar praktiken åtta till tolv veckor, men en del stannar betydligt längre än så!

Praktiken ger inte bara goda arbetslivserfarenheter, utan dessutom ett värdefullt kulturellt utbyte. Kulturell förståelse och erfarenhet är något som efterfrågas allt mer i det ökande globaliserade näringslivet. Språkerfarenheten är också väldigt viktig, då ingenjörers kommunikativa förmåga är av stort värde för företagen idag. Så ligg steget före; Sök medlemskap i CETAC och upplev ett spännande och lärorikt äventyr sommaren 2011!

Medlemskap

För att bli medlem i CETAC skall du studera på D, E, F eller IT, samt vara svensk medborgare eller ha permanent uppehållstillstånd i norden. Vid ansökningstillfället måste du även uppnått minst 75 hp på din utbildning, och under det kommande året uppnå sådana studieresultat att du är studiemedelsberättigad. CETAC är föreningen för dig som är motiverad och beredd att lägga ned tid och engagemang för att få ut något extra av din studietid.

Att söka styrelsen

CETAC 2010 kommer under läsperiod tre 2010 att söka medlemmar till styrelsen för CETAC 2011. Den nya styrelsen antar sedan ungefär 25 nya medlemmar under läsperiod fyra 2010. Styrelsen består av fem personer. Ordföranden organiserar arbetet, håller

kontakten med American-Scandinavian Foundation och hanterar visumansökningarna. Kassören lägger upp en budget, deklarerar och fakturerar företag vid annonsförsäljning. Efter vistelsen i USA skriver alla varsin reseberättelse. Dessa sammanställs sedan i vår tidning, Trainee Report, som du nu håller i din hand. Redaktören har till huvudsaklig uppgift att utforma tidningen men framställer även broschyrer, affischer och andra trycksaker. I styrelsen ingår också två jobbchefer som kontakter amerikanska företag och letar efter lämpliga arbetsgivare.

Att vara medlem i CETAC

Medlemsskapet i CETAC bygger på såväl personliga arbetsinsatser som arbete i grupp mot ett gemensamt mål. För att

kunna finansiera resan till USA och andra omkostnader samlar man som medlem in bidrag och säljer ett antal annonsplatser i Trainee Report. Annonsförsäljningen inleds på hösten med en resa till Stockholm. Under denna resa besöks intressanta företag där medlemmarna får presentera både sig själva och CETAC. CETAC har ett brett kontaktnät med företag, vilket medlemmarna kan utgå ifrån under annonsförsäljningen. Under hösten anordnas även en säljkurs och en CV-kurs för CETAC:s medlemmar. Att vara medlem i CETAC är ett stort engagemang men det ger samtidigt en unik möjlighet till en givande avlönad praktik i USA eller Kanada och många nya vänner och kontakter från Chalmers och Nordamerika. Så ta chansen och sök du också!



New York

The city that personifies the land of possibility

Joakim and I arrived together at Newark International airport in New Jersey at 10.30am, June 6 2009. We went through the usual procedure and smiled towards border patrol. In the U.S. of A they also require a written statement that your baggage does not contain harmful substances as well as a travel permit, which is stapled to your passport next to the J-1 VISA.

After some confusion we got on the airport coach which took us across Hudson River towards New York City.

The bus bravely went straight to Times Square to display the neon lit face of the city. Although better seen at night, we felt welcome and impressed.

We found an opening in the ground where the train took us to the hostel which was going to serve as our home the following week. The subway is \$25 for a seven day pass and is a terrific way to get around. You can go really far for cheap and



get to practice orientation below ground as well as above as part of the deal.

The hostel we chose is situated on 1374 York Avenue, between 73 and 74th street, on the Upper East Side. A note to future visitors; try to choose a hostel close to the subway, as the other options are pricey taxis or repeated long walks.

New York is a young city. This is apparent from the strict arrangement of the areas that

make up Manhattan and the naming of streets and avenues, where the latter span south to north and the former west to east in ascending numbers. The logically gifted can therefore quickly orient himself and find his way even though he is at all times surrounded by skyscrapers.

Despite being relatively recently built, the streets have a worn down feel to them compared to the Swedish average. This is likely due to the incredibly large volume of inhabitants; the subway could use a freshening up though, as it's definitely sub par to e.g. the London one.

One who has visited the large cities of the world before might be less in awe of the grandness of it all, but I can't help but being impressed by the tall buildings. The streets are lined with entrances like you would see anywhere and you're casually strolling along. But if you were to look up, you can immediately see why more light doesn't reach the pavement even on a sunny day.





And then it goes on. Manhattan is covered in skyscrapers and it's as long as the bridge across Öresund.

Half of CETAC were in New York for vacation. The first day we met up with Arvid, who was only there for the day and celebrated beer in Central Park while watching the sun set. Beer is expensive even if bought in a store and make sure that you visit a bathroom before late. The public rest rooms close at 10pm.

We then continued our tourist odyssey through the city and managed to find opportunity for adventure and shopping as well as for taking some good pictures.

We managed to get discount tickets for a Broadway show, we had coffee in Harlem, we walked across the Brooklyn Bride and we took the speedboat out to the Statue of Liberty and back.

There had been talk about jogging in the city, and Joakim managed to convince me to come along around Jacqueline Onassis Reservoir twice. The experience did not disappoint with gravelled roads and a fresh breeze for healthy 5km (3.1 mi).

Such a grand first impression of the U.S of A couldn't have been a better appetizer for what is to come. I anticipate a continued fantastic summer for all of us.



I would encourage everyone to travel through the Big Apple at some point to take part in all it has to offer. Both singing, dancing and a bit of nakedness is served to whoever wants to put down the time and money.

This is the land of opportunity.

by: Jakob Rydén



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Linus Johansson

Sunshine and AGVs



After spending my last three years at Chalmers where I just finished with my bachelor's degree, I felt like I was ready for a new challenge. I was ready for a job that would test and improve my engineering skills. What I got was an engineering internship in the US of A; the land of the free, home of the doughnut, founders of fast food, and the creators of the drive-thru ATM.

My internship at Amerden started a week earlier than most of my fellow CETAC members so I unfortunately missed out on the traditional CETAC-week in New York. Instead, feeling kind of nervous, I arrived in Jacksonville one late night in the beginning of June just a few days before my internship started. My original thought was to spend my first days on the beach relaxing and enjoying the sun in the sunshine state Florida. But a tropical storm (sunshine state huh?) over the Jacksonville area had other plans and the sunny days in Florida were put on hold. Fortunately, I did not have to wait long for some sunshine and I eventually came to see more of the sun this summer than I would have during five summers in Gothenburg. Since I was

very fortunate to find an internship in St. Augustine, a city close to where I had studied a couple of years earlier, I spent the first days catching up with old friends and making new ones. The opportunity to come back to Florida also brought me a lot (~5000 miles) closer to my American girlfriend, which of course was awesome and very lucky, but that is an entirely different story.

When the day came for me to start my internship I was very nervous, but at the same time I was super excited and happy to be where I was. I remember thinking, "This is going to be such a great experience; I am very lucky to be here, as these types of opportunities do not come along every day". At the same time it was really strange and unreal because it felt like yesterday that CETAC 2009 was initiated. At that point that fantastic journey had ended and a

new journey was about to begin in the land of opportunities. Going into my internship I had very high expectations, but I was not worried about having too high of expectations since my boss, the Swede Roland Anderson, had experience training CETAC students before and I was certain that I would be well trained and get valuable experience at Amerden. So for all of you students at Chalmers University of Technology that are reading this: seize the opportunity and join CETAC and go to America (or Canada) for an internship!

Not surprisingly, my first week of work involved extensive training and new information as my co-worker Jonas, another Swede and CETAC alumni, went over some basics of what Amerden, as a company, does. Amerden is a small company that designs and installs Automated Guided Vehicle Systems (AGVS). An AGVS can be very different from AGV to AGV, but the simple explanation is that the AGV is an "automated fork truck" that handles material. As material handling is their main functionality, the AGVs can be used in different types of production where loading, picking, dropping and moving of material is needed. The core of Amerden's business is to guide and control the AGVs, where guidance can be accomplished with a few different technologies, e.g. laser, induction, magnet or vision.



Me and Jonas at Miami trade show



Linus Johansson

Age: 23

Company: Amerden Inc

Tasks: Researching and testing wireless I/O modules

Bachelor: Electrical Engineering

Best US experience: Flying in a two-seater Cessna over Titusville and Kennedy Space Center.

Location: St. Augustine, Florida



Early this summer I got a chance to test and get familiar with several AGVs out in our warehouse. There I also got familiar with what the Florida heat feels like without air conditioning (100 F = 38 C). It was like sitting in a very humid and hot sauna with winter clothes on. Anyways, I got some training which was important since my second week of work was going to be spent at a customer's facility in Lanett, Alabama. The original installation of the system in Lanett was actually performed in 2006 by two CETAC students. Furthermore, the system was still running fine (good job Rikard and Ahmad!) and all Jonas and I had to do was make small changes in the system and update the drawings of the facility. The latter task became my first "real" project at Amerden. On site I took notes and made sketches and later back at the office I updated drawings in AutoCAD (which was a new program to me).

A problem Amerden have been faced with for some time is the wiring of electric cables to and from I/O-modules, either over long distances or inside moving parts (e.g. inside a lift). So I was assigned to spend time on researching, understanding and testing a wireless I/O-module that potentially could solve the issue in hand. I read the manual for the module (not the most fun I have had), was in contact with the manufacturer's technical support (very educational and interesting) and finally I installed the module and tested its capabilities.

Now, almost two months later, we are actually quoting this I/O-module to an AGVS-customer that has problems with moving wires in their forklifts. Hopefully with my research on the I/O-module we can help this company and add it to one of our steady customers. Much of my work at Amerden has been of research and development-character but I also

got a chance to represent Amerden and advertise its business at a trade show in South Beach, Miami.

The summer has gone so fast and I wish I could tell you all my stories from this summer but unfortunately I cannot. Instead, in true Swedish tradition, here is a Smorgasbord of my fun Florida summer memories! Trip to Titusville and Kennedy Space Center with Joakim (see page 39) for an Endeavour launch (unfortunately it got cancelled), traditional Midsummer celebration at Roland's house, Independence Day celebration at the beach on the most beautiful day of the summer, insane amount of hours in the sun, barbecuing by the pool, eating Oreo-cookies, visiting Sea World in Orlando, flying in a two-seater Cessna, spending a weekend in Tampa with my girlfriend and going to the theme park, going to America's continental southernmost point (Key West), drinking a margarita in Miami, and much more...

Finally I want to thank everyone that has made this internship in America possible. Thank you CETAC 2009 for a great year and thanks to all the Swedish companies contributing to the continued success of CETAC. Thank you Roland and everyone else at Amerden for giving me this opportunity and supporting me whenever I needed help at work. Later dudes!





Vi är en stor organisation. Och vårt mål är att den alltid ska fungera som en enhet.

Åse Johnson, kundservicechef, Månadens Värdegrundare mars 2007

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Anders Lundström

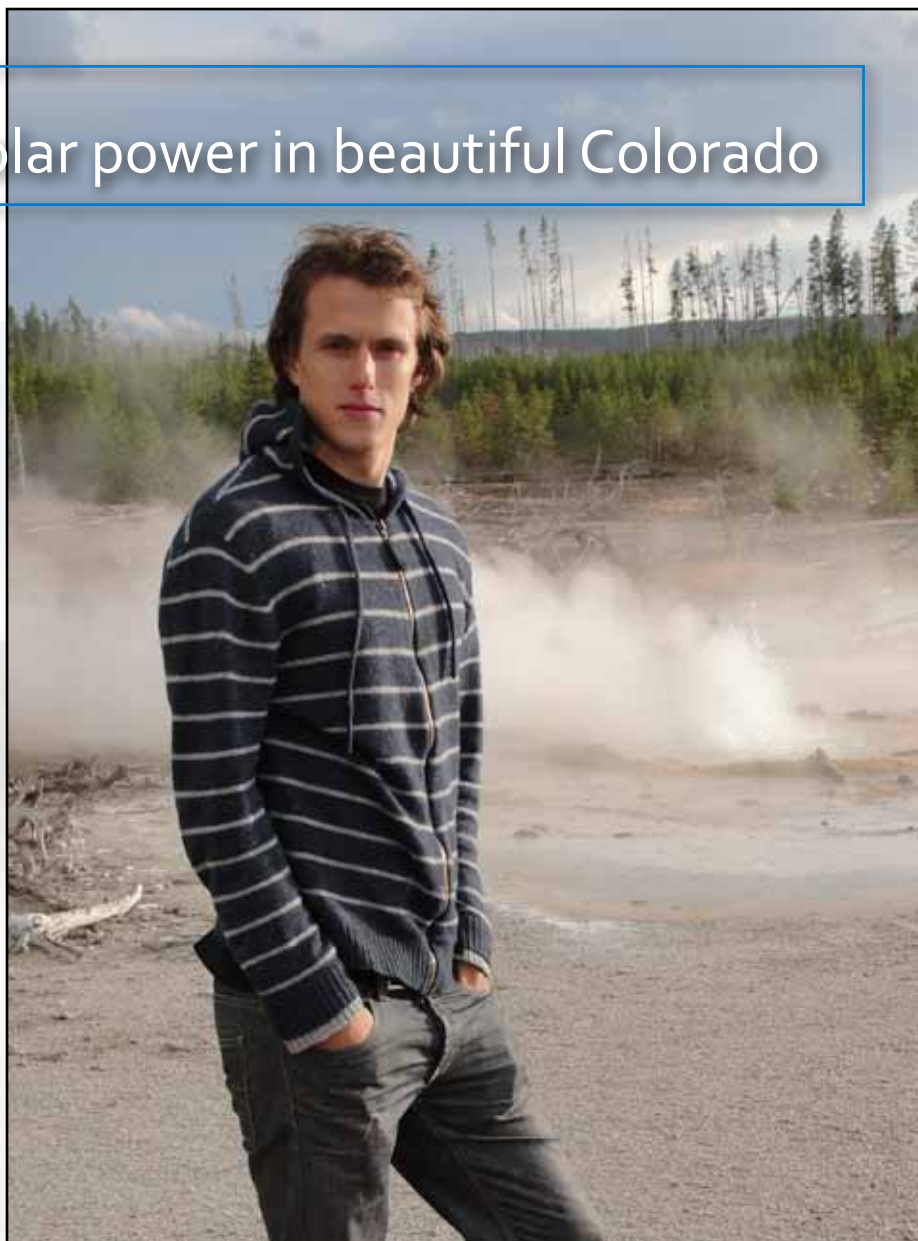
Exploring solar power in beautiful Colorado

When landing in Denver in early summer 2009, a great sense of relief washed over me. I had been traveling in Switzerland for one week before that, and arrived to the United States straight from Zürich.

Two days before leaving for Switzerland, I had an appointment at the American embassy in Stockholm to apply for my US visa. At the same day, I had an exam in environmental economics on the other side of the country. Thus, I found myself waiting at the embassy in Stockholm at 6 AM one cold day in June, just to rush to a 3 hour train ride to Gothenburg, in order to be half an hour early for my exam. Two days after that, my visa arrived in Stockholm, and I left for a 24 hour car ride to Switzerland. One week later, somehow, I had made it to Fort Collins, and I had passed my exam. A new adventure waited for me at Abound Solar. Though I still did not know where to live, or how to get there.

After a number of intense first days I started to get my American life sorted. I had been introduced to my work tasks, gotten a social security card, and picked up my white PT Cruiser that would get me around in Colorado. I ended up staying at Colorado State University, where I shared a corridor with 10 students from around the world, who were on a chemistry internship at the university. Since this instantly got me a bunch of friends, and a roof above my head, I was more than happy to stay at CSU.

At Abound Solar, I arrived in an exciting environment of cutting-edge technology and committed people. The company itself had sprung from research conducted at the university in Fort Collins, where a new way of producing low-cost, effective solar panels had been developed. In the last years, the company had multiplied its number of employees, now covering a number of locations in



the Fort Collins area. Before I started, a new fully automated factory line had been set up, and a lot of effort was focused on getting the production up-and-running at full efficiency.

My work at Abound Solar involved developing a measuring setup for the different chemical layers of a solar panel. Naturally, for the power characteristics it is very important to obtain a correct thickness of each of the components in the cell. Using a setup of different lasers controlled with LabView would prove to solve the problem. Aside from being a fun, changeable and independent job, it was very rewarding working with a company standing in the forefront of modern solar panel technology. My background in applied physics was definitely needed, and the chance of working with such an applied field of my area of study was a great experience.

During my time at Abound, my work got more merged into other projects at the company. I worked for some time with atomic force microscopy (AFM), and also developed a viewing software for monitoring different characteristics of the solar panels.

My spare time proved to be easy to fill with activities, in a hot Colorado summer within minutes from the Rocky Mountains. The first week-end was spent mountain biking in the lush mountain woods and experiencing breath-taking views. Another great experience was tube rafting in the La Poudre river, with a bunch of friends from work and the university. Hiking, swimming in the mountain lakes, baseball games and the Vans Warped punk tour was other things that made the 2009 summer in America memorable. I even got to sing the Swedish anthem at the

Anders Lundström

Age: 22

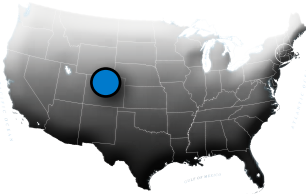
Company: Abound Solar

Tasks: Measuring solar panels.

Bachelor: Engineering Physics

Best US experience: Hiking in the Colorado mountains with my visiting girlfriend.

Location: Fort Collins, Colorado



annual Estes Park Scandinavian Festival, where we ended up on the way to the mountain biking trip. Staying at the university meant an active schedule on the workdays too. Whether it was ping-pong games with my German room mate or sporadic soccer games against Saudi Arabian exchange students, CSU proved to be a great place to stay for a Swedish physicist far away from home. The only drawback would be the absence of a kitchen, which meant a big change from the lifestyle I'm used to. It was, however, a drawback well worth it.

The summer ended with a



week-end trip to visit Yellowstone National Park. Driving north through the vast Wyoming plains, I successively noticed the landscape becoming more and more desolate. My cell phone had been out of coverage for the last two hours, and the road sign started to be filled with bullet holes. Later I got explained to me that "the people up here don't like the government". At one point I even got stuck in a snowstorm, and it really felt like the middle of nowhere. Yellowstone, however, was a great sight. Hot springs,

geysers, mud volcanoes and bison were scattered all over the national park, and it added up to a great experience well worth the 7 hour drive from Fort Collins.

Wrapping up the report from a fantastic summer, I have to thank Alan Davies and the other guys at the R&D department for a great time, and Dennis Stoltenberg at HRM for making my time at Abound possible.



Mountainbiking in the Rocky Mountains

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CHALMERS

Emelie Nilsson

Summer at the Edge in Ohio

When I first came to the campus in the Midwest where my summer was going to take place I feared that I had ended up in the middle of nowhere, especially after just spending one crazy week in the eventful New York City. I had no idea that the best summer ever was about to begin. The adventure that developed me on both a professional and personal level was a mixture of intense problem solving, road trips and night swimming. Let me tell you about a life changing experience.

Spending one week in the high city beat of New York was a great start of my new American life. A visit to the Apple Store, followed by coffee in Harlem and an afternoon Mojito in trendy Little Italy; there is no end to the diversity of the city! We managed to get last minute Broadway tickets to the musical Hair, which was really impressive. After the show the audience was invited to get up on stage to dance with the world class performers. I stayed at my friends' house in New Jersey and it was nice to get a break from the intense Manhattan in the calm neighbourhood. We had a great time at one of the world's largest amusement parks Six Flags, where I developed an addiction to the delicious Dippin' Dots ice cream. I find it interesting that any trouble with a rollercoaster in Sweden creates front page headlines, while at Six Flags it seems to happen all the time. We actually got stuck in the Superman rollercoaster, hanging in "the Superman position" for about twenty minutes before we eventually got down!

The contrast between New York



and the campus in Dayton Ohio where I was going to live and work could not be stronger. It would not be long though before the warmhearted people made it a great place to be. The first day at work, Dr. Petkie invited me to breakfast before we headed to the Terahertz laboratory where I got introduced to the impressive setups and ongoing experiments. I was mostly involved with a project for the Wright Brothers Institute called "Summer at the Edge", where creative students from all over the US were put together to solve complex problems through intense collaboration. My team consisted of a couple of physics and engineering students and together we worked on detecting vehicle signatures with various sensors. With an unbreakable team spirit we also had a lot of fun outside work going to baseball game and singing karaoke. Our project leaders were the best you can imagine. Not only were they extremely supportive, but they also made sure that all of us had a great experience and

learned as much as possible. The work was very independent and a day of work could consist of doing experiments, analyzing data with MATLAB or holding presentations about the project. The fact that the dynamics of a car depend on its load was used to create a profile of a vehicle. The sensors we used



Our project poster



Me and my friends in Chicago

were accelerometers, electro-optical cameras, short-wavelength infrared cameras, radar and an acoustic array that so far was more or less unexplored. The sensor data we got from a car driving over a speed bump was fused to determine whether or not the car was loaded. At the end of the summer we were able to differentiate a loaded car from an unloaded in 100% of the tests!

The campus of Wright State University is located in the Dayton area. Downtown Dayton does not have the best reputation and we were repetitively warned to go there because of the high criminality. Some people in the area have actually never been downtown. Against all odds and despite of all the drug dealers the city really has its highlights! The Oregon district offers pubs with jam sessions, charmy restaurants and an independent movie theatre. The first time we went downtown we managed to take the wrong bus on the way home late at night. We realized it too late and had no idea where we had ended up, but thanks to loyal car-owning friends we got home after a crazy night!

To have a car over there definitely makes things easier, but thanks to my friends and great coworkers who gladly gave me a ride I survived without one. There were three bars within walking distance, so it was not the end of the world. At work I mentioned my thoughts of getting a bike and the next day my coworker Sara surprised me with one that I borrowed over the summer! Even though the area around campus

is not ideal for biking, we managed to go on some bike trips in the beautiful weather. When we biked to the mall on the highway, we got some strange looks though. During hot days when we didn't get a ride to a nearby lake we sneaked in to the swimming pools in the neighborhood, which worked fine except for one time when we were chased by a security guard. Luckily we were faster than him! Finding a place to swim was something we didn't have to worry about during a wonderful weekend in Chicago where the beach of Lake Michigan is in the middle of the city!

Emelie Nilsson

Age: 24

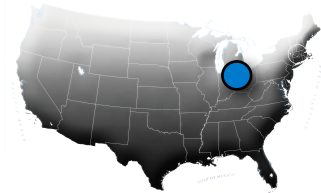
Company: The Terahertz Research Lab of Wright State University

Tasks: Detecting vehicle signatures with five different sensors.

Bachelor: Engineering Physics

Best US experience: Riding the mechanical bull and line dancing to country music in the club "Yellow rose".

Location: Dayton, Ohio



As I go back to Sweden, I bring a lot of nice memories from my summer quarter! An unforgettable night was the Swedish "kräftskiva" that me and two other Swedes hosted. Singing Swedish snaps-songs with our American friends was so much fun. We also threw a midsummer party. I have had an awesome stay and the most adventurous summer of my life. Not only have I improved my relationship with programming, I also made friends for life!



At the Wright State

Jakob Rydén

Hello from Seattle, the home of Gates and Starbucks.



This last outpost on the border of Canada houses a plethora of experiences, from culture and music to nature and recreation. Welcome to the Emerald City, where even the oddest creativity knows no boundaries.

Sitting in Sweden at Chalmers University or a similar place; maybe you are thinking about going to the US as a member of CETAC; maybe you're curious about exchange in general or maybe you are a company in the decision making process of whether to support CETAC. In my experience this sort of exchange is fundamentally beneficial for all parties.

My journey started as part of the board of CETAC. As editor, I was responsible for the layout and printing of the CETAC 2008 Trainee Report. During the year, working after hours in our appointed room in the Chalmers Physics department building, I got familiar with the process of executing a project from start to finish where everything, from internal communication to making the budget, was in the hands of us, the students.

Through the associated Swedish company Tibco Spotfire I ended up in Seattle, Washington.

A 2.5 hours drive from the Canadian border, this is the home and origin of Boeing Airplanes, Starbucks Coffee and rock bands such as Nirvana and Death Cab for Cutie. It also plays host to a number of software companies (Valve Software, Real Networks, Amazon.com), of which the most outstanding of course is Microsoft Corporation. It is easy to imagine how the emergence of the silicon industry in the 80's made Seattle, already housing an army of engineers working in the aircraft industry, a goldmine for inspired entrepreneurs riding the wave of IT start-up companies frenzy.

Interestingly enough, this part of the U.S. was also where many people from Scandinavia came when they first immigrated to America, possibly because of the similarities in climate; Seattle rivals Gothenburg when it comes to rainfall.

During my stay, I have had the opportunity to see the hallmarks of Seattle; Boeing's factory in Everett, the original Starbucks coffee shop down in super cute Pike Place market, downtown and (the gates to) Bill Gates' home in



The Golden Gate

Medina.

I have also had the chance to travel across the U.S to see places and meet some wonderful people. I've been camping on the west coast by La Push in the Indian reservation. I've driven along the Oregon Coast with my brother, and seen some amazing scenery. We tried sleeping in a tent, car and motel to get the full experience of what it means to be on the road.

My first destination in the U.S. was New York where most of CETAC enjoyed an early summer vacation together, which is covered in a separate article; and by the end of August, me and fellow CETAC member Joakim Olsson went to San Francisco to meet up with Johan Lundström and to see Stanford University.

Coming here one needs, besides an impressive amount of paperwork, a social security number and a bank account. I happily managed to get both within a couple of days of arrival at my workplace.

Some things are trickier though; I have yet to have been issued an ID card and am thus forced to carry my passport to the bars, which is less than optimal considering the whole immigration issue. I also had plans for buying an iPhone which in the U.S. is \$200+ \$75/month (about 1500 SEK for the phone and 500 SEK monthly for the

service, which includes unlimited data transfer). However, in the U.S. credibility is measured through past use of credit cards, which is reported to three financial institutions. No previous history equals an additional \$500 deposit for signing up for the phone plan. I guess just cancelling a plan for misuse is too easy for over serious service providers such as AT&T. Working in America is supposedly similar to working in Sweden, with the clear exception of the availability of similar Internships.

This brings to mind a presentation given to us in New York by a researcher of cultural differences (between Scandinavia and the U.S.). He told us about the differences in the structure of meetings where in Sweden you want meetings to be few and substantial but in the U.S. they are short, frequent and less demanding.

For structure, Sweden employs the "coffee break model", where smaller issues are discussed informally in the break room (at TIBCO, you may have coffee during the meeting). As far as work experience is considered, I feel lucky to have arrived at a work place with such great and engaged people, sharing their project ideas and friendship.

I've been told that my office is considered a relaxed workplace, although I get the feeling that this could apply to many software companies.

The organization is small enough that you can have an idea about most people you would meet in the corridor or in the lunch room. I have had the pleasure to attend a number of in-house lectures as well as recreation in the form of jumping in Lake Washington from the office buildings ground deck and hacking the coffee machine in the lunch room.

Concerning the tasks given me, as a half-baked engineer working in software, chances are good you will be doing Quality Assurance (QA). In short; when software ships, customers expect them to work and QA has the final look at the finished product to guarantee a measure of quality.

QA is also part of tracking and managing issues during the development cycle and does in some regard serve as the link between customer feedback

reporting and developers. Code and issues (bugs) are managed through a data exchange system where progress can be monitored through managed messaging and plug ins to certain developer tools.

Besides reporting, I have been working with the S+ statistical programming language, which is the main product of Spotfire in Seattle. I have also written some software for automating tedious tests using C# in Visual Studio.



It's been a great journey for me, both professionally and on a personal level. I used to have the feeling that people were overestimating the importance of exchange abroad. That has changed, as I have experienced all there is to it besides simply working in a

Jakob Rydén

Age: 23

Company: TIBCO Spotfire

Tasks: Quality Assurance

Bachelor: Engineering Physics

Best US experience: Driving south with my brother

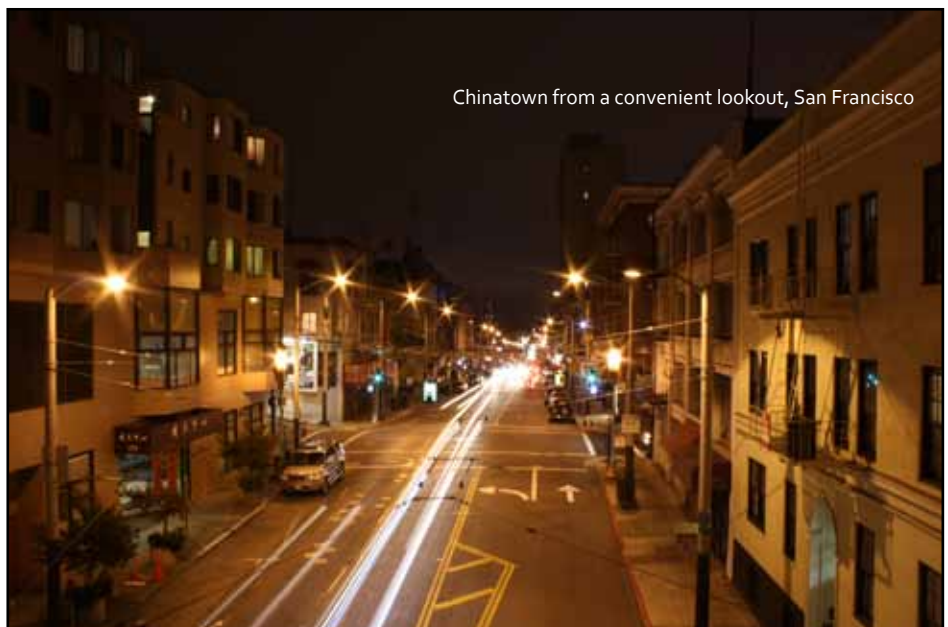
Location: Seattle, WA



different location. Living in a different location, with friends, officials and facilities, all whose backgrounds have been formed by a different setting is a great experience. And this, you get to realize by your own involvement and trying to figure out your role in everything that is going on.

I would encourage anyone that is given a chance to go on exchange, and if you are a student at Chalmers, I think that CETAC offers a superior way that is both accessible and rewarding.

Finally I would like to thank my manager, Rajiv and also Tom and Joakim, who managed to agree on having me go here in the first place. Also thanks to Vera for offering me a place to stay and all my friends and co-workers, both at TIBCO and in CETAC.



Chinatown from a convenient lookout, San Francisco



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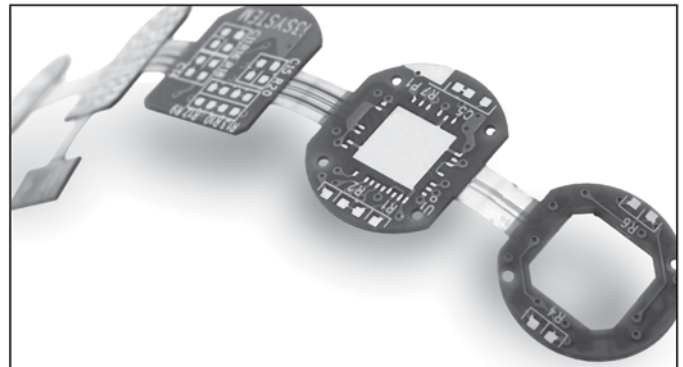
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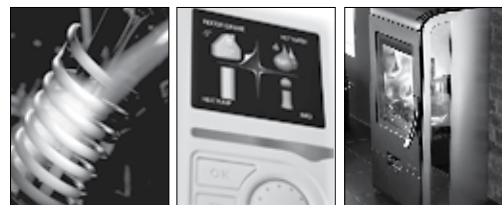
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Gustaf Gunnarsson
Dallas Days

I landed at Dallas-Fort Worth International Airport after a wonderful week in New York. I was excited, stoked and eager to find out what Dallas had to offer. When I left the airport and walked out in the heat, it felt like running into a wall and I knew that the Texas weather was one thing I was going to remember.

I didn't really realize that I was going to the US until I landed at Newark International Airport Monday the 8:th of June. Together with my girlfriend Emma we were going to spend 12 weeks at the other side of the Atlantic Ocean, whereof 6 days in New York. When I look back on my time in the USA, the first week was the best and it was a week to remember

We took a shuttle in to Manhattan and to the Upper East side where we were going to stay the nights in the big apple. It was a great place that had a good location and was very cheap. Could it be better?

It was astonishing to walk around in the city, feel the atmosphere and look at all the skyscrapers. It was like a movie, but even better. We saw Broadway, Empire State Building, Ground Zero, Wall Street, Brooklyn bridge, Central Park and much much more before we headed towards Texas and Dallas

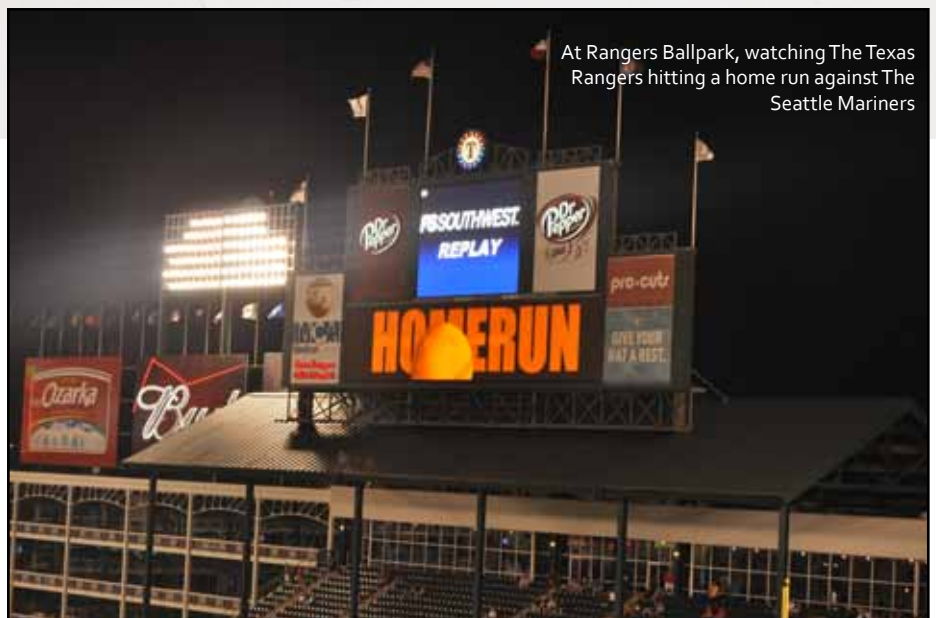
where I was going to work the rest of the summer.

When Emma and I boarded the plane that was going to take us to Dallas via Chicago, we couldn't find my seat. It didn't exist! A little bit chocked we had to leave the plane to talk to the staff of the airline company. They had booked the wrong plane with less seats than the original one. We were worried but after a while they booked us on another plane that took us directly to Dallas. We arrived earlier than the original flight and took something to eat while we waited for our bag to arrive from Chicago.

Our problems were not over yet. Hanz, my boss at Odin TeleSystems, together with his wife Diana picked us up at the airport and took us to our accommodation which we had booked for

the summer. When we got there, no one were there to meet us as planned. To our delight we could sleep at Hanz' and Diana's house and try the day after again. When we arrived at the accommodation the second time they showed us our apartment and all the facilities. After a while we decided not to stay there. It was not what we had been promised and the standard was terrible. Then Diana suggested that we could stay at their place as housekeepers during their family's vacation which we were most happy to do. It turned out that we stayed there during the whole summer. It was great! It was a big house with a nice kitchen, beautiful backyard and the estate had a lovely pool area. After all trouble it turned out to be great for us.

During 11 weeks I worked at Odin TeleSystems Inc, a small company located in Richardson north of Dallas. The company design and develop telecom adapter boards and software packages for telecom, computer telephony, and test and measurement systems. The boards are mainly sold to telecom companies that develop and add their own software to them and then provides them to users. Though the company is small, all of the employees have a wide



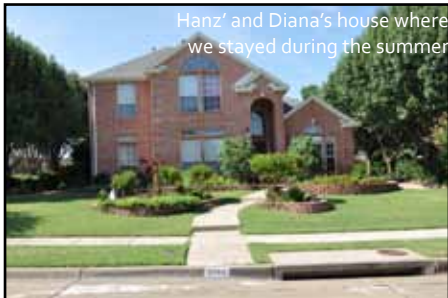
At Rangers Ballpark, watching The Texas Rangers hitting a home run against The Seattle Mariners



Me at Odin TeleSystems Inc.

range of work tasks but a main area of responsibility, like software and hardware development, customer support, testing, marketing and customer relations.

I took part in testing projects, supervised by Yu-Hua He, who provided me with work. I started to change and standardize system testing programs for their boards in the programming language Pearl, which was new for me. It turned out not to be too hard and after a while I had written my first programs for Odin. I continued with standardization of JTAG programs written in C. JTAG



Hanz' and Diana's house where we stayed during the summer

is a technique to scan electronic boards for failures with Boundary Scan. It is possible to find shorts, missing components, wrong placed resistors and so on. All the programs I wrote, I then used to test new produced boards to see if they were functional and OK to be sent to customers. I did not only work with computers, I also had some practical work when I soldered components on to new testing boards. That was a great complement to the other tasks and I enjoyed it.

The time I worked at Odin TeleSystems has given me great experiences. It feels like I accomplished a lot even if I only spent a summer at Odin and I hope

that more students from Cetac get the opportunity to work there.

When I didn't work, I spent most of the time with Emma and we did a lot of things. Dallas-Fort Worth Metropolis has more than 6 million people and its area is huge. It makes it hard to travel around without a car and we were alone to use bikes as transport vehicles. We often took the bikes to the nearest train station when we went into town or went to shopping malls. In excess of shopping, eating a lot of food, looking at the huge cars, sweating in the 38-40 degrees heat, we did a typical American thing when

Gustaf Gunnarsson

Age: 23

Company: Odin TeleSystems Inc.

Tasks: Write test programs in Pearl and C

Bachelor: Engineering Physics

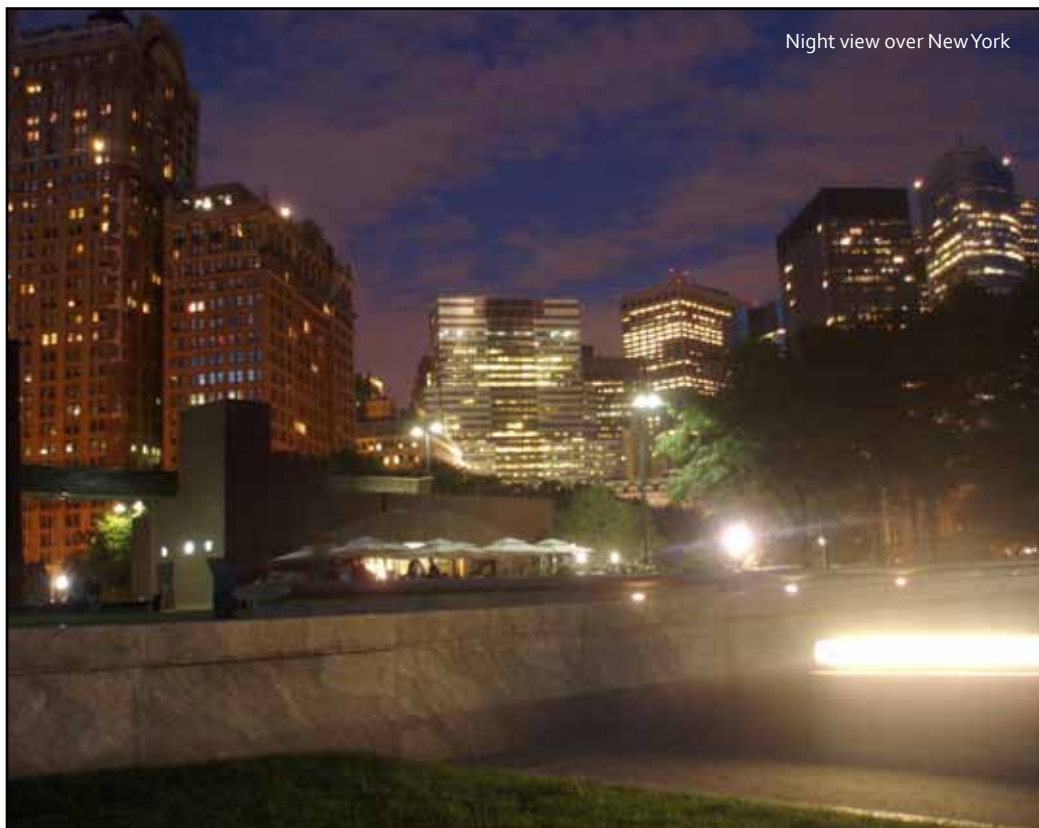
Best US experience: A week in New York

Location: Dallas, Texas



we went to a baseball game. The game were between The Texas Rangers and The Seattle Mariners and of course the home team won. It was fun and it was not like other sports I have watched live and I have never seen such an amount of food and snacks been consumed during a game before.

The 11 weeks past by fast and it was time for us to leave Dallas and the US. I will have many fantastic memories from this summer and I would like to thank all my co-workers at Odin TeleSystems and Hanz and Diana for all their help and to let us stay with them. Thanks, and I hope I will see you again someday.



Night view over New York

Nina Sundström & Olle Friberg

Floating the River in Austin, TX



After a wonderful week in New York it was finally time for us to go to Austin, TX. We were really curious to come to Texas since we really did not know what to expect. In our minds we could vision the state as desert-like and the home to a lot of cowboys. We couldn't have been more wrong!

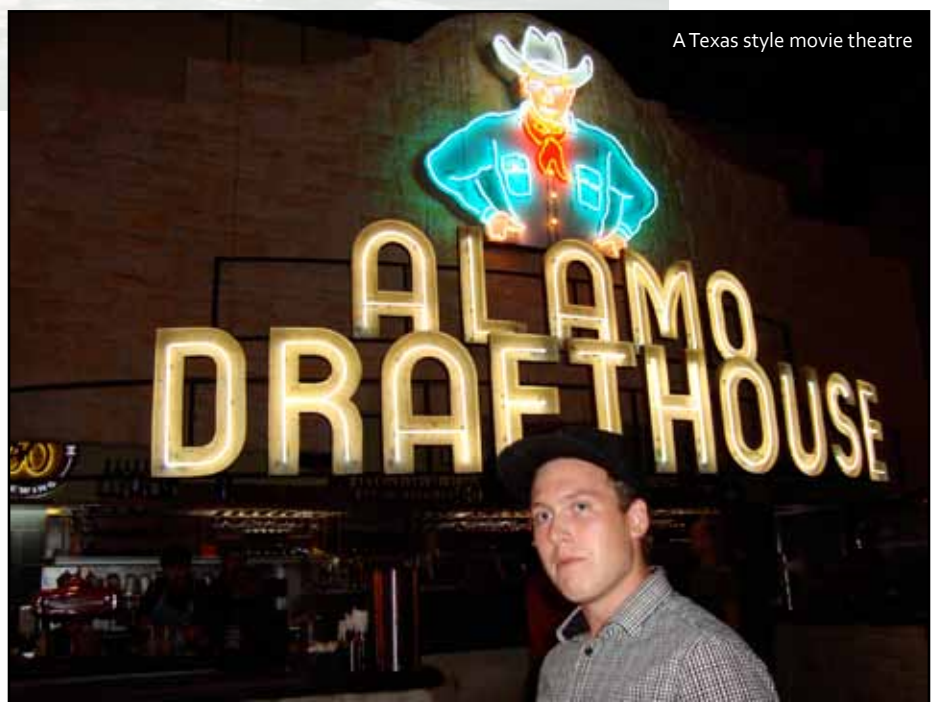
The first thing we noticed about Austin was that we didn't see a single cowboy; instead the city seemed to be crowded with bikers. It turned out that the biggest motorcycle festival in Texas, the ROT (Republic Of Texas) Rally, was held the same weekend we arrived. We saw everything from limousines with motorcycles mounted on the back to people that actually looks hardcore in there bandanas. Austin is located in the flourishing Texas Hill Country with big limestone hills so the surroundings differed greatly from our expectations of tumbleweed and cactuses.

Since we didn't have an apartment yet, we had made a reservation at a motel for the first couple of days. After checking in we went

straight to the closest Starbuck's since they had free Wi-Fi. We started to call every place available, using our pre-paid cell phone bought in NY. It turned out that it was a lot easier to get in touch with people when you had an American cell phone, instead of sending e-mails from Sweden. After talking to a couple of subletters we got to check out some frat houses with "a couple of happy hippies". After a whole day out in the sun and no nice place to rent, we became a bit worried about our living situation. Our bad luck transformed into luck the next day when we found a room in a

really nice apartment complex close to campus of University of Texas. With the room we also got access to a pool and a gym. Our roommate Shawn, originally from Houston TX, turned out to become our best friend during our visit in Austin along with his girlfriend Abby. They were amazing to us and even though they were quite new to Austin they showed us what America and Texas are all about.

Our first day at work started by us oversleeping. We had ordered a cab to come and pick us up at our motel and the phone call from the cab driver saying



A Texas style movie theatre



Two-stepping at the Broken Spoke

Nina Sundström

Age: 29
 Bachelor: Engineering Physics
 Master: Master in Systems, Control and Mechatronics.
 Best US experience: Meeting Abigail Ransom, the Abigator!

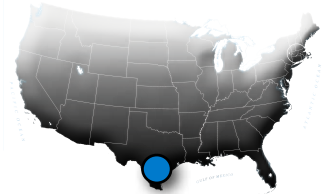
Olle Friberg

Age: 24
 Bachelor: Engineering Physics
 Master: Production Engineering.
 Best US experience: Floating the guadalope river with a bear in my hand.

Company: Advanced Geosciences Inc.

Tasks: Automated tests of equipment using LabVIEW, Serial Communication and SQL Databases.

Location: Austin, Texas



he was outside waiting woke us up in a second. The cab took us from south to north Austin to a car rental company close to where our work was located. To rent a car turned out to be a bigger problem than we had thought. Though we arrived at the rental company one hour before work we showed up one hour late, i.e. we had spent almost two hours at the renting company.

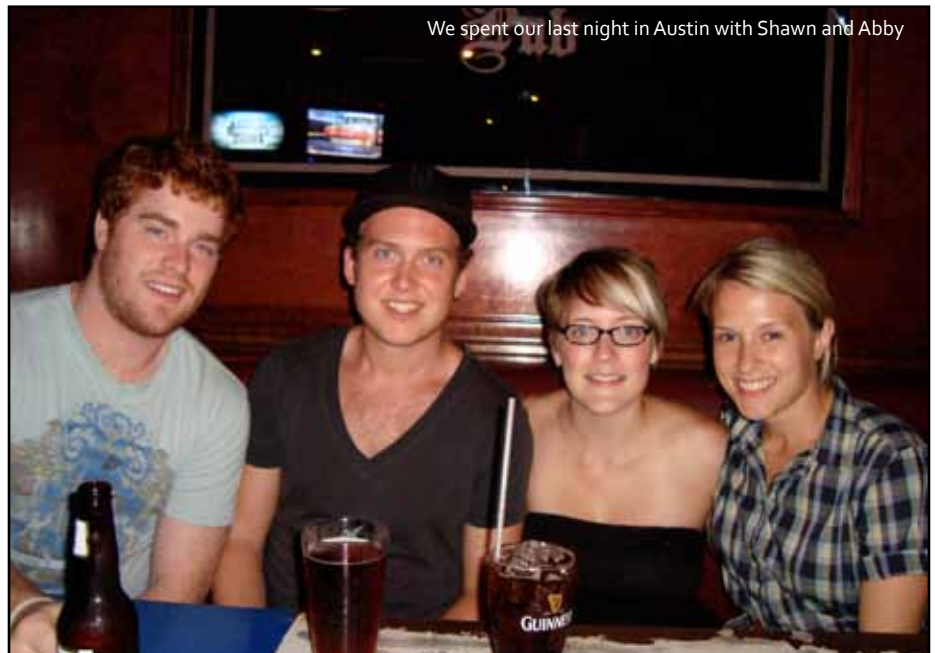
When we finally made it to work we met up with Jennifer, one of our employers and daughter to the co-founder of AGI. She told us about the company while we were waiting for our other employer Markus, Jennifer's brother. He was out buying us new computers with nice 21" screens. When he arrived they took us for lunch at a great place called the Oasis, which is a Texas Mexican (TexMex) restaurant that overlooks Lake Austin. This was our first encounter with the TexMex food, and since we did not have time to eat breakfast it is was one of the better meals we've ever had.

The company that we worked at, Advanced Geosciences Inc. (AGI), is a small company that develops and manufactures equipment for ground imaging. The imaging is of the earth below the ground surface and by using AGI's equipment you can find everything from water to sink holes and minerals. This is basically done by measuring the different variations in resistivity using



At work, Advanced Geosciences Inc.

cables that are placed on the ground. Our first project was to write a test program for these cables. The program would scan for errors, display the result to the user and then store the data in a database. This work involved a lot of new things to us, for example we had to learn a new programming language, how to establish serial communication between devices and how to use a database. We did encounter some problems at first, but thanks to our Chalmers courses in e.g. experimental physics we eventually solved the problems.



We spent our last night in Austin with Shawn and Abby

Most of our spare time was spent with Shawn and Abby. One of many memories from our visit in Austin was going tubing down the Guadalupe River. We rented one tube each and tied coolers to the tubes. The day was spent floating the river for 4 hours. Halfway we passed a wedding celebration outside one of the houses along the river. The bride invited us to join them in their

festivities. They had a swing that you used to swing yourself out into the river. Some of us dared to try it while others were too scared of the drop height to the water.

Because of the heat in Austin, being around 104° (40°C), we also enjoyed going to a famous landmark in Zilker Park called Barton Spring's Pool. The pool is fed from underground springs



Visiting NI Week to learn more about LabVIEW

and stays really cool all year around. The pool has an average temperature of 68° (20°C) which in combination with the outside temperature was a great match.

A must see in Austin is a popular movie theatre called the Alamo Draught House. Shawn took us there our first week in Austin and we later came back several times. The Alamo Draught House is a fusion between a movie theatre and a bar. The seat rows has a long bar desk and are spaced just enough for a waiter to be able to go around and serve customers during the movie. When

you wanted to make an order, you just wrote your order on a note and made it visible on the bar desk. The waiter then collected your order. They had really nice food, a large collection of beer and great \$5 shakes!

After staying with Shawn for almost two months it was time for us to find a new roommate, since the lease ended on the apartment we shared with Shawn. This time it was much easier to search for rooms since we knew Austin by then and therefore what areas we were interested to live in. Since we also

had a rental car we could get around more easily. We ended up renting a room in a house owned by Megan. As a bonus we got two cats, Gizmo and Percy, as roomies. Megan introduced us to lovely little spots that we had never seen before. We went to a dive bar to watch the sunset with an amazing view over the hill country and we finally met real cowboys when we went to a dance hall and danced two-step. Last but not least, we went to a chicken shit bingo which was an experience to remember. Megan introduced us to her great friends and during the three weeks we spent with her, we learnt more about Austin then during our whole stay.

Finally we would like to thank Markus, Jennifer and everyone else at AGI for making our summer unforgettable, this has truly been a ones in a lifetime experience.



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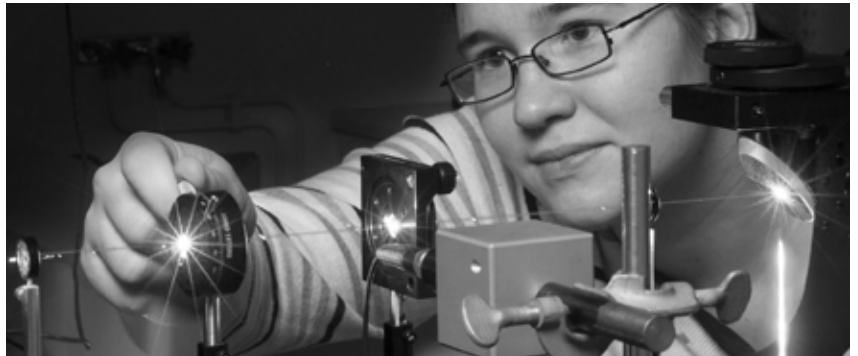
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Sofa Rahiminejad

Itacha is Gorges



Ithaca is Gorges

Or that's what all the T-shirts said at least. The town called Ithaca is famous for its gorges, waterfall and green way of living, however it is also known for the research at Cornell University. That's where I did my internship the summer of 2009.

I arrived to Ithaca in the middle of the night on a Monday. The town was asleep and there were no one to ask for directions. I found myself wondering around the empty streets until a guy came up to me and said that the bus driver thought I was lost and might need directions. That's the good thing about Ithaca. Everyone is always willing to help you.

I lived in an apartment with three girls from Cornell University. This was a good way for me to get in and experience the real way of living over here. My roommates took me to a lot of places and through them I met some great people who also wanted to show me parts of Ithaca that I would have difficulty to go to on my own. I got to swim by the waterfalls of Ithaca, stroll around the Farmers Market where everything was grown by the people selling it and celebrate Fourth of July with a traditional BBQ and smores.

Work started almost right after I arrived, I found myself at Professor Shealy's office not really sure what to expect from my internship. The plan was, well I didn't know what the original plan was, though because of trouble with the photon counter that plan was abandoned and I had to be reassigned to another project.

Professor Shealy and his grad students were doing research on "Capacitance - Voltage (CV) characterization of AlGaIn/GaN heterostructures". By measuring capacitance and conductance for a voltage range it is possible to determine the sheet electron density, the effective AlGaIn barrier thickness and also the pinch off voltage for a sample.

The measurements are done



At work doing measurements with IC-Cap

with the help of a program called IC-Cap. IC-cap has a lot of advantages and possibilities, however a regular measurement is done by giving a voltage range for the probe to sweep over. These measurements take time and every so often they have to be done more than once on the same sample to alter some parameters depending on the sample.

This is where I come in. My job was to create Macros and transforms in IC-Cap to automatize and make the measurements "smarter". The idea was to still let the initiation of the measurement be simple by just entering the voltage range and click on the measurement button. IC-Cap would then make numerous single point measurements within that range. The voltage-step between every measurement would depend on the slope of the curve and can therefore do more precise measurements only when needed which would result to a lower measurement time altogether. And when it comes to technology and research today, time makes a big difference.

For someone like me who had never heard of IC-Cap before, this was a great chance to learn a new program which is used a lot in this field. I really felt that I got something out of my internship and that the experience was priceless.

Sofia Rahiminejad

Age: 22

Company: Cornell University

Tasks: Constructing Macros and transforms

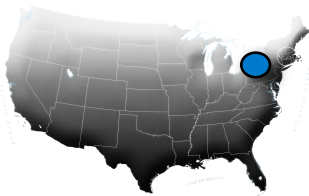
in IC-Cap to automatize measurements

Bachelor: Engineering Physics

Master: Nanotechnology

Best US experience: Going out on the lake with my boss and my friend

Location: Ithaca, New York



The summer in Ithaca was more than just work and Professor Shealy is the last person to forget that. One Friday I was sitting at the office on what was believed to



At the border to Ithaca on my way to Buttermilk waterfall

be one of the hottest days that summer. Professor Shealy stopped by to check on my progress and also invited me and my roommate out on the lake that day. We got to his boat when the sun was at its highest and went out to the middle of the lake. We immediately jumped into the water and lied in our floaties enjoying the hot sun and the cool water. Not long after that more boats showed up with people from many different parts of the community. They tied their boats to ours and everyone was going from boat to boat enjoying their day as we were. Professor Shealy also invited some friends of his that were from two different bands, together they played live music for us. One of the other boat owners

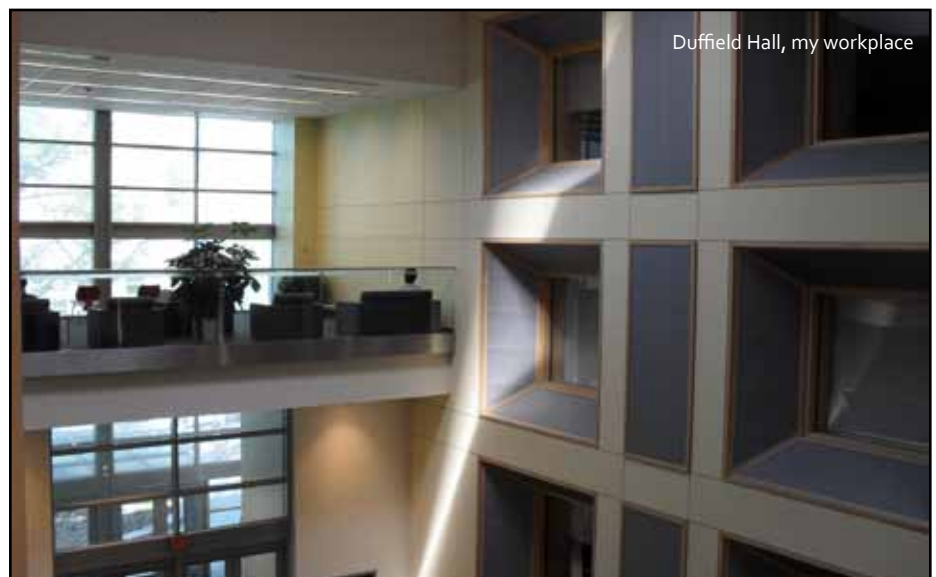


had a board and asked if anyone wanted to try and wake surf on the waves of the boat. Wake surfing consist of a plain board without any straps for your feet, you then have a line to hang on to and when you have your balance and speed, you let go and surf on the waves. A bunch of us went just to watch and one by one people tried to master the board. They asked if I wanted to try and at first I was a bit unsecure but then I realized that it will probably be a long time before I get the chance to try it again and I didn't want to waste that opportunity so jumped into the water with my yellow life west ready to give it a go. It was not as easy as it looked but after a few tries I managed to get up on the board and stay on it for a few seconds. I will probably not become a professional in this area but I am glad that I tried. The sun started to set and we all realized that we had not eaten for a long while. Professor Shealy took us on his boat to nearby harbor that had a nice restaurant with good food and great atmosphere, or maybe the atmosphere

was because of us. After dinner we went back on the boat and were ready to go home. On the way back the sky was lit with a thousand stars and along the shore someone was shooting fireworks. It was the perfect end of a perfect day.

This trip was not only about going to the USA and work, this trip has made me more open and unafraid to try new things on my own. I learnt a lot about myself when it comes to the way I work and also how I handle a new and unfamiliar situation. I met a lot of students from different fields and made strong connections with many of them.

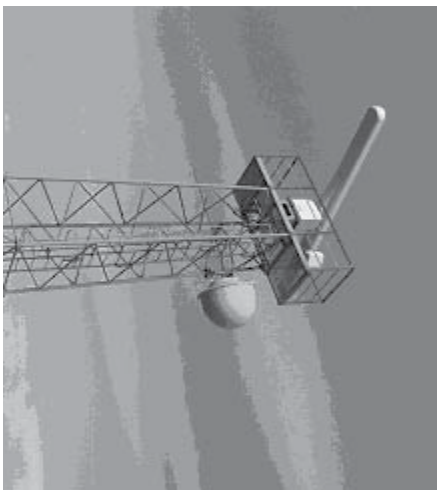
I want to thank proffesor Shealy for giving me this opportunity and his grad students for all the help they gave me. I would also like to thank Jamie, who works for Prof Shealy, for always giving a helping hand and a smile.



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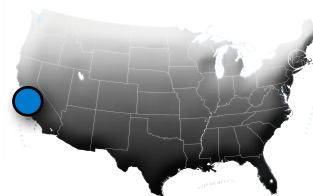
Johan Lundström

It never rains in southern California



Johan Lundström

Age: 25
 Company: Nicira networks
 Tasks: Primarily developing the automated software testing system but also contributing code to the main products.
 Master: Software Engineering
 Best US experience: Camping by Trinity river, all though it was really nice to go hiking with Ms K in Yosemite.
 Location: Palo Alto, California



Northern California just might be one of the best places on the planet to live. Not perfect in any way but just so very versatile and with so many opportunities. After being here for a few months, Mr J is in no way ready to leave.

Mr. J got off his flight at San Francisco international airport about one day behind schedule. It turns out that aircrafts and lightning doesn't mix very well after all. It wasn't as warm outside as he had expected. Not cold in any way but definitely not as hot as miscel-

laneous movies had made Mr. J think it would be in California.

He made his way to the BART, which took him to the Caltrain. The Caltrain took him south, not all the way to San Jose but almost. He got off the train in the heart of Palo Alto, in the middle of Silicon Valley. Now it was seriously hot and Mr. J changed his mind regarding his clothing for the second time in one hour.

Mr. H swooped by in his silver Mercedes and for the first time they met face to face. Mr. H did not only pick Mr. J up at the station, he was also Mr. J's boss. By now it was already afternoon so the entire office went out for a few beers at the closest bar. Mr. J thought it was a pretty good first day at the new job.

This was the start of something that would turn out to be the best thing Mr. J had ever done. Sure, getting an education and such was also a pretty good call on his own behalf, but all things considered, all previous events had been leading up to this.

Was it all perfect and smooth sailing from here on out? No. Mr. J was struggling at work. After he managed to escape the suboptimal* motel he spent the first few nights in, he moved in to a less than perfect* apartment that cost more than any student flat Gothenburg has to offer. He didn't know anyone and, quite frankly, there was no one around to be found either. You see, Palo Alto is two things: suburbs and Stanford University.

Let's face it, Stanford is for Stanford students and the suburbs are for families. During the first few weeks: Mr. J realized that the he didn't have that much to show for five years of university studies, he managed to get into an bike accident (ambulance ride, stitches and all) and he was dumped by his girlfriend.

Mr. J didn't think it was rock bottom just yet, but he did hope things (* original choice of words did not quite make it past censorship)

The infamous Californian Standoff, by Trinity river



photo by Peter Capraro

would get better. Did they? Well, at the time this text was written, Mr. J had missed the first train back up to his new place in San Francisco and wasn't allowed to board the second train as a warning for riding his bike at the station. Mr. J still didn't know everything there was to know at work, but to be fair, what would be the point of moving to California if everything could be learned in just three months?

Currently, however, things are good. He just moved into a new place (after three failed living situations) and the number of contacts on Facebook has grown quite a bit, which has made weekends and weekday nights much more interesting than before. This is actually, from time to time, life on a stick(tm).

There is an insane amount of things to do in the City (in case you didn't know, San Francisco is and always will be the City) and in NorCal in general. Basically, if you are bored, it is because you have chosen to be. In other words, it doesn't happen very often.

Now you'll have to excuse me. The train is arriving in San Francisco and Mr. J has to get a move on.

A few words about work perhaps? Nicira Networks is (at the time of writing) a stealth startup company that is developing a virtual data switch. It is located in the heart of Silicon Valley and boosts a whopping 15ish employees. Mr.

J has mostly been working with the quality assurance aspect of the virtual switch by doing manual testing and by adding scripted tests to the custom made automated test system. Mr. J has three colleges in the QA department: Reid, Sujatha, and finally Henrik who is the head of the department. As mentioned before, it took Mr. J a while to wrap his head around what was actually going on in the company. This was however helped to a great extent by working so close to everyone in the office. If there ever was something Mr. J didn't get, he could go to the very person who wrote that specific part of the system and get the inside scoop. The best part of interning at a

start up rather than a bigger company is being in the middle of things and participating in things like the all-hands meeting every week (held by the CEO). There might be upsides to working at a bigger place but Mr. J is extremely happy with being given the chance to be at Nicira in this very exciting stage of the company's development.

Now, my dear reader, I will say my goodbyes to you. I'm in my room, in the flat I'm sharing with four other people (found the place on Craigslist), going to fall asleep to the sound of sirens as the weekend begins in the city. You'll get used to it, I promise.



Mr J and Ms K with the majestic Half Dome in the background

Joakim Olsson & Arvid Hammar

Dr. Higgs, I presume?



The Large Hadron Collider (LHC) at the European Organization for Nuclear Research (CERN) is the biggest scientific experiment ever attempted by humanity. About a hundred meters underground it spans the Swiss-French border with its impressive 27 kilometers in circumference. LHC will collide particles with an unprecedented amount of energy in four large detectors and, if everything goes well, advance our understanding of the universe. This summer, we had the privilege of making a small contribution to this exciting project as interns at The Institute of High Energy Physics and Astrophysics at the University of Florida.

On a sunny Monday morning in June, we entered the New Physics

Building at the university to begin our internship. We were greeted by one of our supervisors, Alexander Madorsky, who gave us a brief introduction to the project and a very interesting tour of the high energy physics laboratory. This laboratory is where crucial parts of the muon system of the CMS detector at CERN have been assembled and tested. CMS is one of four big detectors in the LHC. As one of two so-called general-purpose detectors, the other one being ATLAS, it is designed to test predictions made by the forefront of theoretical physics. The muon system is a sub-detector within CMS. It is the outermost layer where heavy particles, called muons, are detected.

After the introduction we got started on our first assignment right away. Our task in this important scientific project was to automate data analysis in the muon system in order to find interesting events, so called corona discharges, which then could be investigated further. All of our code was written in C++, a very common programming language in research environments and in the industry. For data analysis and to generate plots, we used root, a CERN developed data analysis framework. Both of us were rather experienced in Java, from several courses at Chalmers, but we had only worked briefly in C++ before. It was a little confusing at first, but after a while we got into it. A few weeks later, when



The 12,500-tonne CMS experiment is a masterpiece of science and engineering.

we had finished the project, our program was successfully tested at CERN where it is still being used today.

A very convenient thing about this project, as we realized later, was the rare opportunity to actually write something from scratch. However, when working in bigger projects, you seldom or never get to do anything from scratch. We got a taste of this when we started working on our next project, supervised by Ivan Furic, who had several interns and PhD students working for him. We also moved from the high energy laboratory and into a room called the Graphics lab, where we worked together with other interns.

In this project we worked on a muon-reconstructing algorithm that was designed to accurately determine the trajectory of a single muon inside the CMS detector. Due to a strong magnetic field, the trajectory of a particle is bent to a certain degree. However, if the kinetic energy of a muon is very high, the bending will be very small over a short distance and the trajectory can then be estimated with a straight line in each sub-detector of the muon system. For this project we continued to use C++ and root, but we also had to get familiar with another API, called CMS Software. It is written specifically for CMS and contains a huge collection of objects and functions that are used to simulate

different events.

Since most of us in the Graphics lab were working on different parts of the same project, it was very convenient to be able to discuss common problems. CMS Software could be a mess sometimes, or as Ivan liked to put it: "It is monkey code". However, some problems are a part of a scientist's or an engineer's daily work; when one is encountered you do not look the other way, you solve it! It was really satisfying when the code you had been working on for weeks actually produced the expected result.

Joakim got very involved with Ivan's project and continued to work on it during the rest of the summer. Arvid worked with a minor project for two weeks before continuing on a bigger one, which involved updates for the muon tracker in CMS.

When this is written, LHC is scheduled to start running in November 2009. If everything goes well, one might ask what kind of discoveries we can expect from it. The most famous phenomenon is probably the Higgs mechanism, which would give an explanation to why some particles in nature (e.g. quarks and electrons), but not all (e.g. photons), have a mass. The Higgs mechanism is supposed to be carried out by a massless particle called the Higgs boson, named after physicist

Peter Higgs. The Higgs boson is the only particle, predicted by the Standard Model, which has not been discovered. The Standard Model has been extremely successful in describing nature on its smallest scale, and it is a well-established physical theory. However, if the Higgs boson is not found by LHC, physicists have to do some serious rethinking. Either way, something similar must give mass to the particles and physicists are very confident that this phenomenon is going to be found by the LHC. Another, more exotic, prediction that might be confirmed by LHC is the large family of new particles predicted by supersymmetry, or perhaps even extra dimensions. Whatever happens, we will discover something new and exciting.

We would like to thank Ivan Furic and Alexander Madorsky for their patience, encouragement and advisement during our internship. We would also like to thank Victor Barashko for his helpfulness with several programming issues. Thanks to all our new friends from the Graphics Lab, it has been a truly great summer. Finally, special thanks to Guenakh Mitselmakher, at the University of Florida, and to Lars Brink, at Chalmers University of Technology, for their efforts in making our participation in this invaluable research experience possible.



Down in the high energy laboratory with our supervisors. From left, Alexander Madorsky and Guenakh Mitselmakher. Ivan Furic was at CERN at the time.

Arvid Hammar



My journey started in early June when my girlfriend Paulina and I flew to America. After having landed at Newark International Airport we took the train to New York where we immediately began to explore the city.

We only spent three days in New York since we had been there before, but we still experienced a lot of things. Some of the most memorable things we did was to have a night out at a stand-up comedy club, hanging around Times Square and seeing Madame Tausauds. The latter was the closest we came to see a celebrity, apart from Swedish artist Håkan Hellström who we spotted at the airport.

Before going to Gainesville, Florida, we stayed a couple of days in Washington, D.C. together with my sister and her family. Our home in Gainesville was an apartment that we shared with Joakim who arrived the day before our first day at work. We went to bed rather early that day and I was falling asleep while listening to the rain that

started to pour down. It felt like it was going to be a pleasant night and a good way to prepare myself for my first day at work. It would have been if only the rain was not coming from the toilet upstairs. Joakim woke us up from our sweet dreams and when we ran out to the kitchen we got a shower from the lamps and the fire alarm in the ceiling. In some peculiar way it all ended well but I was a bit tired on my first day at work...

During the weekends we usually rented a car and traveled along the east coast of Florida where many beautiful beaches are located. On one of these weekends Paulina, Joakim and I celebrated Independence Day in Jacksonville together with our CETAC fellow Linus and his American friends. We spent a couple of hours at the beach where the drinking began. The real party was held in a house near the beach where we met many new and interesting people. Later at night we went back to the beach to watch the fireworks. It truly was a night to remember.

After my work at UF had come to an end Paulina and I went to Miami for a weeks vacation together with Paulina's sister and her boyfriend. We stayed in downtown Miami in an apartment at the 29th floor where we had a nice view over the city. Our vacation started in a very good way by being driven to the movie

Arvid Hammar

Age: 23

Company: University of Florida, Institute for High Energy Physics and Astrophysics.

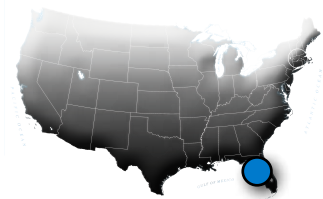
Tasks: Simulations and data analysis for the CMS detector at LHC, CERN.

Bachelor: Engineering Physics

Master: Fundamental Physics

Best US experience: Vacation in Miami.

Location: Gainesville, FL



theatre in a Bentley with a 600+ hp V12 engine. The vacation and our summer in America ended in a pleasant way by a trip to Key West, the southernmost place of Florida.

My time in Florida has been truly great; I have learnt a lot and I would not hesitate for a second to go back. Finally, I would like to express my gratitude to all the generous and friendly people in the United States who made my summer one of the best in my life. Thank you!

Joakim Olsson

Cross Country

After months of hard and dedicated work by everyone in the CETAC committee, the most memorable summer in my life began when Jakob and I entered the U.S. through the borders of Newark. Moments later we found ourselves at the streets of central Manhattan, ready to explore the city that never sleeps...

In New York we soon teamed up with other friends from CETAC. I had a great time; just walking around and exploring the Big Apple, shopping at the mall, going to a musical, taking a boat tour, going to bars, exercising or relaxing in Central Park and so much more.

My week in New York was the perfect start of an awesome summer in the greatest country in the world. Soon I boarded my flight from JFK, NY to Jacksonville, Sunshine State. My first thought, when leaving the air-conditioned airport, was that Florida really lived up to its nickname; the weather was extremely sunny, hot and way too

Joakim Olsson

Age: 22

Company: University of Florida, Institute for High Energy Physics and Astrophysics.

Tasks: Simulations and data analysis for the CMS detector at LHC, CERN.

Bachelor: Engineering Physics

Best US experience: San Francisco and meeting new people from all over the world.

Location: Gainesville, FL



humid. This kind of weather is rather common here, even though thunderstorms occur quite frequently. My CETAC fellow Linus picked me up at the airport and we then drove south towards Kennedy Space Center, where we got to fly over the area in a small two-seated Cessna. Thank you so much, Charlie! After experiencing a night out at Jacksonville Beach with Linus' friends, I finally arrived in Gainesville, where I moved into a big apartment with my CETAC fellow Arvid and his girlfriend, Paulina.

I tried to enjoy my limited time in Florida as much as possible. I spent the first weekends visiting Linus and his American friends in Jacksonville. Among many things we celebrated a Swedish-American midsummer at Linus' boss' house in St. Augustine. With Swedish herring and snaps from IKEA and classical midsummer songs like "Hell and Gore", it was a wonderful evening. Another weekend, I traveled to Washington DC to visit Hans, also in CETAC. Together with the guys in his fraternity I had a great time, both when visiting the classical tourist spots during the day and when going out in George Town at night. We even got a sight of Mr. Obama himself, in his limo outside the White House.

I went on many trips and did many things together with my Swedish friend, Axel. Our surfing trips to St. Augustine Beach and the hiking and rafting weekend in the Smoky Mountains, with friends from India, are unforgettable memories.

I highly valued the opportunity

to travel and to meet new friends from all over the world. My vacation in San Francisco was the perfect ending of a great summer. At San Francisco Int'l Airport I was reunited with Jakob and we then spent the weekend exploring the city. After Jakob left for work, I stayed for five days at a hostel on my own, where I met many new friends. Among other things, we went on a road trip to Santa Cruz, visited Yosemite, walked the Golden Gate Bridge, experienced Alcatraz and sailed in the San Francisco Bay.

I want to end this trainee report by thanking all of my wonderful new friends and colleagues in the U.S. and elsewhere for this awesome summer. I really miss you!



Surfing at St. Augustine Beach in Florida.

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Sara Friberg

Making new friends on the Long Island



The summer of 2009 I went to America to work as a trainee on a company located on Long Island, New York. Rodale Electronics is a small but successful company that taught me a lot and I have met a lot of very nice people. Summer flew by and without even noticing it was time to return back home but I will always remember this as one of the most amazing summers ever.

After a seven-hour flight we finally arrived in New York City or “the Big Apple” as many people say. We went through the toll without any complications, not like last time when I got stuck for three hours because I didn’t have the right paperwork with me. No, this time I had thought of everything. We spent a wonderful week in the city filled with exciting sights and long walks. Every morning, when we didn’t spoil ourselves with pancakes, we grabbed a bagel or two and a cup of coffee at a bagel place just around the corner from our hostel. Man, had I missed bagels. I intended to eat a lot of them during my two months stay so I wouldn’t miss them so much when I

went back.

When the week was over I jumped on the Long Island Railroad that would take me to my new home for the next two months. I was picked up at the train station by Christine, the mother of the family, and her beautiful son Ben who is five years old.

My new apartment was great, very American but great! It was located in the basement of the house and was a lot bigger than my apartment in Gothenburg. I got to meet the rest of this big family; Chuck, the father, Christian who is eleven, Francesca the eight-year old and CJ who is thirteen. It is a big family

but filled with love and they gave me a warm welcome.

The up and coming Monday my boss, Vince, picked me up and we drove off to work. Rodale Electronics is a small company with about 25 employees. I got my own little cubicle with a computer and everything and we went for a small tour of the company. Everybody was very interested in me and had a lot of questions about Sweden. It seemed like a lot of them never been overseas and therefore Europe was very exotic.

My work over at Rodale consisted of lots of different tasks and since the company was between projects at



Me and some of my co-workers at Rodale Electronics



Me, my boyfriend and his brother on our way to Fire Island

the moment I got to be more like an assistant for all the workers in the office area. My main task was to help Rodale with a dispute they had with the Government. This involved searching many emails, making books for the lawyer and going to meetings. The case was not done when it was time for me to



My cubicle

leave but my good friend Nick at Rodale keeps me updated on what's happening. At first when I got the job they told me that there was going to be a lot of programming for me to do and I got nervous since I've only taken one class in java programming and I didn't really like it. I have a bachelor in Electrical Engineering so I was hoping for more tasks within that area but I was wrong about both. Now as time goes on, I kind of wished I got some more advanced jobs but when I think of all the experience I gained during my stay it doesn't matter.

During my time in America I also got the chance to participate in many different American traditions such as barbeques and 4th of July. On 4th of July the family I stayed with held a big

party in their backyard with about 100 guests. It was people everywhere and there was so much food and good desserts. Of course I didn't know any of the people who came but I had a good time getting to know everybody. Americans are, in general, not good with food but they do know one thing and that is how to cook steaks and other kinds of meat. Barbeques play a big role in the American summer and it seemed like wherever I went there was a barbeque or someone was frying up some hot dogs. I also need to make a comment about the servings here in the USA. They are very big and it's almost impossible for a person my size to finish even half of a normal sized burger or pizza. There was a solution to my problems though, the doggy bags which also is a part of the American food culture which basically mean that you can take your left-overs home.

Sara Friberg

Age: 23

Company: Rodale Electronics

Tasks: Helping with a lawsuit.

Bachelor: Electrical Engineering

Best US experience: The 4th of July party!

Location: Long Island, New York



During my stay in the States I also experienced the American health care after an unfortunate car accident towards the end of my stay. I got a big cut in my forehead and had to ride an ambulance to Huntington hospital to get some stitches. The first thing they informed me about when arrived at the emergency room was that they had many good plastic surgeons that could sew me up. I also realized during this little experience that this country is all about the paper work. We had to sign so many papers and documents because of this accident it almost felt ridiculous.

This summer went by so fast and just like that it was time to go home again. I met up with some fellow CETACians in New York City and after four days we got on a plane and flew back home. This experience has been wonderful and a bit life changing and I have learned so much during my time at Rodale. I have met some amazing people that I hope to visit some day in the not so distant future.



Me, my boss Vince (right) and Nick (left) celebrating 4th of July at work

Hans Salomonsson

This is Washington!



to a art festival at the Penn State Col-
lage. The school patriotism the local
students showed was stunning. If you on
the middle of the street screamed "We
are" EVERYONE dropped their conver-
sation, turned around and shouted back
"Penn State" like it was 1 minute left on a
football game and their team was about
to score. Coming from Chalmers where
I always have experienced that the stu-
dents are very proud of their school, this
certainly put things in perspective.

I was thrilled when I heard
the news that I was given the
opportunity to work with NVI
Inc. NVI Inc. Provides scien-
tific services to the US fed-
eral government, primarily
NASA.

data simulation software to verify the
operations of one analysis program that
is used for calibrating radio telescopes.
While using my software we found bugs
in its functionality and I fixed some of
them. I programmed in Python, which I
was not familiar with before this inter-
ship. However, this was no problem. I
learned some before my arrival, but I was
also given some time during the start of
the internship to learn some more.

The fraternity house had a lit-
tle gym, which was perfect to get back
in shape after a pretty stressful spring.
I found the perfect home workout on
Youtube: The Spartan 300 workout. I did
my very best to engage people in this
workout. At first the participation was
surprisingly good, but quite soon people
dropped out. In the end of the summer it
was only me and a German guy who had
the discipline to carry it out.

I was working with the Very
Long Baseline Interferometer (VLBI)
project at the NASA Goddard Space
Flight Center in Greenbelt, Maryland 20
minutes from Washington DC. VLBI is
an astronomical technique for making
maps of radio stars using multiple radio
telescopes. VLBI is the highest precision
technique for making measurements on
tectonic plate motion and the rotation of
the earth.

I lived in a fraternity house dur-
ing my entire stay. A fraternity house is
a student residence for males only. This
turned out to be a great way of spending
the summer. Some students stayed dur-
ing the summer but most students rented
it out to other interns like me. This
was a great way of meeting people and
together we did a lot of fun stuff. Among
things we went on a weekend road-trip

Going abroad for me is very
much about learning and experience
different cultures. One night a friend
of a friend was visiting in the fraternity
house and he kindly offered my a ride to
the grocery store. When we entered the
car he turned up his rap music to a level
which made conversation impossible. So

During my tenure I developed

Hans Salomonsson

- Age: 24
- Company: NVI Inc.
- Tasks: Tasks: Develop simulation software
- Bachelor: Engineering Physics
- Best US experience: Jazz concert @ Birdland, NY
- Location: Greenbelt, Maryland



Vegetarianism, only in America!

Washington is a big place



there I was sitting next to him feeling a little bit stupid and listening to gun shots and his rhyiming along. The only time he turned down the volume was when we passed a girl. Then he winded down the window to shout something. The girl totally ignored him, but he did not bother much. He just turned the volume back up and started rhyiming.

After a week or so I felt that I needed some kind of activity to do when coming home from work. I then decided to buy a longboard. When it finally arrived I was really eager to fetch it, so I borrowed a car from a friend and drove to the UPS pick up place. I was actually so eager to get my package that I forgot the minor detail that his hand break did not work at all. When I came back happy as a child with my precious package in my arms, which I successfully had gotten out from the store five minutes before they closed, I gazed at the sight of my car hanging with its front wheels over a steep.

After a while and a lot of happy cheers from people driving by I was finally helped by a very nice Jamaican guy. Anyhow, I soon found the perfect newly asphalted slope with very light traffic.

When food is no fat, no sugar I really wonder where people get their energy from. Coming to America I had my prejuidice about their food habits, but na-

ive as I was I thought that I could choose healthy food in the grocery stores. Well, it turned out that I was wrong. But they did have great hamburgers!

After my internship I did some traveling with my girlfriend. Among things we went to the legendary jazz club Birdland in NY and listened to some amazing live jazz while enjoying whiskeys and Cosmopolitans. We really felt that you can not claim that you have been to the states if you haven't been surfing in California. So just as in the song we tried the famous waves of the La Jolla shore next to San Diego. The

people on the west cost is considered by the Americans to be more friendly and out-going than the people on the east. We thought this to be true, but nevertheless the people on the east coast was still very friendly and out-going.

To summarize I must say that I had a very exciting summer and I gained a lot of experience, both professionally and personal. I definitely improved my fluency in the language and had the opportunity to meet a lot of really friendly and interesting Americans. Some of them I am still in contact with and will for sure meet again.



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Joakim Olsson

A trip to Stockholm

In June 2009, CETAC finally went abroad to work in North America, but our efforts to get there started almost a year before. The first CETAC adventure began on an early September morning in 2008, with a trip to the Swedish capital, Stockholm.

Our train left Gothenburg at 5.00AM, but despite the early hour, there was a strong vibe of excitement and anticipation among us. On the train, some preferred taking a nap while others talked about their dream jobs for the upcoming summer.

The Stockholm trip has become an annual tradition in CETAC. It serves as the official start of the work at hand, but most importantly it is a good opportu-



ity for the members in the committee to get to know each other. The members work together to sell advertisements for the Trainee Report and to establish relationships with Swedish companies.

Upon arrival in Stockholm, the members went by subway to their respective areas while the board took care of practicalities such as bringing everyone's luggage to the hostel. We stayed in smaller houses at Bredäng Camping, just 20 minutes from the city center by subway. Part of the board went into the city and functioned as a communications center, assisting the members in looking up information on the go. The rest went shopping for food and started preparing for

they had previously researched had business in North America, while the rest of the board went to the Royal Institute of Technology to set up a base



for continuing to assist the members, like the day before.

In the evening, everyone had a nice dinner together at an Indian restaurant. After that we went out to see what the clubs and bars in Stockholm had to offer this wonderful Friday night.

On Saturday afternoon we left Stockholm, tired but satisfied after three exciting days together. I believe that this was a perfect start of our year together; productive, sometimes challenging but most importantly, enjoyable. It was our first group activity, but others would follow.



nity for the members in the committee to get to know each other. The members work together to sell advertisements for the Trainee Report and to establish relationships with Swedish companies.

The members had been split into five groups in advance and also been appointed an area of the city where they were to contact as many companies as possible. The income generated by the advertisements in the Trainee Report is used to support the committee's activities in Sweden and abroad, so

the evening. After a long and eventful day the members finally arrived back at the camping, where they were treated to an American style barbecue and a quiz about the U.S.

The next day was quite a busy one for CETAC's members. After being served an early breakfast consisting of oatmeal and scones, the members went into the city to meet companies. The two appointment managers went to Kista to look for companies which

cetac Alumni

CHALMERS ENGINEERING TRAINEE APPOINTMENT COMMITTEE

Most students work hard to get through all the courses taught at Chalmers, it is tough – and it should be tough. Even so, many Chalmers Alumni witness that while piling up knowledge is important, another aspect of university studies is the possibility to meet fascinating people, realize the value of hard work, and gather up in, or maybe even head, interesting and rewarding organizations.

This is exactly what CETAC's members are doing – they have decided to walk the extra mile; to squeeze something more out from their time at Chalmers than just a fragmented memory of outdated course material. For a whole year, they work to draw together enough funds to help each other getting to America and to find, and get accepted to internships at American high-tech companies. After a year of blood, sweat, and tears, the majority of CETAC's members are rewarded with at least a summer's worth of American work experience – a veritable gold mine for anyone on the brink of starting a career.

As for myself, I recognize the year working with CETAC, and the time spent in North America as equally important as any course ever taught throughout my education. In fact, the people and companies I got to know in America, as well as some of my CETAC friends, have shown to become vital stepping stones when embarking on my own career. I know for a fact that many other Alumni can say the same. No wonder many of CETAC's old members want to stay in touch with each other and to help even more students to become part of the organization.

Aside to being a fruitful platform for socializing and networking between CETAC's many alumni and to govern and conserve CETAC's proud traditions and achievements, a key mission of CETAC Alumni is to constitute an empowering force supporting CETAC. As the organization all the way since 1966 has been one of Chalmers' primary sources of qualified work experience, it is no surprise many of CETAC's earlier members today holds key positions throughout Swedish and American industry. These people, of whom many are members of the alumni network, are integral in helping future generations of CETAC to prosper and grow – just as many generations have done before them.

Marcus Johansson
Chairman of CETAC Alumni



Pictures from the CETAC 40th Anniversary Party which was arranged by CETAC Alumni

The American-Scandinavian Foundation

This past June we have continued the tradition of hosting members of CETAC and the USA Trainee Committee at Scandinavia House, the Nordic Center in New York, to introduce them to the Exchange Visitor Program and give them some essential information.

This rather hectic time of year is my favorite. I finally get to meet the committee members I've been working with for months in person. However the change in regulations and web interviews being required gave me a chance to catch a glimpse of all committee members before they landed on US soil.

Your arrival in the United States is the culmination of an exhaustive months-long process, during which you raise money, find placements and fill out applications. That's why I try my best to help you in any way possible. As you may know, every student coming to the United States for an internship needs a visa and that's where we come in. The American-Scandinavian Foundation has been designated by the U.S. Department of State as an Exchange Visitor (J-1 visa) program sponsor. Our job is to make sure that all your assignments meet program requirements. This program helps promote cross-cultural exchange and understanding between the people of Scandinavia and the United States. Through your conduct you show your colleagues and your supervisors that to host a Chalmers University intern is beneficial. You are the unofficial ambassadors of your country. After the orientation you spread throughout the country in search of valuable professional experience. This experience helps you to evolve not only professionally but personally as well. Most submitted final reports state how much you enjoy and appreciate this experience, how many friends you made and how many new people you met and all the places you visited. I am glad to be a part of this experience.

As always, it's been a pleasure to work with this group. You bring incredible energy and youth to the program. We at the ASF would like to wish you continued success in your future.

Wishing you the best.

Tatiana Pashman



Thank You!

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Hans Salomonsson

The Chairman is speaking

They say life is about timing. Well, the members of CETAC 2009 got the financial crises.

This summer I was taught by my boss that motivating an engineer is very simple; you just keep feeding him with problems. So, regarding to the present financial situation we had no problems of motivating ourselves. Reflecting back on the hectic spring we all experienced, I want to focus on the good things for CETAC that followed from the crisis. You could say that we were affected in two ways. It meant difficulties for our members to raise the money needed for making this very experience feasible. In this aspect we are solely in the hands of Swedish companies' understanding of the need for and their willingness to support Swedish engineers to gain experience abroad. Secondly the crises made the board's work in arranging the internships more difficult. However, we succeeded in our strives and in the end we even had more offerings of positions than members. Due to the difficulties more companies both in Sweden and USA were contacted this year and informed about our association. This inevitable lead to an expansion of our database and network of companies. This will hopefully facilitate for future committees and provide them with the space needed to further develop CETAC.



Vote for Change! Bad times always motivates change. Companies all over the world have been forced to- or seized the opportunity in the shadow of the crises to reorganize. Even CETAC needed to adopt to its environment. We often heard that the circulation of the Trainee Report was inadequate. We therefore started a collaboration with Student.se. The Trainee Report is now also distributed via <http://www.student.se/jobb/>, which has 20 000 unique visitors per month. Another collaboration that was

initiated this year was that with the Swedish American Chambers of Commerce, SACC. They assisted us in the VISA process and they also provided us with business contacts that were of great value in our search for positions.

After focusing most of this article on my year in CETAC I would now like to seize the opportunity to focus on you that is holding this wonderful magazine and are in the process of making up your mind if you would like to join our committee. Let me say that working in a committee is very developing and fun, but the best part is that in this committee it only constitutes the path leading to the goal. Learning more about the applications of my theoretical knowledge in a real business environment, improving my English and meeting a lot of Americans all added up to a great summer experience. I hope to see you on an Alumni event soon.

Kind Regards,
Hans Salomonsson
Chairman CETAC 2009

Assuming there is a dog around and you have a ball in your hand. If you throw the ball, the dog will fetch it. It's the same way with an engineer; you give him/her a problem and he/she will fix it.

ELEKTRA-programmet stödjer elkraftteknisk forskning

ABB, Elforsk (elföretagens gemensamma forskningsbolag), Banverket och Energimyndigheten driver gemensamt ett elkrafttekniskt forskningsprogram benämnt ELEKTRA. Bakom Elforsk står de elkraftproducerande och elnätdrivande företagen i Sverige, som Vattenfall, E.ON, Fortum, Svenska Kraftnät, Göteborg Energi mfl.

Programmet omfattar forskningsprojekt inom traditionell elkraftteknik såsom forskningsprojekt inom elkrafttekniska material och elmotordrifter, men även inom nya områden med tillämpning av ny kunskap från andra områden, till exempel informationsteknologi, bioteknologi, rymdvetenskaper, komplexa system mm.

Programmet finansierar för närvarande ca 35 forskarstuderande på ett antal institutioner på CTH, KTH, LTH, HVV, LTU och Uppsala Universitet. Avsikten är att långsiktigt stärka konkurrenskraften hos elföretag och tillverkande industri, och samverkan mellan industri och forskarstuderande stimuleras.

Även för elkraftteknologer!

Programmet beviljar också stipendier för elkraftteknologer för att täcka de merkostnader som uppstår vid examensarbete som genomförs utomlands, speciellt inom det elkrafttekniska området.

Det kommer att behövas fler forskarutbildade inom elbranschen och industrin!

Funderar du på att börja forska, ta kontakt med din elkraftinstitution.



Energimyndigheten

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