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WELCOME TO THE CROSSROADS

You have just opened a magazine that will treat you to a window to another continent. The points of view are ours - 16 Chalmers engineering students - who travelled to North America in the hot summer of '11. We by no means claim this brochure to contain a general overview of "real America", if there is one, but hopefully we can inspire you and, more importantly, help you take steps to make that discovery for yourself. We are all part of a student organization CETAC, Chalmers Engineering Trainee Appointment Committee, and this is our magazine Trainee Report.

The following pages will cover our first three months at work, our experiences, impressions and thoughts. You will read backgrounds on the host companies/organizations, the tasks we performed, American culture and various spare time activities. Basically, it will be a summary of life in America as seen through the eyes of European engineering interns.

I hope you will enjoy our stories, and if you like to, please imagine yourself appear on one of the pages in a future edition of this magazine. Or, if you already had the opportunity, lean back, relax and try to think about your journey. What springs to mind? No matter what, it will likely be one of many genuine pictures that best describe America. If you never heard about CETAC before or if you are an Alumni - in either case - this 46th edition of Trainee Report will provide you with a crossroads to new and old experiences alike.

Being a part of CETAC to jointly make all this possible has been a great pleasure for me. All I can say now is: "enjoy your reading!"

Ilya Zorikhin-Nilsson
Editor-in-chief
New York City, 31st of August, 2011

cetac

publisher: NIKLAS ANDERSSON

editor in chief: ILYA ZORIKHIN-NILSSON

editor: MICHEL EDKRANTZ

cover photo: JOHAN ÖSTMAN, TIMES SQUARE, NYC

printed by: SANDSTENS

paper: 150G GALERIE ART SILK

copies: 1500

address: INFORMATIONSTEKNIKSEKTIONEN, CHALMERS
TEKNISKA HÖGSKOLA, 412 96 GÖTEBORG, SWEDEN

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TABLE OF CONTENTS

6	Att söka CETAC	22	A bright bit of Sweden in North Carolina <i>By Andreas Furberg + Mathias Jones</i>
8	New York, New York.	26	87 days in Motown. <i>By Niklas Karlsson</i>
12	A summer with AGVs all over the U.S. <i>By Gustaf Gulliksson</i>	28	The final space shuttle mission <i>By David Eriksson + Johanna Juhl</i>
14	It's always sunny in California. <i>By Nikola Mirkovic</i>	32	A taste of a different America <i>By Ilya Zorikhin-Nilsson</i>
16	Displaying the future in California! <i>By Kristoffer Ottosson</i>	34	Hello Seattle, I'm listening. <i>By Mattias Eriksson</i>
20	California rules. <i>By Senad Santic</i>		



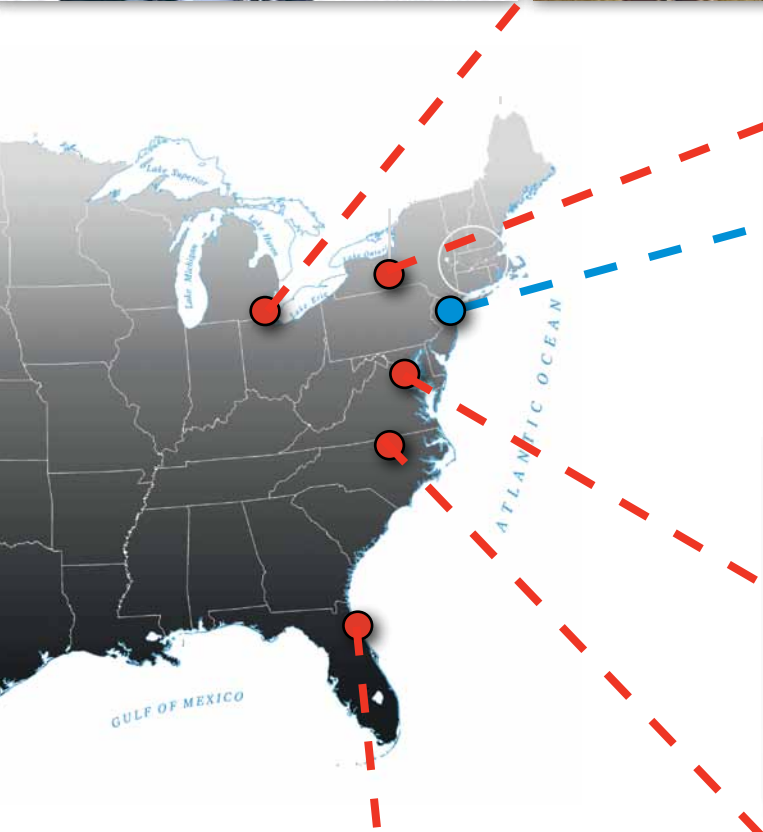
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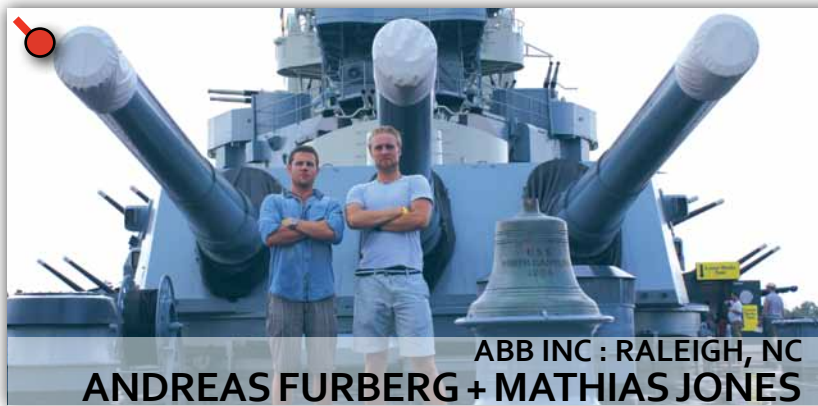


ABB INC : RALEIGH, NC
ANDREAS FURBERG + MATHIAS JONES

- 38 Teknikskifte inom batterivärlden
Teknisk Artikel av Celltech Energy Systems
- 40 The Ithaca experiment
By Sebastian Gustafsson
- 42 The feeling in my stomach; I have got a summer crush
By Johan Östman
- 44 Virtualizing in Silicon Valley
By Niklas Andersson

- 46 Sunny, virtual days. *By Tobias Svensson*
- 50 Be sure to wear some flowers in your hair.
By Carl Sylow-Rynning
- 52 Stockholm Sales Trip
- 53 American Scandinavian Foundation
- 57 The chairman speaks
- 58 Thank you
- 59 Index

ATT SÖKA CETAC

DU HÅLLER NU EN TIDNING FYLLED MED RESEBERÄTTELSE FRÅN CHALMERISTER SOM HAR VARIT I USA SOMMAREN 2011. 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 2013!

TEXT: MICHEL EDKRANTZ, PHOTO: ANDREAS FURBERG

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. Praktiken varar minst åtta till tolv veckor, men de flesta 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 2013!

MEDLEMSKAP

För att bli medlem i CETAC skall du studera på E, D, IT, F eller TM, samt vara svensk medborgare eller ha permanent uppehållstillstånd i Norden. Vid ansökningstillfället måste du även ha 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 2012 kommer under läsperiod tre 2012 att söka medlemmar till styrelsen för CETAC 2013. Den nya styrelsen antar sedan ungefär 25 nya medlemmar under läsperiod fyra 2012. 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. Jag som redaktör har som huvudsaklig uppgift att utforma föregående års rapport men framställer även broschyrer, affischer och andra

trycksaker och är admin på hemsidan cetac.se. I styrelsen ingår också två jobbchefer som kontaktar amerikanska företag och finner lämpliga arbetsgivare. Dessa hjälper dig också att skriva ett grymt amerikansk CV.

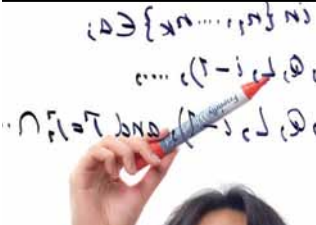
ATT VARA MEDLEM I CETAC

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. Föreningen 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! ■



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IN THE BEGINNING OF JUNE ALL THE MEMBERS OF CETAC 2011 HAD ARRIVED IN THE BIG APPLE. WE WERE ALL EXCITED AND HUNGRY FOR ADVENTURES IN THE LAND OF OPPORTUNITY. ALMOST EVERYBODY WAS TO SPEND A WEEK TOGETHER IN NEW YORK, EXPLORING THE CITY.

AND BIG IT WAS, and hot! It was hard to be a good tourist when the temperature hit 39 degrees Celsius, however we did our best and we got to see a lot of things.

WE WENT UP IN the Empire State Building, walked around in Central Park, visited Ground Zero, went shopping down Fifth Avenue and much more.

WE LIVED TOGETHER WITH USA SIP (USA Summer Internship Program) at Chelsea International Hostel. This was very good because it gave us the opportunity to spend time with all the people in USA SIP. They were also on the way to internships so they were as excited as we were.

ON THE EIGHT OF June the American Scandinavian Foundation invited us to spend our morning with them. Here they helped

us fill out our last papers and we got to listen to a Swedish speaker giving a speech about working in America compared to Sweden. As most of us were starting our internships around the 13th of June this was an excellent introduction on how to dress and act properly at work.

AFTER A COUPLE OF sunny and exciting days in New York it was time to fly or take the train to where our internships were hosted. For some this meant travelling three time zones away to California and for others it meant three hours on the train to Washington, DC.

IT WAS BOTH WITH sadness and eagerness we all left New York. It meant the end of our work together as a group, but mostly it meant the beginning of what we all had worked a year for - an internship in the United States of America. ■

TEXT: JOHANNA JUHL, PHOTOS: CETAC 2011





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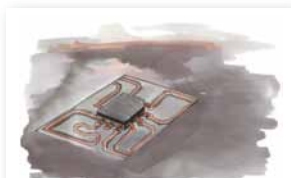
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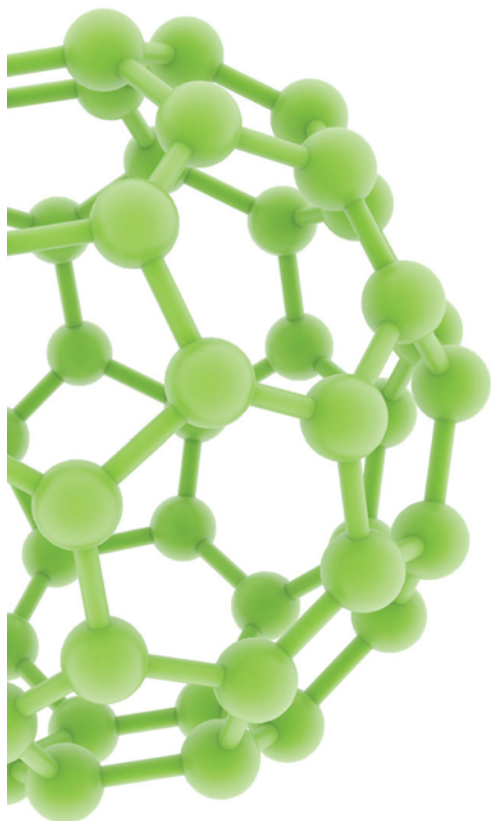
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11

A SUMMER WITH AGVS ALL OVER THE U.S.



BIKE RIDE ALONG NEWPORT BEACH, CALIFORNIA

MY ADVENTURE STARTED AN EARLY MORNING IN THE BEGINNING OF JUNE. MY FRIEND DAVID ERIKSSON AND I LEFT MY APARTMENT AND I KNEW THAT I WAS GOING TO BE FAR AWAY FROM HOME FOR A VERY LONG TIME. SINCE I HAD JUST RECEIVED MY BACHELOR DEGREE IT WAS TIME TO DO SOMETHING ELSE.

TEXT + PHOTOS: GUSTAF GULLIKSSON

OUR FIRST STOP WAS New York where we met up with all the other CETAC members. As tourists in probably the most attractive tourist city in the world we had a week with a lot of experiences – musical on Broadway, baseball at Yankee Stadium, Statue of Liberty, Ground Zero, Empire State Building, boat trip around Manhattan and much more.

AFTER ONE WEEK THE vacation was over and I took the plane down to Florida – The sunshine state. The company I was going to work for was Amerden Inc. Their office is located in Saint Augustine, a little town by the east coast of Florida. Amerden is specialized in AGVs, Automated Guided Vehicles, a robot designed for transport of various material/products mainly in manufacturing industries. Since it is a smaller company I quickly got involved in projects working with the engineers which was very educating and developing.

MY TASK WAS TO participate in programming and testing the AGVs, make sure that they go and stop where

they are supposed to, pick up and drop off loads the right way and not crash into each other. The AGV follows an AutoCAD layout which is exported to the programming language ACE, AGV Control Executive, which is where all the AGV moves and load handling are programmed. When a load is ready for pick up, the off board control DeCarte, which keeps track of the whole system, sends an order to one AGV via WiFi. The order tells the AGV which ACE tables that need to be executed to complete the pick order.

MY SUMMER IN FLORIDA was quite short, only three days, as I was sent out on my first project in California. This system was brand new and quite complex with two AGVs picking up pallets and boxes from conveyors and then stacking them in the warehouse, everything totally automated. The program was almost complete when I got here but not fully tested on site. One thing I really learned here was that things seem to work one way in theory, but it is different how it actually works in practice. I worked here

with my supervisor Jonas Ohlsson, CETAC 2005, and he taught me all the software and everything about the AGVs that I

GUSTAF GULLIKSSON

age: 21

bachelor: ENGINEERING PHYSICS

best us memory:

VACATION IN KEY WEST

needed to know. I was here for seven weeks to make sure that the system worked more or less perfect. This period was really tough and stressful sometimes but I really enjoyed it and I learned a lot. There were several problems I had to struggle with but eventually the customer was satisfied and I could leave, which was a little bit of a relief.

SPARE TIME IN CALIFORNIA has a lot to offer. It was always sunny, only one cloudy day there on my seven weeks. I visited Hollywood, got a close look on the famous sign and walked the Walk of Fame at Hollywood Boulevard. A place I did not see much was Beverly Hills, where all the celebrities live. Almost all of the houses had signs that said "Security guards" or "Armed Response", along with heavy gates and hedges. Jonas and I went to SixFlags Magic Mountain, which is an amusement park with roller coasters – only roller coasters - and they

employees: 8

location: ST AUGUSTINE, FL

web: AMERDEN.COM





AT WORK CONTROLLING THE AGV TO PICK UP BOXES



AT THE SOUTHERNMOST POINT OF CONTINENTAL US

are huge! I also had a quick visit down in San Diego and a beautiful bike ride along Newport Beach.

AFTER SEVEN WEEKS WITH the same hotel breakfast I went on to my next project in Nebraska. This system and the AGVs were completely different from the ones in California. These were 16 meters, or 52 ft, long and had four driving wheels that should try to cooperate, instead of just one. The AVGs here have been running already for 13 years but they did need new electrical hardware and software.

AFTER THREE WEEKS IN Nebraska I went on a week vacation to my home state Florida. My two friends David and Emil flew down and we had a long weekend in Miami Beach and Key West, with jet ski, parasailing, snorkeling, alligators and much more.

ON A VISIT TO the U.S. one will see that everything here is huge, from the shopping carts and roller coasters, to the buildings and the meals. One will also meet a very open and friendly people that always help if needed. They are very curious about Sweden, how the weather is over there and about our free health care and school. It is surprising how many people here that actually know a lot about Sweden, but it is not a myth that some do not know the difference between Sweden and Switzerland. US is a car country, if you do not have a car and a GPS it is almost impossible to get anywhere, if you are

not on Manhattan. Even though it is a huge range of food here, I must say that one of the best things I have eaten is the Swedish meatballs at IKEA, which are much underrated.

I HAVE HAD A fantastic summer with many experiences and met so many nice people. First, I would like to thank my supervisor Jonas Ohlsson for everything you taught me and helped me with during this summer. Also thanks to my boss Mr. Roland Anderson and all the other employees at Amerden for giving me this opportunity to come and work for your company. Thank you CETAC 2011 for a great year and all the Swedish companies supporting our association.

IT IS THE END of August when I am writing this and the summer in Sweden is probably almost gone by now, but not in Florida since the summer here never ends. Maybe that is one of the reasons why I do not want to leave this adventure

yet. But mainly because of my inspiring work at Amerden so I am now looking forward to four more months here with the AGVs. ■

HOLLYWOOD HILLS





PLAYING BASKETBALL AT WORK

IT'S ALWAYS SUNNY IN CALIFORNIA

I ARRIVED AT SAN FRANCISCO INTERNATIONAL AIRPORT ON JULY 9TH, ONLY A MONTH LATER THAN THE REST OF CETAC. I GOT PROBLEMS WITH MY VISA AND IT TOOK ME A MONTH LONGER THAN THE REST OF THE GROUP TO RECEIVE IT. DESPITE THIS, THE TRIP TURNED OUT TO BE THE BEST EXPERIENCE SO FAR IN MY LIFE!

TEXT + PHOTOS: NIKOLA MIRKOVIC

SO I WAS A bit disappointed that I had missed the New York trip and to be honest my first impression of United States was not that great. However that changed very quickly once I arrived. I spent a weekend with Niklas, Calle and Senad before I drove down to Morgan Hill where my job Infineon Technologies is located at.

MORGAN HILL IS A CITY with a population about 38,000 and I thought that it would be boring to live in such a small city. I stayed at a motel in Morgan Hill during the first ten days and in the mean time I was looking for an apartment in San

Jose. I found one close to the highway and it would only take me 20 minutes to drive to work.

INFINEON TECHNOLOGIES FOCUSES ON the three central challenges facing modern society. Firstly Energy Efficiency, secondly Mobility and Security. Thirdly Infinion offers semiconductors as well as system solutions for automotive and industrial electronics, chip card and security applications. With a global presence, Infineon operates through its subsidiaries in the USA from Morgan Hill, California, in the Asia-Pacific region from Singapore, and in Japan from Tokyo. Morgan Hill is one of the locations where they have a production line.

AT INFINEON I WORK both close with the IT group and with the process group. When working with the IT group my

tasks involve building new and maintain existing applications in .NET framework. This has been fun because I have not got in touch with C#, Microsoft SQL Server or Visual Studio at Chalmers. Since these techniques are commonly used

I knew that Silicon Valley was the center of the IT industry but I did not realise it was this crazy.

by companies in Sweden I think this will benefit me in my future career. When working with the process group I help out in making processes in the production more effective. I have been working with LabVIEW in these projects. Since I did not have any previous experience in this programming language I started with a one week long online course.

I HAVE ALWAYS BEEN a person who has done sports a lot and I thought it was going to be tough to sit so many hours at the computer without any exercise. But I did not have to worry about that because it turned out that many of my

NIKOLA MIRKOVIC

age: 23

bachelor: SOFTWARE ENGINEERING

best us memory: LAS VEGAS

colleagues had the same opinion. There is always a group that is taking a bike ride every day at lunch and we also have a basketball rim behind the office. Since I have been playing basketball for ten years, I was quite happy that some of my colleagues play basketball. The first month was really stimulating and quite hectic. I was trying to get started on the job while starting up a life in a foreign country and during the weekends there were always road trips somewhere. The best road trip so far was my trip to Las Vegas with two of my friends from back home. Las Vegas was the first time in a long while that I just concentrated on having fun. There is so much to do in that city and it was certainly not the last time I went there.

LIFE IN SILICON VALLEY is great because of many reasons. First of all, I have not seen

I have not seen a drop of rain since I left Gothenburg which is great.

a drop of rain since I left Gothenburg, which is great. People are really friendly, like when I met two guys, Brett and Justin, on the plane back from Las Vegas that I had much in common with. We exchanged phone numbers and now we hang out all the time. It is that easy to make friends and it is a great place

for networking. Every other person you meet is working at Google, Apple or some tech startup company. I knew that Silicon Valley was the center of the IT industry but I did not realise it was this crazy. During my whole time at Chalmers I always felt that I really wanted to be out in the world and travel. At the same time I wanted to do something that could benefit my career and when I first heard about CETAC I thought it was too good



AT WORK

to be true. I mean getting an internship in United States? Does not everyone want that? I think there were twenty-one available member positions in CETAC 2011 and that quota did not even get full at the first sign up. I am still confused about this when I sit here on my patio in San Jose. I am very happy here so far and I do not miss Gothenburg, only my family and friends.

LET ME CONCLUDE BY thanking all of CETAC 2011 and all the sponsors who made this possible. All the students at Chalmers who are eligible, apply for CETAC. It is too good to be true! ■

TRIP TO A WINERY IN NAPA VALLEY



employees: 26,650

location: MORGAN HILL, CA

web: INFINEON.COM



DISPLAYING THE FUTURE IN CALIFORNIA!



HIKING WITH MY BEST FRIENDS,
VIEW IS FROM INSPIRATION POINT
CLOSE TO SANTA BARBARA.

I HAD REACHED THE END OF A YEAR CONTAINING AN ENDLESS AMOUNT OF PHONE CALLS, AND AN ABSURD AMOUNT OF CONFUSING PAPERWORK. THE FINAL DESTINATION BEING THE UNITED STATES, AND TO BEGIN WITH, THE FAMOUS NEW YORK CITY.

EVERY YEAR MOST CETAC members gather in this enormous city, before heading off to work at various places across the country. After finishing my Bachelor's thesis I was eager to get to the United States, so I was arriving on my own a few days ahead of most people, which in turn gave me ten wonderful days in NYC. After those ten days were over, it was time to move from east coast to west coast, Santa Barbara in California to be exact.

SANTA BARBARA IS A fairly small town with around 100,000 people, and is situated just above Los Angeles. The geographical location gives the area a very pleasant climate, which by Swedish standards means it has summer all year around. I started out in an apartment

just by the beach which was nice, but soon reconsidered and moved to a cozy room in a house downtown. Anyone who knows the prices for living in Santa Barbara might understand this decision, and it is still just one mile from the beach.

THERE ARE QUITE A few differences between living in Sweden and living in California. It is not a huge culture shock but you immediately notice that people are more open to making small talk, which makes it easier to meet new people. Although I guess that it also helps being from another country, which usually piques people's interest.

employees: 21

location: SANTA BARBARA, CA

web: CBRITEINC.COM



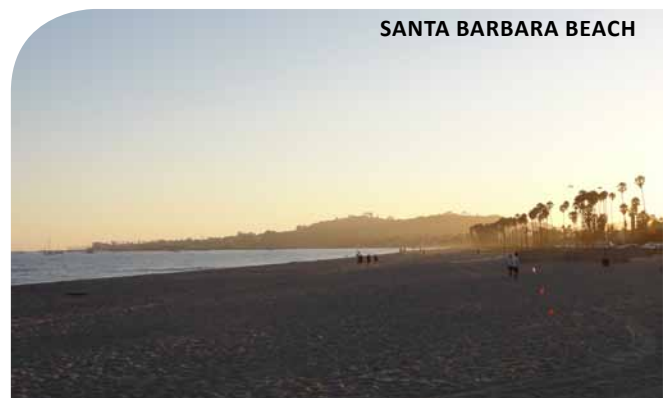
There are also a lot more people living in shared houses or apartments here, although I suspect this might have to do with the prices for housing.

ONE THING I HAVE always wanted to do is surf, and the west coast is a great place to surf. During a festival in the town I randomly met an old surfer who said he could lend me a board. So the next weekend I called him up and asked if I could take him up on his offer. I arrived

AT WORK



SANTA BARBARA BEACH



TEXT + PHOTOS: KRISTOFFER OTTOSSON



EATING LOBSTER AT THE PIER IN SANTA BARBARA.



STARBUCKS IN NEW YORK WITH SEBASTIAN.

and it turned out he had another guy from the east coast subleasing a room, so apart from lending a board I also got a surfing buddy! We ended up surfing for five hours that day with a few breaks, and five hours the next day too. It was so much fun and in the end I caught quite a few waves from start to finish. Although a word of advice to future surfers would be to go for less than five hours, I was aching all over the following week.

ONE THING I HAVE never done before is running, but I decided I wanted to give it a try since it is usually easily accessible training. It turned out that was a good decision, it is beautiful running by the beach here in Santa Barbara, especially when the sun is starting to set, and afterwards you can cool down a bit by wading out in the water. Thanks to one of my co-workers I also went for a hike in the mountains north of Santa Barbara. This coincided with the visit of some of my best friends from Sweden, so it turned out to be an awesome weekend altogether.

I WORK AT A company called Cbrite Inc, which is a small company trying to make an impact in the display industry. They are making Thin Film Transistors which make up part of the backplane for displays, meaning they control the individual pixels. The technology of today is starting to get old, amorphous silicon is close to its limits and new technology is needed to advance the displays. One of the promising new technologies is Metal Oxide TFTs, which is what Cbrite is developing. Since my background is in Electrical Engineering, I was well prepared from Chalmers to help with their testing, having read courses explaining transistor technology and measurement techniques. While I am not an avid programmer I have tried a few different languages and this time it was another new one, Visual Basic for Applications (VBA) in Excel. The measurements were all being run by Excel programs which means I had to learn VBA to be able to control them better. A lot of small companies that are in the business of developing new techniques use machines that are old but sufficient enough to suit their need for accuracy, because they are so much cheaper than new equipment. Excel

provides an easy way of controlling these machines while at the same time being an easy way of presenting the data acquired. This is what I have been working on during my first two months and what I will continue to work on and improve during my stay here. I also hope to improve my knowledge regarding semiconductors in general and Thin Film Transistors especially. There is an extensive amount of knowledge at Cbrite which I will try to make good use of, to be able to help even further with their products while furthering my own knowledge in the field.

AS A LAST NOTE I would like to thank all the sponsors that helped me and my fellow CETAC members to get this far. I am very grateful for your support and wish you all the best. I also want to thank everyone at Cbrite for giving me the opportunity to work at the company. By the time I am writing this I have just received my extension for the full year, which means I am staying until June 2012. It has been and will continue to be, a year full of wonderful new experiences. ■



KRISTOFFER OTTOSSON
age: 27
bachelor: ELECTRICAL ENGINEERING
best us memory: ALL THE NEW PEOPLE I MET, AND SURFING!

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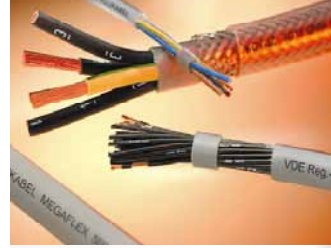
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19



THE SUMMER STARTED OFF WITH AN AMAZING WEEK IN NYC. THE WHOLE CETAC GROUP CAME TOGETHER FOR AN UNFORGETTABLE TIME THAT WAS ALSO SHARED WITH THE MEMBERS OF USA SIP. WE DID EVERYTHING FROM GOING TO STAND UP COMEDY SHOWS IN HARLEM, TO RIDING THE STATEN ISLAND FERRY, TO WATCHING THE DAVID LETTERMAN SHOW LIVE.

TEXT + PHOTOS: SENAD SANTIC

THE EXPERIENCE LEFT US with memories for life. After our vacation in The Big Apple, it was time for me to fly out to the west coast.

UPON ARRIVING IN SAN Francisco (SF) with two fellow CETAC members (Niklas Andersson and Calle Rynning) and soon to be roommates, we were stunned by how cold the evenings are in the Bay Area. Having just left the heat waves, crowds and culture shocks of New York, SF all of a sudden felt very much like Sweden when seen in contrast. I knew that it was a place I would enjoy spending my six months of internship.

THE CITY HAD A very modern yet moderate look to it at first sight. My

friends and I decided to take into a hostel while we looked for an apartment. SF is famous for having preposterously high apartment rates, but what surprised us was that there were no differences in price whether one wanted to live in central downtown, or 30 minutes from downtown. There is not the same buildup around the idea of living centrally like there is Sweden. Nevertheless, we ended up getting place to stay in downtown SF. It was only about a 15 minute walk from my job. It was a gorgeous apartment with a hot tub and a heated pool on the roof of the building.

SOON ENOUGH IT WAS time to start my internship at

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employees: 600
location: SAN FRANCISCO, CA
web: CYPRESS-SECURITY.COM



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I AM THE ONLY IT Representative at a company of over 600 employees. That gives me great space to choose to work with technologies that I want to work with, and thus evolve the skills that I want, while at the same time being beneficial for the company.

I WAS REALLY EXCITED about the internship, because I knew that web development and video editing would be part of my tasks at the company, both of which are passions of mine. My tasks ranges from recording and editing new training modules, to developing sophisticated dynamic websites that will be used by the company.

I am living in San Francisco and living out my dream

IT SHOULD HOWEVER BE mentioned that Cypress employees are given a lot of room to work with tasks that would usually be considered out of their realm of expertise, thereby allowing them to evolve and grow in areas they otherwise would not.

NEVER THE LESS, THE best thing about work, and what really makes the office special, are the people working here. We are a very tight knit group of people that all work as a team and have a great time doing so. Even though the workload can

be heavy at times, we will always spare time for a good laugh. That is also what I will miss the most about working with Cypress Security.

IN MY SPARE TIME I look to do as much as possible. One weekend my friends and I visited Sofia (chairman of USA SIP) in Lake Tahoe, where she was having her internship. Lake Tahoe turned out to be a fairy tale type place, with amazing views wherever one turned. The lake is so big that it almost felt like an ocean with crystal clear blue water. I highly recommend this place for future interns that are located in the Bay Area.

ANOTHER LAKE WORTH SPENDING a weekend at is Clearlake, which is about a three hour drive north of SF. That is where the YSC (Young Scandinavian Club) holds their events. It is definitely a place to go if you want to get a taste of that good old Swedish cooking, but also have that traditional American barbecue. Everybody just had as great time when I was there, and you can try everything from canoeing to wakeboarding before you go to sleep under the star lit sky.

BACK IN SF, WE really have the fortune

of having a great location in town. SF, being the artist filled town that it is, will never disappoint when it comes to putting on a good show. We have seen stand-up comedy shows and watched many famous bands perform. Everything always seems to be within walking distance, and if it is not, lucky for us the taxis are very cheap.

EVERY NOW AND THEN I will walk down the streets of SF by myself, and it will hit me, this is really happening, I am living in SF and living out my dream. I like that most people who joined CETAC wanted to, at one point or another, spend some time living and working in the US. When better to experience that than half way through my college years and in my mid 20's? I recommend this experience to everyone! ■

SENAD SANTIC

age: 22

bachelor: SOFTWARE ENGINEERING

best us memory: ROAD TRIPS THROUGH CALIFORNIA WITH MY ROOMMATES



A BRIGHT BIT OF SWEDEN IN NORTH CAROLINA

IT DOES NOT SEEM LONG AGO SINCE OUR FIRST DAY AT CHALMERS. NERVOUS AND EXCITED ABOUT BEING IN A NEW CITY AND STARTING IN ONE OF SWEDEN'S MOST PROMINENT UNIVERSITIES, THIS WAS THREE YEARS AGO. NOW WE ARE IN THE US, BOTH WORKING AS ENGINEERS FOR THE BIGGEST ELECTRICAL GRID COMPANY IN THE WORLD, ABB INC.

AFTER THE SIGHTSEEING IN New York which among other involved the Empire State Building, Statue of Liberty and Wall Street, we met up with Mai Thai and Göran Smith from USA SIP, whom we would live with during the summer. USA SIP is a sister association to CETAC for the programs that are not included in CETAC. Together with Mai and Göran we flew down to Raleigh, North Carolina where Mai's boss picked us up at the airport and took us to the house we rented for the summer.

NORTH CAROLINA (NC) IS proud of being "first in flight"; the Wright brothers flew the first air plane at Kitty Hawk, a small town on the coast of NC. North Carolina is also the most military dense state in the US, which is noted by all the

signs that reads "Support Our Troops" or "We Serve Those Who Serve Us" etc. Raleigh is the capital of North Carolina and part of the Research Triangle, an area in NC that is very dense of high technology companies such as Red Hat, Sony Ericsson, IBM etc. It also houses many well known colleges for example NC State short for North Carolina State University which has approximately 33,000 students scattered over Raleigh.

WE ARRIVED IN RALEIGH Saturday night and started work the following Monday, therefore we did not have time to get a car before the first work day forcing us to take a cab the first day. At ABB we were informed that public transportation in Raleigh is limited, and the Project Management Coordinator followed us

downtown and rented a car for us the first week on ABB's expense. This gave us time to find a car on our own and luckily during this week we were offered to rent a colleague's Ford Mustang Convertible -05, an offer we could not refuse.

ABB IS THE LARGEST electrical grid system company in the world, but they do a lot more e.g. Automation, Robotics, Wind Farms etc. Andreas and I were to work at Power Systems – Substation; where they design substations either as new or upgrades and modifications of existing. A substation is a unit that transforms voltage enabling transmission and distribution of electrical power.

THE FIRST DAY WE were shown around the office and introduced to all the people

MATHIAS AND ANDREAS ONBOARD THE USS NORTH CAROLINA BATTLESHIP





MATHIAS, GÖRAN AND ANDREAS TRYING THE BACKYARD BISTRO CHALLENGE. A TWO-POUND ANGUS BARN BURGER, TOPPED WITH ONE POUND OF BBQ AND A HEAP OF SLAW. SERVED WITH ONE POUND OF FRIES AND ONE GALLON OF SWEET TEA. ON THE HOUSE IF FINISHED WITHIN AN HOUR. NONE OF US DID, NOW OUR PICTURE IS ON THE WALL OF SHAME WITH THE TEXT: "SWEDISH, FAIL – UNDERKÄND."

who worked there and also shown to the cubicle where we would spend our summer. The cubicle is a five person cubicle giving room for Andreas, myself, two designers Michael and Fermino, and Zack - an American intern from NC State.

DURING OUR FIRST WEEK at work, much time was spent being informed about ABB and what it does and also getting everything set-up such as an American bank account, retrieving a Social Security number etc. The whole first week there was always someone who wanted to take us out for lunch, which made us feel very welcomed.

MATHIAS' WORK STORY

My first major project was to develop standard specifications for substation equipment in Microsoft Word. It basically means creating general templates of specific equipment to ease the effort of project and tender teams when they need to order or price something. This was a great opportunity to learn about substation equipment and their use, knowledge within my area of education I have yet to receive. I have also done a couple of minor tasks like calculating the airflow and noise level from cooling fans.

MATHIAS JONES

age: 23
bachelor: ELECTRICAL ENGINEERING
best us memory: SURFING AT VIRGINIA BEACH.

I WAS RECENTLY ASSIGNED to a team that is to conduct a customer survey. My role in this it not really set at the moment, but it will be nice to begin with a different project to get some variety.

ANDREAS' WORK STORY

My main project for the summer was to develop a program that would generate a budget proposal for substation projects. The program is intended to be used by the marketing group so they do not need to spend a lot of time consulting the engineers

ANDREAS FURBERG

age: 22
bachelor: ENGINEERING PHYSICS
best us memory: WHEN MATHIAS SCREAMS "ARE YOU KIDDING ME?!" AND THEN GETS FLUSHED ONTO THE BEACH BY A GIANT WAVE AT OAK ISLAND.

for budgetary proposals. To find the appropriate input and right values to use in the calculations I have spent a lot of time in meetings with different Project

We were offered to rent a colleague's Ford Mustang Convertible -05, an offer we could not refuse.

Engineers as well as the Director of Engineering. The experiences from having these meetings are something that I believe are going to be valuable later in work life. I will soon present a draft version of the program for the Marketing group and the engineers that have helped me, during a so called "Lunch and Learn".

I HAVE ALSO HAD a side project, which was to develop a program for detecting what competences are in the

employees: 120,000 WORLDWIDE

location: RALEIGH, NC

web: ABB.COM



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WE AND DAVID IN FRONT OF THE INTIMIDATOR

civil departments in all ABB substation units. The intent is to find if extra education and training is required in any department. Both programs are developed in Excel using VBA (Visual Basic for Applications). During the fall I will, except for modifying the budget program and further develop the competence program, be involved in developing a substation tool for customer to help figure out what substation configuration they will need for their project. This is the great thing with ABB; they have so much going on so you are never stuck with one single task for eternity.

ROAD TRIPS

Since Raleigh is located in the center of NC, road trips to the beach among other places are inviting. We had the privilege to work something called summer-hours, which means you work longer days Monday through Thursday, allowing you to get off at noon Friday which also is an invitation for road trips. The first trip was to Washington D.C.,

to visit David and Johanna, two fellow members of CETAC for sightseeing of the district and celebration of the fourth of July. The fireworks on the fourth of July are definitely something extraordinary. On the way home David followed us down to Kings Dominion, the biggest amusement park on the east coast with cool rides and roller coasters. The best being The Intimidator that makes you experience 4.5 g in the first turn and has a top speed of 90 mph. We made a road trip as well, down to Fayetteville, NC to visit the "Airborne and Special Operation Museum", a great museum telling the story of the airborne troops of the US Army. We also managed to go for a weekend to Virginia Beach to surf and hang out with David, Johanna and Martin, a visiting Swedish friend.

THE WEEKEND BEFORE WE wrote this article Mathias, Linda, a friend of Mathias' from Sweden, and I made a road trip down to Wilmington and Oak Island. In Wilmington we visited the USS North Carolina battleship, one out of ten fast battleships that served

in the Pacific during World War II. The road trip later took us down to Oak Island where we checked into a classic American roadside motel that consisted of several two story buildings, exactly like the ones in American movies. The rest of the weekend was spent on the beach with Paason, a colleague from ABB, and some of his friends. The waves were sometimes crazy; they could really knock you over and flush you back on the beach. On Saturday night Mike, another colleague from ABB, and his family and friends joined in for a nice barbecue dinner. On the way back our engine over heated and we had to make a stop at the first gas station we could find. Mathias and I opened the hood, not really sure what to do. We probably looked like idiots, but luckily a random guy showed up and helped us and told that he had had the same car model and that this was a common problem. This is a good example of the friendliness of the south which we have experienced during the whole summer. People will stop and make small talk with you and try to help you if you have a problem,

WAVES AT OAK ISLAND

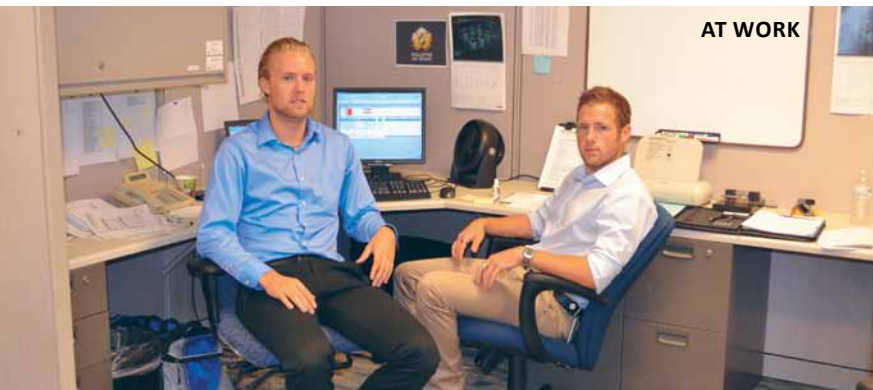




BY THE POOL



MATHIAS TELLING SECRETS TO THE TALIBANS AT MUSEUM



AT WORK



THE MUSTANG

which is opposite of the picture we had of Americans before our trip.

THE FUTURE

Göran will soon leave us, and we therefore decided to move into an apartment instead. It has two pools, a gym and a small movie theatre in the common building so we do not miss

the house. Zack is going back to school, Michael and Fermino are moving to another cubicle in the office giving room for three new interns from NC State, making Mathias and I the old interns that are supposed to help out the new ones.

FINALLY WE WANT TO thank all the colleagues at ABB who have been nice and given us a great summer and we are

looking forward to spending another four months at ABB. Special thanks goes to Zack who always managed to be entertaining, making the days more interesting. And finally a big thanks to all the sponsors who help CETAC continue to give students the opportunity to go to America for internships, which is a truly valuable and awesome experience. ■

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87 DAYS IN MOTOWN

NIKLAS WITH SOME FRIENDS VISITING CHICAGO

THERE ARE MORE DRIVE-IN PHARMACIES THAN REGULAR ONES. PEOPLE HARDLY STEP OUT OF THE CAR TO WITHDRAW CASH OR MAKE OTHER BANK BUSINESS, FOR THAT MATTER. THE AVERAGE SWEDISH CAR WOULD SEEM LIKE A SMART CAR. WHEN YOU WALK ON THE SIDEWALK YOU WILL BE LUCKY TO HAVE 10 HUMAN ENCOUNTERS IN AN HOUR.

TEXT + PHOTOS: NIKKLAS KARLSSON

THERE IS A CAR show somewhere nearby every weekend. Welcome to Detroit - Motor City, also known as Motown! Located in - as Wikitravel put it: "The United States of America is a large country in North America, often referred to as the "USA," the "U.S.," the "United States," "America," or simply "the States"". Here the infrastructure relies completely on cars, public transport is in principle non-existent.

TO BE HONEST, THE actual Detroit city is not a city in its days of shine. But unlike big cities in Europe, in Detroit and many other big cities in US, the "hangout neighbourhoods" are rather in the suburbs than in the downtown city. It was in one of those suburban cities GM, General Motors, had arranged accommodation for me. Consequently most of my 87 days of Detroit summer where spent in a hotel(!) in the city of Warren, at various times accompanied by French, Russian and

Chinese students also working for GM and living at the hotel.

AT FIRST I WAS disencouraged by some people to even going downtown Detroit. But at hand I came to discover there are plenty of hidden treasures down there. The DIA, Detroit Institute of Arts,

a world class art museum.

All major sports events are held there. There is an extensive street culture, for example a lot of graffiti and music venues. Dining or having a drink at the 72nd floor of GM's downtown headquarter, "the Renaissance Center", is considerably cheap and provides an amazing view

of Detroit and Windsor (Canada). I got to dine there during a severe thunderstorm, the view was stunning!

GM R&D (research and development) is a very interesting place to work at, so much energy, motivation and talent bustling around here! The atmosphere is very

Here the infrastructure relies completely on cars, public transport is in principle non-existent.

NIKLAS KARLSSON

age: 22

bachelor: ENGINEERING PHYSICS

best us memory:

"NIAGARA FALLS - NYC - CAPE COD - BOSTON - CEDAR POINT" ROAD TRIP WITH MY GIRLFRIEND

research oriented with a lot of seminars being held, a huge numbers of labs along the corridors and many co-workers boasting with a PhD degree. It is also very multicultural, actually in accordance with the whole region, something I find interesting. You constantly learn about habits and customs of other cultures when hanging out with friends and talking to colleagues. During my stay I have made friends with people from China, Vietnam, India, Russia, France and of course America.

MY INTERNSHIP IS A collaboration project between the Swedish research institute Fraunhofer-Chalmers Centre,



DOWNTOWN DETROIT



ROADTRIP PICNIC



IN FRONT OF THE GM BUILDING



CARS CARS CARS!

FCC, and GM. I started the project in January, working part time at FCC in Gothenburg. Throughout the summer I have continued the same work here at GM in Detroit. Thus I have worked against my colleagues at FCC in Sweden as well as my colleagues at GM here in Detroit. I am working at the Virtual Manufacturing group, validating a spray simulation software for use in automotive industry. My project can be split up into two parts. The first one: Performing experiments and post processing and analysing the data out of different aspects of spray painting. The second consists of simulating the spray painting process; testing and validating the results of a under-development simulation software to those of the experiments. In work I have used software such as ParaView, DaVis, Matlab and also written a few scripts in Perl as to facilitate data

I got to dine there during a severe thunderstorm, the view was stunning!

processing. I was given a lot of freedom in how to solve my problems, which I believed was great. My work experience with GM and FCC have been everything I anticipated and I have learned a lot. I have also had the benefit to work at a huge company, GM and at the same time at a smaller one, FCC.

ONE WORD TO DESCRIBE my spare time would be travelling, and since we are in the US, more specifically Road trips! Most weekends were spent in some extent on the road. Driving with friends to other world metropolitan cities such as Chicago and Toronto, both located about four - five hours by car. Exploring the beautiful north coast of Michigan, covered with giant sand dunes and white beaches along the coast and wine yards scattered across the inland. One thing you should not miss if you are in the area around Michigan is Cedar Point. Possibly

one of the most thrilling amusement parks in the world and definitely the best one I have ever been to. Counting 16 roller coasters places it second in the world in that category, just behind Six Flags amusement park in California which has 17. Most of the coasters are like other things in this country; B.I.G! I also had one week of vacation in the middle of summer, which was spent exploring America's northeast coast together with my visiting girlfriend. Not surprisingly this week turned out to be the best of the whole summer.

TO SUM UP, MY summer at GM have been an invaluable experience. I have met fantastic people which I have had lots of fun with, but at the same time I have made a huge development on a professional level. A big THANK YOU to everyone who made this possible! ■

employees: GM: 209 000 WORLDWIDE

location: DETROIT, MI

web: GM.COM, FCC.CHALMERS.SE





THE FINAL SPACE SHUTTLE MISSION

THE MISSION STS-135, ENDED JULY 21, 2011 WHEN ATLANTIS ROLLED TO A STOP AT ITS HOME PORT, NASA'S KENNEDY SPACE CENTER IN FLORIDA. WE SPENT OUR SUMMER WORKING FOR NVI INC. AT NASA GODDARD SPACE FLIGHT CENTER.

ON THE 8TH OF July NASA launched their last shuttle Atlantis into space, STS-135, at Kennedy Space Center in Florida. This was the end of an era starting in 1981. Atlantis mission was to deliver supplies and equipment to provision the space station ISS. To see this launch, history in the making, we drove 15 hours straight from Greenbelt in Maryland to Kennedy Space Center in Florida. One could think that 15 hours in a car, eating, sleeping and breathing 2 inches from 4 others is a high price for 20 seconds rocket launch. However we would redo this trip 15 times over - that is how amazing the launch was. Almost immediately when

the rockets flared you could feel the heat in your face. For about 15 seconds we silently watched the rocket lift of, after this the sound wave hit us and we could

hear the roar of the rocket. This was an amazing experience and something we will never forget - we were able to experience the very last shuttle launch.

One could think that 15 hours in a car, eating, sleeping and breathing 2 inches from 4 others is a high price for 20 seconds rocket launch.

AFTER THE SPACE SHUTTLE launch we drove about one hour north to the world famous Daytona Beach. There we rented surfboards and tried our skills in catching waves. We had so much fun and it was nice to swim in the ocean after about a month in high humidity and temperatures over 35 degrees Celsius. After a day of fun in the sun we returned to work a bit sore after surfing and with a very bad sunburn. The redness took a

WATCHING THE LAST SHUTTLE LAUNCH



NVI, INC.

employees: 20

location: GREENBELT, MD

web: NVIINC.COM

week to settle so we walked around at Goddard Space Flight Center looking like lobsters. After another week of peeling we were ready to face the sun again. This time protected with a high SPF, we drove five hours down to Virginia Beach to meet Mathias Jones and Andreas Furberg, also CETAC members. The waves were not as big as in Florida but we had a lot of fun in the water for two days.

WHILE BEING ON THE road one eats a lot of fast food, and fast food is one of the things that comes to mind while thinking of America. There is fast food everywhere! And it is so good! You also get a lot of food, and this is hard. As a good Swede you want to finish all your meals, but here everything is bigger. For example a medium drink here is a large one in Sweden. This leaves you in a food coma after every meal. Thankfully there is a gym right at Goddard, so hopefully we will just gain a few pounds during our stay.

This leaves you in a food coma after every meal.

WE LIVE IN COLLEGE Park, about 15 minutes by car from Goddard Space Flight Center. College Park is, as the name suggests, filled with college students so it has been easy to meet and hang out with Americans. A good thing about College Park is that it has a metro station, so it takes about 20 minutes to get to the Mall in Washington D.C. There you can do a lot of things, and during our weekends we try to go there as often as we can. Right at the Mall you have the Smithsonian, which are free museums so you can go see art, natural history, air and space and more for no money at all. Also they are well air conditioned. This is something you really appreciate while living in 80% humidity and temperature constantly over 36 degrees Celsius. During the 4th of July we walked around in the city in 39 degrees Celsius so we visited a lot of museums during the day. Then at 9 pm we sat down at the stairs of Jefferson Memorial to watch the fireworks - Fireworks in Sweden will never be the same again.

NVI INC IS A contractor to NASA and is therefore responsible for supporting certain services for the Government. NVI Inc. is a part of the VLBI group at Goddard. VLBI is an abbreviation for Very Long Baseline Interferometry. A short description of the VLBI technique follows in the next section.

ON THE SURFACE OF the earth, a large number of antennas form an array of antennas. Signals from sources in the sky, usually quasars, are received and paired with timing information. The time it takes the light from a quasar to reach each of the antennas varies because

DAVID ERIKSSON

age: 21

bachelor:

ENGINEERING MATHEMATICS

best us memory: FEELING

THE HEAT WAVE FROM THE LAST SHUTTLE LAUNCH AND WINNING THE HUGE STUFFED ANIMAL AT KINGS DOMINION

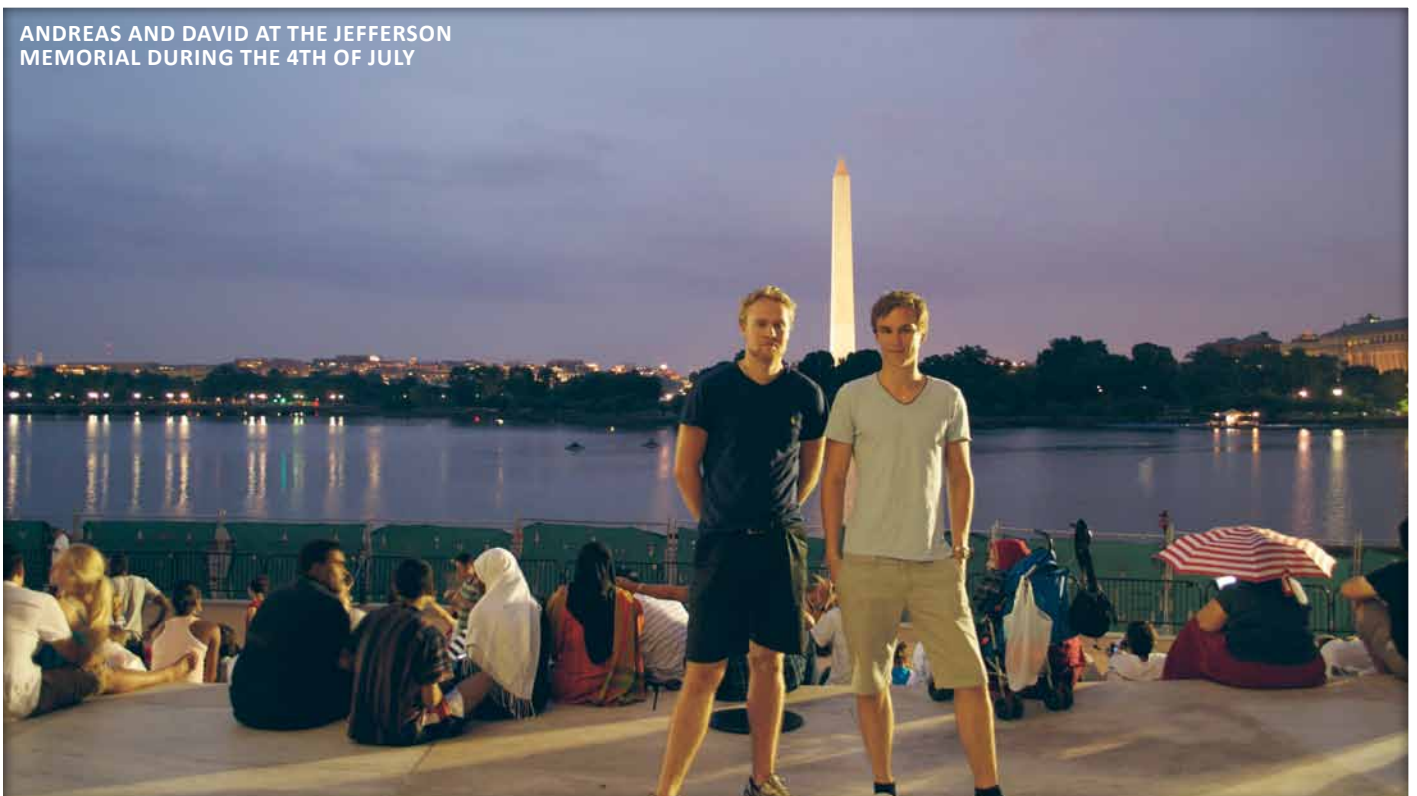
JOHANNA JUHL

age: 23

bachelor: ENGINEERING PHYSICS

best us memory: STANDING AT THE BEACH, EATING REALLY BAD FAST FOOD FOR BREAKFAST WAITING FOR THE LAUNCH AND FINALLY SEEING THE ROCKET SPEW FLAMES AND TAKE OFF

ANDREAS AND DAVID AT THE JEFFERSON MEMORIAL DURING THE 4TH OF JULY



of the difference in distances to each antenna and since the light will refract when passing through different layers of the atmosphere. Using a large number of observations, one can perform earth rotation studies, detect movements of tectonic plates with millimeter precision and perform other types of geodesy. What makes it advantageous to use quasars is that their great distance to the Earth makes it possible to determine a stable reference frame.

NASA'S GODDARD SPACE FLIGHT Center is the nation's largest organization of combined scientists, engineers and technologists who build spacecraft, instruments and new technology to study the Earth, the Sun, our Solar system, and the universe. It is located a few miles east of Washington D.C. in an area called Greenbelt.

WE WORK ON TWO different projects during the internship period. David's project is about hydrology loading. The distribution of continental water storage causes the surface of the earth to deform. Typical peak-to-peak vertical

THE CAR COMPANIONS DOWN TO FLORIDA



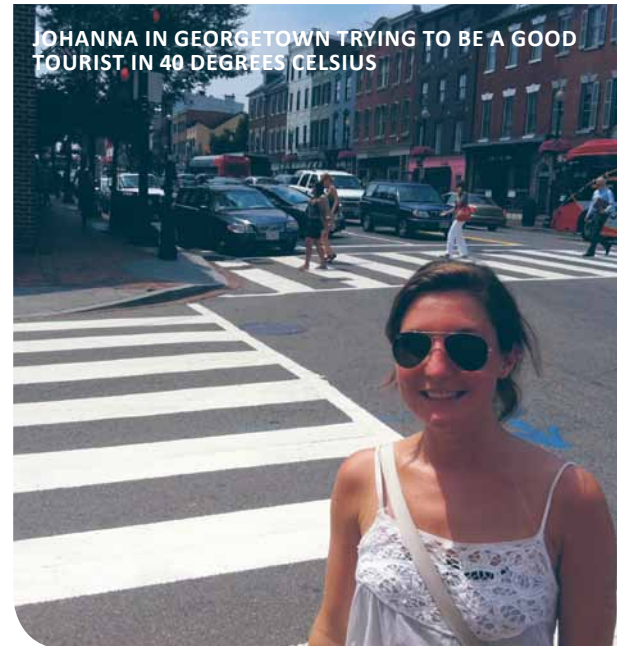
variations are 3-8 mm at VLBI sites. Usually the deformation has a seasonal character, but inter-annual variations and trends are observed. If the variation of the amount of water is known, it is possible to predict the deformation by convolving a loading Green's function with the hydrology data. To compute this deformation the GLDAS Noah model and data from GRACE are used. Noah is a model for the distribution of water in the hydrology system. GRACE is by monitoring the gravity field of the earth at a very high resolution able to detect

changes in groundwater stocks, mass changes within the oceans, and the mass balance over ice sheets. The supervisor of the project is Dr. Dan MacMillan.

THE CODE FOR THE loading model is written in Matlab. The project is very mathematical and a lot of formulas and relations had to be derived to be able to compute the loading series. To do this, a lot of spherical trigonometry and vector algebra had to be used. In the near future,



JOHANNA IN FRONT OF THE CAPITOL BUILDING



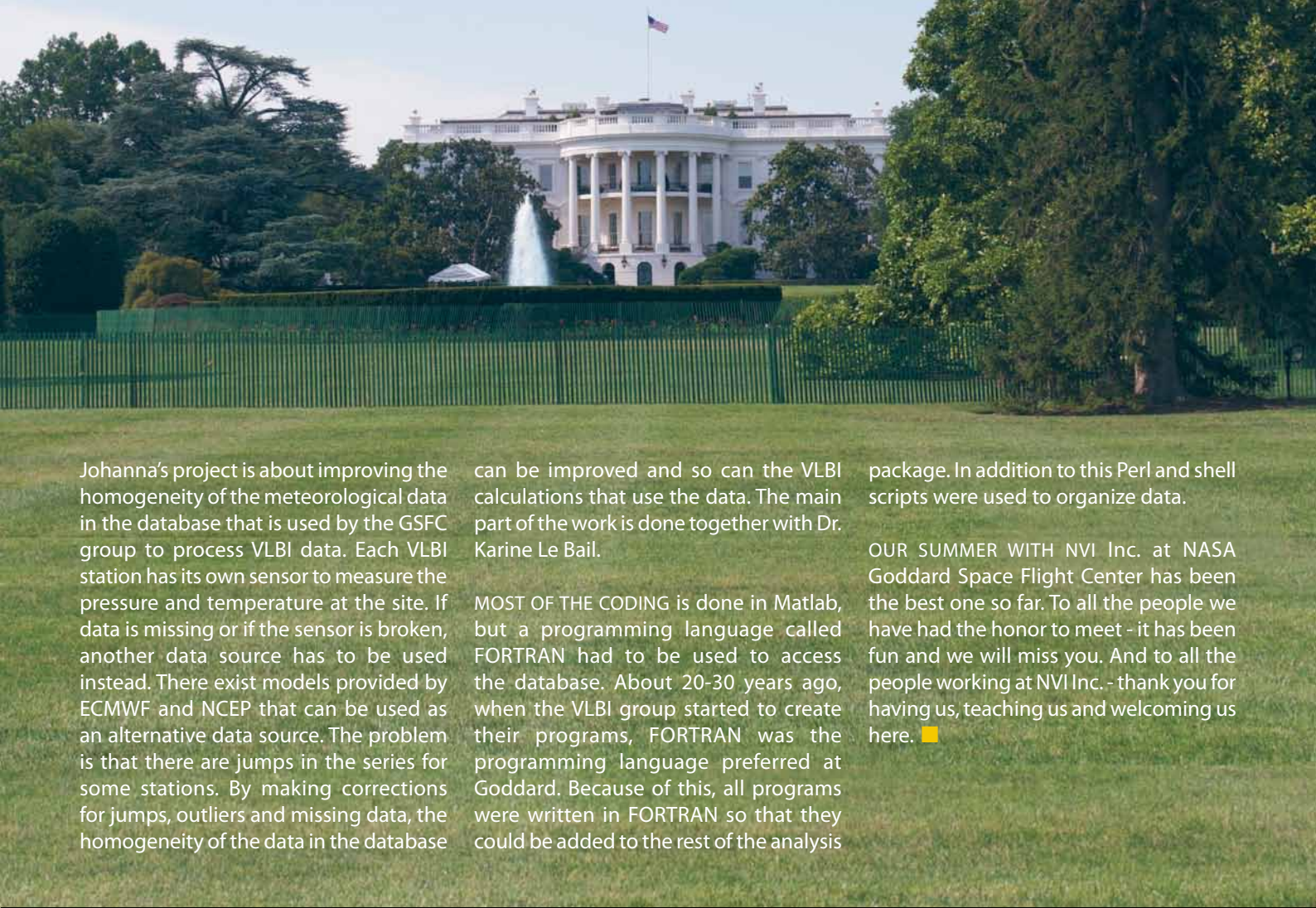
JOHANNA IN GEORGETOWN TRYING TO BE A GOOD TOURIST IN 40 DEGREES CELSIUS



HEATWAVE ON THE EASTCOAST



THE STUFFED ANIMAL THAT DAVID WON AT KINGS DOMINION



Johanna's project is about improving the homogeneity of the meteorological data in the database that is used by the GSFC group to process VLBI data. Each VLBI station has its own sensor to measure the pressure and temperature at the site. If data is missing or if the sensor is broken, another data source has to be used instead. There exist models provided by ECMWF and NCEP that can be used as an alternative data source. The problem is that there are jumps in the series for some stations. By making corrections for jumps, outliers and missing data, the homogeneity of the data in the database

can be improved and so can the VLBI calculations that use the data. The main part of the work is done together with Dr. Karine Le Bail.

MOST OF THE CODING is done in Matlab, but a programming language called FORTRAN had to be used to access the database. About 20-30 years ago, when the VLBI group started to create their programs, FORTRAN was the programming language preferred at Goddard. Because of this, all programs were written in FORTRAN so that they could be added to the rest of the analysis

package. In addition to this Perl and shell scripts were used to organize data.

OUR SUMMER WITH NVI Inc. at NASA Goddard Space Flight Center has been the best one so far. To all the people we have had the honor to meet - it has been fun and we will miss you. And to all the people working at NVI Inc. - thank you for having us, teaching us and welcoming us here. ■

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Chalmers University of Technology conducts research and education in engineering sciences, architecture, technology-related mathematical sciences, natural and nautical sciences – in close collaboration with industry and society. The aim is to make an active contribution to a sustainable future. Chalmers has about 10,000 students and 2,200 employees. New knowledge and improved technology has characterised Chalmers since its foundation in 1829 in accordance with the testament of William Chalmers, and his motto: Avancez!

CHALMERS

A TASTE OF A DIFFERENT AMERICA

FROM STATE TO STATE FROM ONE COAST TO ANOTHER. THAT IS HOW I EXPERIENCED A COUNTRY WITH MORE FACES THAN STATES. I FOUND GOLDEN SKYSCRAPERS RISING THROUGH OCEANS OF CLOUDS AND MISERABLE SHACKS IN THE SHADOWS BENEATH THEM.

I SAW SNOW-COVERED mountains from vast deserts below and lush valleys bounded by enormous walls of barren granite - arranged side by side in a fashion that is only comparable to the contrast between the endless poverty and immeasurable wealth that dominates street life in what is considered to be the richest country in the world.

IT WAS JUNE WHEN I arrived in Berkeley, the annual Chocolate and Chalk Art festival had just begun. Adults and children alike were crowding the streets painting them in bright colours. The atmosphere of the city was all set. Customers shot rubber bands at clerks, adults played with toy cars in the hills, rolled down the sidewalks atop skateboards or on scooters. It was as if the whole town was a giant day care center, and to my joy it would remain so for the rest of the summer.

THIS LAID-BACK BUT CREATIVE atmosphere has given birth to civil movements, revolutionaries, countless coffee shops, hippies, musicians and more hobos than I had pennies. At its core lies a

35,000 student strong campus symbolized by a giant Venetian tower that occasionally plays funky tunes. This tower is also part of the symbol of Lawrence Berkeley National Laboratory, or short "Berkeley Lab" which lies on a hill overlooking Berkeley and San Francisco. It is operated by the University of California at Berkeley for the U.S. Department of Energy. In total it has had eleven Nobel laureates, and its scientists are famous for discovering elements like Plutonium and Berkelium. Here I had the opportunity to work with people from all over the world and get insights into how advanced research works in practice.

A MAIN PROJECT OF the department I was in, was to develop a new type of PET/MRI-scanner that combines two of the major technologies used in oncology. Separately the PET and MRI provide different imagery for medical diagnosis, where the former accounts for the functional part while the latter handles the physical.

PET IS AN ACRONYM for positron emission tomography, where substances that are tagged with radioactive tracers are injected into patients. High-energetic photons are emitted inside the body as soon as positrons created through beta plus decay

ILYA ZORIKHIN-NILSSON

age: 23

bachelor: ENGINEERING PHYSICS

master:

COMPLEX ADAPTIVE SYSTEMS

best us memory: THE ROADTRIP TO YOSEMITE & BODIE

annihilate with nearby electrons. These photons are subsequently captured in a way that makes it possible to compute the location of the decay, i.e. the organ of interest.

MRI, MAGNETIC RESONANCE IMAGING, on the other hand, uses a strong static magnetic field that is overlaid by a weaker spatially varying magnetic field. When protons are knocked out of alignment with the static field, they precess with a frequency proportional to the spatially varying field. The emitted radio frequency from different points in the field of view creates the image.

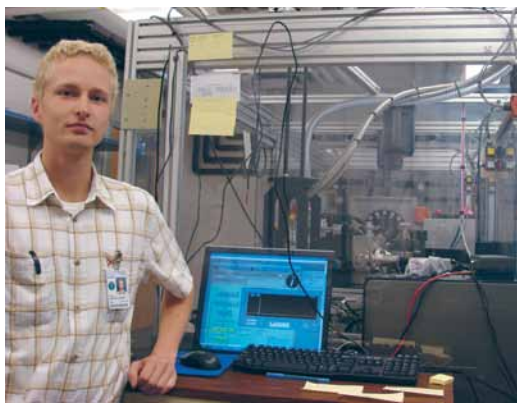
THE PROBLEM WITH COMBINING MRI and PET lies in that PET requires photomultipliers, and these are obviously very sensitive to magnetic fields. The group is therefore aiming to develop a new kind of solid state photomultiplier (SSPM), which is insensitive to magnetic fields.

MY TASK AT THE Lab has mainly been to analyse reflectivities at different wavelengths for different reflectors used in PET-scanners. There is currently no independently collected data for these materials and the work has consisted of preparing samples, operating machines for measurement purposes, but also of writing





BERKELEY IS KNOWN FOR THE FREE SPEECH MOVEMENT.



LabView programs to automatize data collection. Moreover, I have had the opportunity to do a lot of programming and some code optimization in Matlab as part of the data analysis. The experiences from the courses in image processing, medical physics and experimental physics have come in very handy.

IN MY SPARE TIME I have tried to discover my surroundings and America in general as much as possible. Given that I am here I have put myself on a quest to find the perfect hamburger. But Berkeley is mostly famous for its ethnic foods and even if you find "American" food that is more than edible, there is an area called the "Gourmet Ghetto", that contains absolutely delicious food from all parts of the world. Berkeley residents really have an obsession with healthy organic food.

On the campus or in the subway you often overhear discussions about politics or even quantum mechanics and typically all kinds of people join the conversations, which is especially inviting when someone shouts "Is there a physicist on this train?". Slowly you get dragged into the American mindset, where hardly any social restrictions exist.

THERE ARE NO WORDS for how the scenery of Californian countryside can change in very little time. The road trip to and through Yosemite and the ghost-town of Bodie was absolutely stunning, and that is probably "the Way" California should be experienced. There is so much to explore when it comes to nature, and that is one thing that I regret I did not do more.

BUT NOW LITTLE SPACE remains and the chalk has all faded. It is time for me to head back home. I hope Berkeley stays an

inspiring environment with its unique mix of scientists, engineers, students and artists for decades to come, and that it will continue to serve as a role model for other parts of this country. From my small European vantage point I shall now take the iron horse through the US all the way to the east coast, and hopefully visit some fellow CETAC-members on my way to the other ocean.

Slowly you get dragged into the American mindset

I WOULD ESPECIALLY LIKE to thank Martin, my supervisor, as well as the group head Bill, for giving me this opportunity. But I would also like to thank YeongJe, Victor, Eunice and Kei along with all the people I met for making my stay absolutely unforgettable.

I KNEW I WOULD SEE a different America, but I never imagined to see one that I could call my home for a brief period of time. I was wrong. I love everything that makes California "California" - its wonderful nature and its marvellous people. ■

employees: 4000

location: BERKELEY, CA

web: LBL.GOV





HELLO SEATTLE, I'M LISTENING

MY INTERNSHIP ADVENTURE STARTED IN EARLY JUNE WITH THE TRADITIONAL TRIP TO NEW YORK CITY WHERE THE CETAC GROUP MET UP TO DO SOME SERIOUS SIGHTSEEING DURING THE BRIEF TIME WE WOULD BE THERE.

AFTER A COUPLE OF eventful and fun days in the Big Apple, me myself would head over to the west coast to the great city of Seattle, Washington: home of Microsoft, Starbucks and Frasier. This would prove to be a great summer.

WITH NO APARTMENT ARRANGED I would spend my first few days in Seattle on craigslist, searching for a suitable accommodation during my stay. Compared to Sweden, it is not hard to find a place to live here and I actually went to a couple of viewings before settling down in the U-District, just north of Lake Union. Currently, when writing this article, I am looking for a new accommodation for the remaining time of my internship as the lease of my current apartment is up the last of August. Once again I do not think there will be a problem finding a place and I am looking forward to maybe relocating closer to downtown.

WHILE FINDING AN APARTMENT was prioritized in the beginning, I still had the chance to walk around the Emerald City to get acquainted with the town that would be my home for the upcoming months. The Space Needle was my first stop and I, of course, had to take the Monorail, which was also, along with the Space Needle, built for the 1962 World's Fair. I also soon got used to Starbucks cafes being basically on every block and that Seattleites seemed to love their coffee, which is great because I love coffee too and because of that I have grown to love Starbucks.

WHEN THE DUST HAD settled it was time to get the internship started which I had very much been looking forward to. By the west shore of Lake Union I found the office in a great building by the water, pretty close to downtown. The following weeks the introduction to new colleagues, new environment and new programming languages have been a really fun and beneficial period, working on writing tests and closing bugs and doing other interesting things.

I REALLY LIKE MY job. The job involves a lot of programming to expose bugs for the developers to solve which is both interesting and fun. I have come to realize that this is probably the direction I want to take for my Master once I get back to school, which is something I have not been

AT GAS WORKS PARK FOR 4TH OF JULY



TEXT + PHOTOS: MATTIAS ERIKSSON

MATTIAS ERIKSSON

age: 22

bachelor: ENGINEERING PHYSICS

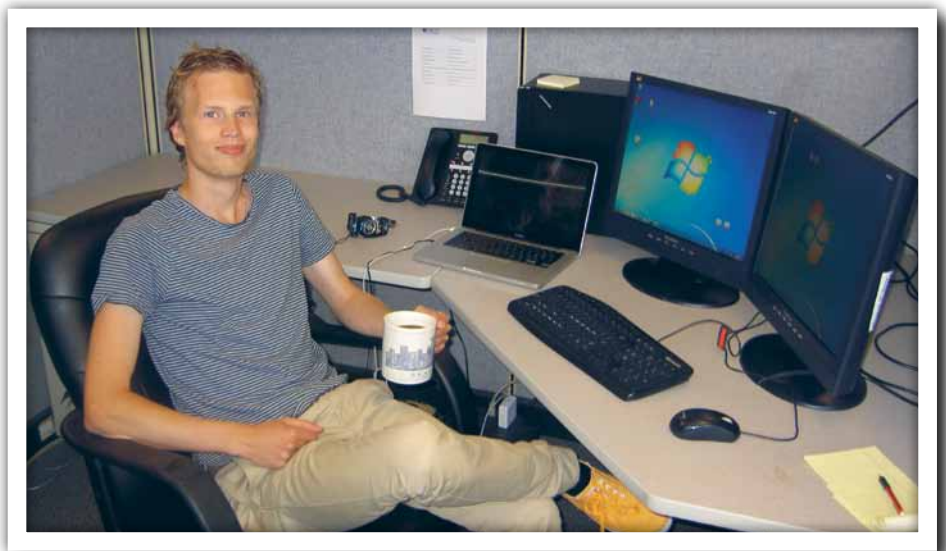
best us memory: LIVING
IN SEATTLE: THE PEOPLE, THE
ATMOSPHERE, THE CITY

sure I would do until now. Now I can actually see myself studying Software Engineering or something in the future, probably abroad somewhere and somehow.

AS SOON AS THE weekend makes its presence felt, plans are made for possible excursions in the greater Seattle area. Washington state has a lot to offer when it comes to both culture and nature. There are a lot of National Parks around the area and together with friends, like fellow Swedes from up north and colleagues from work, I have made trips to both Olympic National Park, where we saw hot springs, and Mt Rainier National Park, where the huge mountain Mount Rainier is located. I have also experienced camping for the first time during my stay here as well as kayaking and there are still a lot more to see and do that will probably keep me occupied for the remainder of my internship.

THERE ARE A LOT of sports in Queen City which I really enjoy; everything from the great American pastime (baseball) and American football to all kinds of different college sports. Seattle is also probably the best city to live in if you like soccer, since one of the best teams in the MLS is located here. I have been to Mariners games as well as Sounders games but have yet to experience a Seahawks game since the football season has not started yet. A couple of miles north of here lies Vancouver and I would not mind going to a Cunucks game sometime. Also,

As soon as the weekend makes its presence felt plans are made for possible excursions



AT WORK

everybody tells me that the college football team, Huskies, is something to experience so I will, for sure, try to catch a game.

THE ABSENCE OF STUDYING has been great so far but somehow you cannot help yourself searching the web for a class you might enjoy taking. This has happened to me as I have found myself back behind the school

bench, if not for anything physics related but more for a fun break, as I have been taking a class in screenwriting. It has been a nice contrast compare to the

normal kinds of classes we would have at Chalmers and I am currently looking for another course like that to keep me busy.

I LOVE IT HERE in Jet City and I would not trade the hard working year as part of CETAC for anything. Thank you fellow CETAC colleagues for a great year and good luck to the next batch of students taking up the challenge to go to the USA. It is worth it. I want to thank Tom and Rajiv for giving me this internship opportunity and of course everybody else at the TIBCO office. I have had fun so far and I expect it to continue like that the remainder of my internship.

GOOD NIGHT SEATTLE, WE LOVE YOU. ■

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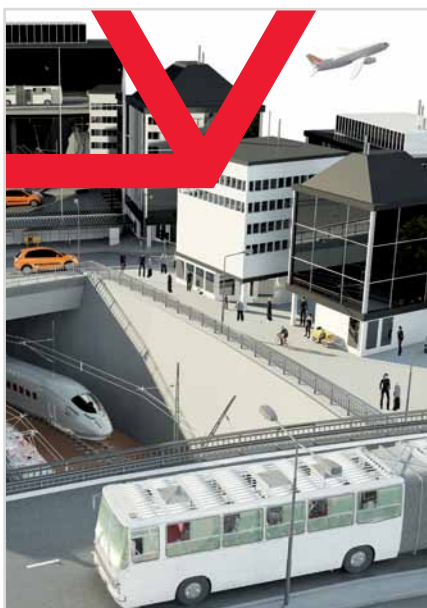
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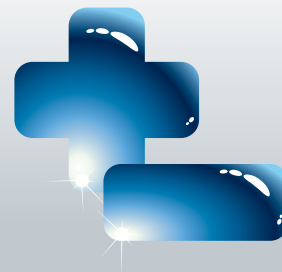
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Precision

Ett väl genomarbetat processflöde säkerställer vår produkters höga kvalitet. Att svetsa samman batterier kräver hög precision och detta görs med hjälp av mikroprocessorstyrda punktsvetsar.

Bredd

Våra produkter och leverantörer är många och vi vågar påstå att vi har marknadens bredaste sortiment. Alla batteriteknologier med tillhörande laddningsteknik finns representerade.

Dynamik

Oavsett om det rör sig om batterier till små elektronik-kretsar eller batterisystem till stora ställverk på flera tusen Ah så har CellTech lösningen åt dig. Vi arbetar brett men besitter samtidigt en bred kompetens.

Strävan

CellTech strävar hela tiden efter nya och mer miljövänliga batterialternativ. Idag kan du t.ex. byta ut dina gamla blybatterier mot nya miljövänliga Litium-järn batterier.

CellTech är ledande inom batterier, laddare, strömförsörjning och solkraft. Vi har marknadens bredaste sortiment samt egen tillverkning i Sverige. CellTech ingår i den börsnoterade Addtech-koncernen.

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Teknikskifte inom batterivärlden

Det har länge varit en enkel sak att installera ett batteri i en produkt. Det är ju någonting som kommer fortsätta vara så naturligtvis, men vad är det som krävs för att kunna använda framtidens batterier? Vilka är egentligen utmaningarna med att gå ifrån gamla "dumma" blybatterier till mer "smarta" litiumbatterier?

Batterier har länge varit en naturlig del i vår vardag. Under praktiskt taget hela 1900-talet har man brukat batterier för att driva allt ifrån bilar (ja, elbilen fanns ju långt innan bensinbilen) till glödlampor. Man har brukat många olika kemikalier för att få fram så bra batterier som möjligt och till en början inte nödvändigtvis med miljön i tankarna. Kadmium och kvicksilver blev snabbt givna ingredienser i batterier men sedan kom blybatterierna och tog med sin kostnadseffektivitet och enkelhet över en stor del av marknaden när det kommer till stationära batterier.

Men nu under flera års tid har vi vant oss vid att höra om litiumbatterier. I sin linda så var litiumbatterier mest brukade som primärbatterier (ej uppladdningsbart) och slog igenom, där man tidigare brukat mer giftiga batterier med, som tidigare nämnts, exempelvis kvicksilver i batterier för termometrar, hörapp-

parater och datorer. Med tiden har kunskapen och brukandet av litiumbatterier ökat samtidigt som batterierna själva har utvecklats och idag är litiumbatterier bland de mest energitäta batterierna på primärsidan och kommer troligtvis så förbli under många år framöver.

Vad sker idag?

I dagsläget ligger utvecklingsfokus mestadels på sekundärbatterier (uppladdningsbara) där industrin runt om i världen är intresserad av en högre urladdningskapacitet och högre energitäthet. Den industri som driver utvecklingen mest i dagsläget är fordonsindustrin där batterierna blir allt viktigare inför övergången till hybridiserade och fullt elektrifierade fordon. Ett batteri med lågt inre motstånd för att minimera förluster och en förmåga att leverera höga strömmar och hålla spänningen i såväl höga som låga temperaturer är hela tiden vad man eftersträvar. Dessa parametrar blir vad som formar batterierna just nu då man söker ett batteri som kan klara av allt som en bil kan utsättas för under sin livstid.

Själva energiinnehållet blir sedan en sekundär prioritet då man i dagsläget fokuserar mycket på hybridtekniken när man då bär med sig energi i form av vätska eller gas.

Litiumbatterier

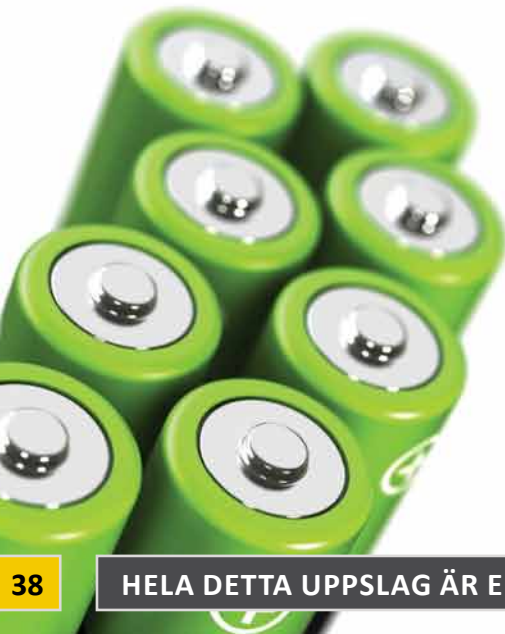
I dagsläget finns det mängder med olika litiumbatterier på marknaden. Litium kombineras med andra ämnen och elektrolyter för att skapa en viss karaktäristik på batteriet. Inom

primärt litium (ej uppladdningsbart) är de vanligaste kemityper Tionylklorid, Mangandioxid samt Svavel-dioxid. Dessa ämnens egenskaper gör att man får en cellspänning på 3,6 resp. 3,0 volt vilket gör att man väljer batteri typ utifrån den spänning men även urladdningskaraktäristik som efterfrågas men även en underhållsfri produkt i vanligen 10 år och i särskilt nischade applikationer upp till 20 år.

Men som nämnts tidigare så är det alltså på sekundärbatterier sidan som den stora utvecklingen sker. Här faller de flesta batterityperna in under familjen litium-jon. Det har blivit väldigt populärt att skriva litium-jon på allt som har ett laddbart litiumbatteri i sig vilket har gjort det svårt att veta vilken egentlig kemi som används i batteriet.



I dagsläget är det en kemi som är mest känd och även mest brukad. Litium-kobolt är den kemi som är mest energitäta av dagens litiumkemier. Men trots att litium-kobolt är den mest energitäta kemin så är det inte säkert att den är bäst lämpad. Den har fått ett dåligt rykte om sig



efter flera incidenter med eld och explosioner, i de flesta fall p.g.a. höga temperaturer. Samtidigt så klarar ett enkelt litium-kobolt batteri enbart av att genomföra 3-500 fulla cykler innan det har tappat allt för mycket av sin kapacitet. Båda dessa faktorer spelar en ny kemi i fatet då den är både tåligare och klarar ett ökat antal cykler. Denna kemi kallas för Litium järnfosfat, även kallat LiFe eller LFP. Detta är en batterityp som klarar alla de krav som ställs på ett modernt batteri men med den nackdelen att det inte riktigt lika energitätt som litium-kobolt p.g.a. lägre cellspänning. Även Life batterier kräver naturligtvis övervakning så även med denna kemi behövs väl fungerande elektronik.

Så, för att hantera laddbart litium så bygger man något av vad man kallar "smarta" batterier. Detta är kort och gott elektroniskt övervakade batteripack för att minimera riskerna för haveri av batterierna. (se faktaruta)

Risker

Obalans – Celler i ett batteripack arbetar tillsammans för att bibehålla en given spänning i ett system. Vid en cykel (i- och urladdning) så kan en obalans mellan cellerna uppstå. Detta kan leda till ökat slitage i en given cell eller kanske t.o.m. att en cell helt enkelt går sönder. I detta läge skulle det eventuellt kunna gå att byta ut just denna givna cell men då packet är svetsat och sammansatt så är det oftast inte kostnadseffektivt vilket leder till att man oftast byter hela packet.

Så för att minimera riskerna för obalans så har man kretsar som består av små motstånd som går igång vid en given spänning. Detta för att på så sätt kunna styra strömmarna till rätt cell om en cell skulle hamna i obalans.

Temperatur – Inget batteri mår bra av höga temperaturer. Man tappar i livslängd och kapacitet om man laddar och brukar batterier i höga temperaturer, trots att den tillgängliga kapaciteten kanske tillfälligt ökar om batteriet blir varmt så kommer det långsiktigt att slita ut batteriet mycket fortare.

För att minimera riskerna installerar man en stor del elektronik som i dagsläget antingen tas in med standardkomponenter men i många fall så måste man ta fram en specialbyggd elektronik för givna specifika behov och önskemål. Det är här som mycket tid och resurser krävs och det är här kompetens behövs runt om i världen.

Framtiden

Vart är då batterivärlden på väg? Det vi ser är att batterier med högre i och urladdningskapacitet och med ett större antal cykler i sin livslängd är vad vi har idag. Frågan är bara när eller kanske om vi kommer hitta material som är bättre på att binda energi? Man pratar om batterier som reagerar med luft likt dagens zink-luft batterier. Dessa är väldigt energitäta men har en väldigt låg urladdningskapacitet. Kan man kombinera litium med luft teknologin finns säkert en stor potential för högt energiinnehåll.

Men kan man få tillräckligt höga strömmar ur batteriet? Kanske är det du som är med och tar fram framtidens teknologi?

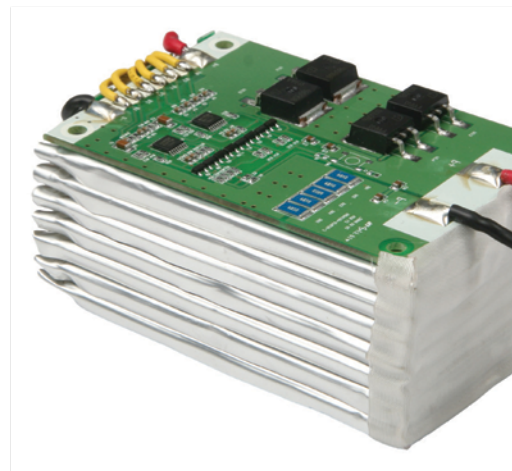
Elektronik inblandat

Cellbalansering – Kort med motstånd som skall förhindra obalans i spänningen mellan cellerna.

Hög och lågspänningsvakt – en krets som skall bryta om spänningen blir för högt eller för lågt i ett batteripack.

Temperaturvakt – sensor eller krets som skall reagera på om temperaturen blir för hög eller låg för batteriet så man inte riskerar externa skador.

Pack-övervakning (BMS) – I ett större system som består av fler pack så övervakar och balanserar man hela systemet med ett BMS (Battery Management System) som då skall hålla koll på alla data från tekniken ovan samt eventuellt kommunicera med externa system via en CANbus eller annat kommunikationssystem.





THE ITHACA EXPERIENCE

AFTER A MAGICAL WEEK IN NEW YORK CITY I TOOK A FIVE HOUR BUS TRIP TO ITHACA, NEW YORK WHERE CORNELL UNIVERSITY IS LOCATED. UPON MY ARRIVAL TO THE ITHACA BUS STATION, I WAS GREETED BY JESSE, WHO I SUB RENTED THE HOUSE FROM, .

WE PACKED MY THINGS into his car, headed to a local grocery store for some quick shopping, and then ventured to my summer apartment. The house was old but very spacious. It had four bedrooms, one sitting room, one bathroom, a shared kitchen and a large attic. The house proved to be an excellent place to hang out with new found friends, having a foosball table, many couches, and big front porch with a grill. Further, the house was conveniently located just steps from college town and Cornell's central campus. I spent the first week alone in the house but was soon joined by Jesse's friend Chris as well as a Taiwanese family.

I ARRIVED IN ITHACA on a Friday afternoon so I had a whole weekend

to explore Ithaca before I started work on Monday. Saturday I oriented myself by walking around the Cornell campus. While walking around, I realized the campus was about four times the size of Chalmers. Cornell University consists of seven colleges, the College of Engineering being just one. Both the city of Ithaca and the Cornell campus are gorgeous places to visit during the summer. Ithaca has lots of vegetation, wildlife and beautiful sceneries. The Cornell campus is comprised of both new and old architectural styles which gives a nice impression. After exploring Ithaca the whole weekend I was ready to begin work.

MONDAY MORNING I MET with my supervisor, Professor Shealy, and he introduced me to his vacuum chamber project. He then gave me a workplace and four tasks that had to be solved in order to complete his project. The first task was to write some drivers in the C++ programming language for a Keithley

Source Measurement Unit (SMU) for the IC-CAP program. IC-CAP is a program made by Agilent and is widely used in the industry for various semiconductor measurements. I had never written drivers or seen the IC-CAP program before so that was a new experience. As I worked on the first task, I also began

I realized the campus was about four times the size of Chalmers

the second task, which involved writing drivers to control the motorized stages used in the vacuum chamber. I soon realized that just writing drivers would not solve the task so I decided to write a stand-alone program that

communicated with IC-CAP instead. The last two tasks were to implement a 3D-mouse which controlled the motorized stages, and then assemble some parts of the vacuum chamber. Basically the objective of all four tasks was to automate a high voltage vacuum chamber with some programming and IC-CAP. This project seemed overwhelming at first, but I successfully solved every task in order to help complete the vacuum chamber project.

TEXT + PHOTOS: SEBASTIAN GUSTAFSSON

SEBASTIAN GUSTAFSSON

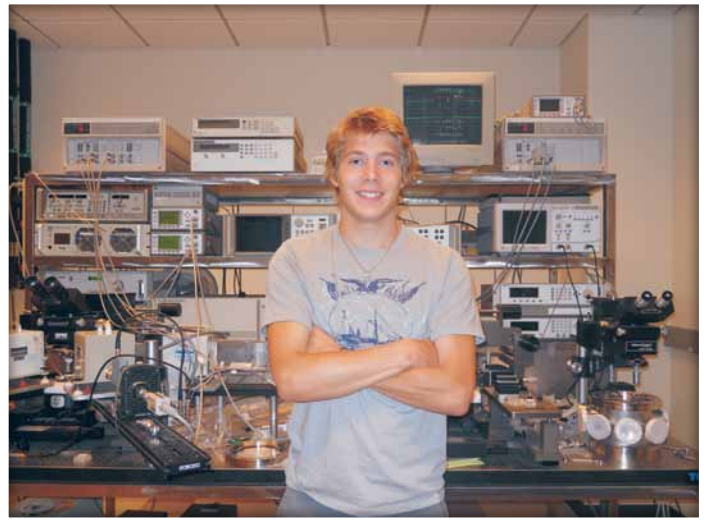
age: 21

bachelor: ELECTRICAL ENGINEERING

best us memory: THE FIRST WEEK IN NEW YORK CITY



ONE OF THE SWIMMING AREAS IN ITHACA



AT WORK

I can assure you that I learned a lot of programming along the way!

IN MY SPARE TIME I had lots of fun with my two friends Jesse and Chris. We went swimming, running, biking, relaxed at Jesse's parents' house and watched movies. We also spent large amounts of time exploring Ithaca. I am very glad that my tenant Jesse and I became such good friends. We did a lot of activities together and it enriched my summer experience. In mid-July my girlfriend came to visit me for two weeks. I went by bus down to New York City and met her at Penn Station.

We stayed at a hostel for the weekend, and explored NYC. The weather was so hot! When we came back to Ithaca we spent a lot of time with Jesse and Chris swimming and enjoying the weather. My girlfriend and I also spent a weekend up

in Niagara Falls sightseeing, even getting a chance to explore the Canadian side of the falls.

AFTER MY GIRLFRIEND LEFT the United States the weather became slightly cooler which turned out to be okay because I had to spend

more hours at work finishing up the project. Despite the slightly cooler weather, my Professor surprised me one day and invited me to an afternoon out on his boat. I met him outside the building where I worked and he drove us to the marina where a friend of his was waiting. We then

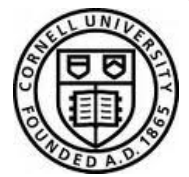
fired up the engines and headed out on Cayuga Lake. The sky was blue and the sun was shining making a perfect day for swimming! We spent five hours boating around Cayuga Lake before heading back to Ithaca.

The sky was blue and the sun was shining making a perfect day for swimming!

employees: 11,000

location: ITHACA, NY

web: CORNELL.EDU



ALTHOUGH THESE FEW paragraphs cannot capture all the memories I have made, I hope you have enjoyed my report on many of my exciting experiences in the States! In conclusion, I would like to thank Professor Shealy for this great opportunity at Cornell University. It helped cultivate my engineering skills and has prepared me for future challenges. I would also like to thank the CETAC board for their awesome work this year; you guys have done a great job fixing all of this! Last but definitely not least, I would like to thank all of the many sponsors who made this exceptionally valuable trip possible. ■





**THE FEELING IN MY STOMACH;
I HAVE GOT A SUMMER CRUSH**

NEW YORK IN ALL ITS GLORY BUT IT WAS NOT UNTIL I SET MY FOOT AT THE BELLINGHAM INTERNATIONAL AIRPORT IN THE EVERGREEN STATE OF WASHINGTON THAT IT CAME UP TO ME. THIS IS FOR REAL. THIS IS SERIOUS. I AM SOON TO BE A PART IN ONE OF THE LARGEST MACHINERY IN THE WORLD; THE RED, WHITE AND BLUE.

TEXT + PHOTOS: JOHAN ÖSTMAN

AT THE AIRPORT, I was picked up by Rich, the engineering manager. He gave me a tour and showed me where I was about to stay. I was imagining a small dungeon but when we arrived and looked into the apartment, I was astonished. Among a lot of things there was a pool table, karaoke and not to mention my very own bowling lane. This could definitely be worse, I thought to myself. After that he took me to dinner at his home to meet his family which I got very attached to.

I HAD THE WEEKEND to get settled before I was about to start working.

The company that I am working for is called Rothenbuhler Engineering and is a family owned company. It was founded by Howard Ernest Rothenbuhler, who invented a radio frequency transmitter and obtained the patent for it. The company has stayed in the family since. The main product is a blasting device that is used mainly in the military, the logging and mining industries.

MY PROJECT HAS BEEN to work on a new product that is going to have a lot of new features in comparison to previous versions and the main task has been to

implement Wi-Fi. This is wanted since the already commercial products are communicating over VHF which is a licensed frequency band while Wi-Fi is not. Rich had given me a document with all the things I would have to consider and then it was up to me making the modules work by doing the electronics and writing the protocol. By doing this, I had to learn a new language called Wi-Fi Basic.

I HAVE NOT ONLY been working with the Wi-Fi though. The new product is also supposed to have GPS, LCD display, RFID,

ON TOP OF STAR PEAK



SLIDING DOWN COURTNEY PEAK
PHOTOS BY DAN JOHNSON





HARLEY HARLEY HARLEY!



external flash memory, two keypads and a PC-mode. The previous intern had been working with this and I started where he took off. Hence my project has also been to write drivers for these modules, in C, and making them work as a unit.

DURING MY STAY, PEOPLE have tried really hard to make me feel welcome. It has included a lot of barbecues, trips to parks, sightseeing and events such as rodeo, logging show, road trips, camping trips and mountain climbing. I have also been introduced to two new sports I have never even considered before; road biking and downhill mountain biking. Just recently I also started playing soccer again, after an absence of a couple of years. I am excited and the indoor league is just about to start. Speaking of soccer, the Sounders are playing down in Seattle and it is a really cool experience to watch, not because they are that good but because of the huge crowd they attract. People are very friendly around here and do not hesitate to ask you to come if they have anything going on. This was probably the biggest surprise for me, coming from Sweden.

AS IT MAY SOUND, outside of work, there has been a lot going on but there is one thing that really stands out. As I said, I have gotten introduced to road biking by Tom, the head engineer. He is riding with a bike club and every year they do a ride over a mountain pass. It is not just any mountain pass, this one has an elevation gain of about 6000 feet over a distance of 65 miles. The views are mind blowing. I was really happy about going through with the trip and made it to the other side along with the other 20 riders. I was

I have fallen in love with America and it is still to see if it is more than a summer crush.

This could definitely be worse, I thought

actually the first one in, which made me earn the climbing master shirt à la "tour de France" on the next club trip. People seem to be hunting the guy in the shirt down because I ended up last in that race, big time.

A REALLY COOL THING about this place is its contrasts. It could be chilly and raining at the coast side of the mountains but if you go by car to the other side that is only two hours away, you will experience snow not to speak of a wall of heat when you arrive. This, I became aware of when I and a couple of guys went camping. It was so warm that tubing down a river made of melted snow, which make it a cold river, did not seem to be a problem. If you on the other hand go out the coast direction, there is a bunch of islands to visit that offer a nearly tropical atmosphere and if you are lucky, you might see some killer whales.

I AM REALLY GLAD I decided to join CETAC and got the opportunity to do this. The hard work gets paid off many times over by all the new knowledge you get by working with highly qualified people in your area of studies and not to speak of all the amazing people you get to know along the road. I have to say thank you to Neal and Rich at Rothenbuhler who gave me this opportunity and all of my other colleagues that made me feel like I was on the team right from the start. In this writing, I still have ten months left to work in the states and I could not be more excited about what the future has to bring. I have fallen in love with America and it is still to see if it is more than a summer crush. I am positive about it. ■



ROTHENBUHLER ENGINEERING

employees: 30

location: SEDRO WOOLLEY, WA

web: ROTHENBUHLERENG.COM

JOHAN ÖSTMAN

age: 22

bachelor: ELECTRICAL ENGINEERING

best us memory: CLIMB A PASS OVER THE AMERICAN ALPS ON MY BIKE



KILLER WHALES



AMERICAN SOCCER



VIRTUALIZING IN SILICON VALLEY

LIVING AND WORKING IN BAY AREA, OR AS MEDIA MOSTLY CALL IT - SILICON VALLEY, IS AN ABSOLUTE DREAM COMING TRUE FOR ME AND IT HAS EXCEEDED ALL OF MY HIGHEST EXPECTATIONS. IT IS DEFINITELY KEEPING ME BUSY, AND I DO WORK A LOT. BUT AS SICK AS IT IS - I STILL HAVE BUTTERFLIES IN MY STOMACH WHILE GOING TO WORK EACH DAY. IT IS THAT EXCITING.

TEXT + PHOTOS: NIKLAS ANDERSSON

I AM WORKING AT a company called Nicira, which is a startup - just as Google, Apple, Facebook and many other well-known companies once were here before. Nicira is developing cloud computing infrastructure software for large data centers and was founded by network research leaders from Stanford and Berkeley in mid-2007.

THE CLOUD, WHICH NOWADAYS is an ever-growing buzzword, is made possible in an infrastructure point of view by three parts: compute, storage and networking. Compute is basically the ability to virtualize computers, which means that you can run several operating systems (e.g. Windows, OS X, Linux) on one single computer - at the same time. Storage provides the resource pool of abstracting several hard drives into one big unit - even if they physically are different parts. So, what about networking? Right, that is the thing that Nicira is solving and it will

bring the missing puzzle to the table to be able to build and maintain high-performing clouds successfully.

I AM WORKING IN the QA department which is an acronym for Quality & Assurance. We perform automated tests for functionality and performance, as well as for scalability. For Nicira's releases this summer, I have been responsible for something called the customer test plan. It is functional test from a customer's perspective for Nicira's product and its supported platforms. Currently I am working on rewriting the libraries in our test automation framework to support multiple types of hypervisors, where the hypervisor is the host node software located on the physical server on which the virtualized computers are located. The team I work in is quite international, we are a mix of people from the US, India and China - and Sweden of course. I guess I will have great use solely on the communication skills I have developed here so far in the future of my career.

employees: 80
location: PALO ALTO, CA
web: NICIRA.COM

SILICON VALLEY IS PROBABLY the most vibrant area of our world, and not just in the sentence of top universities and leading companies. Here are also tons of things to do in your spare time. It is kind of in the middle of everything, you are very close to San Francisco - which is a big city with everything that comes along with that. There are lakes and beaches located just within a 1-3 hour

drive away where you can go swimming, sunbathing, surfing, wakeboarding and more. One of my best weekends this summer I spent up in Lake Tahoe. I went there with my two roommates, who happen to be fellow CETAC members as well, to visit a friend from Chalmers USA SIP, who was doing an internship there for the summer. The environment up there is absolutely amazing. We went kayaking, running, watched a beach theatre, tried out the casinos which are located right by the Nevada border and more. A cool thing is that during the winter this village transforms into a ski resort as well. So you can basically go there during the summer for sun activities and during the winter for all suitable activities that come along with that. It is awesome. I am currently making plans to go there to for some snowboarding later this year!

NIKLAS ANDERSSON
age: 26
bachelor: ENGINEERING PHYSICS
best us memory: BEATING MY BOSS IN PING PONG



MY FIRST THOUGHTS OF moving to the USA was that one of my initial missions has to be to buy car or find some long-term rental deal to manage to go to work and around. But I did not. San Francisco and Bay Area actually do have great commute and public transport possibilities - something that I, and most Swedes I know, do not know about. I mean, here are buses, cable- cars, subways and commute trains which all take you literally everywhere.

I still have butterflies in my stomach while going to work each day.

ALTHOUGH I AM WORKING in Palo Alto, I decided to live up in San Francisco and go by train down to work each day and it has suited me perfectly. I get some time to bike to the Caltrain station and to work every day, and I can use the time on the train to work as well. And the most important fact, San Francisco is an amazing city to live in and it has a fantastic cultural life.

IF THERE ARE ANY lesser good things about San Francisco, it could possibly be the weather. Not in the sense that you by surprise happen to get into a thunderstorm or something like that. The weather is actually quite predictable, sunny during the days and in the late afternoon it is almost always these clouds that come in from the Pacific Ocean and just swamps all over the city. It makes it kind of charmy but still a bit colder. When I leave from home it is often about 12 degrees and when I arrive

down in Palo Alto about 50 minutes later - it is about 22 degrees. So I am having a hard time dressing some times.

HERE IS SOME AWESOME food as well! And international. Lots of Mexican food, Thai food and Sushi. And if you find the right places, also very inexpensive compared to Sweden. Every once in a while I kind of miss meatballs and potatoes with lingonberry jam and other typically Swedish dishes. It is good to know that there are always some IKEAs around where I can go and feed my Swedish mouth. One of my goals by going here

except for work was to get to know new American friends - hopefully for life. I thought it would be hard but I was completely wrong. People are generally very open-minded and friendly, as soon as I go by train or a bus I most often end up having a chat with someone. My second weekend here I met Cristina, whom I have been hanging out with a lot this summer. She grew up and went to College in Florida but has been living and working here for the last four years. She has showed me all her favourite places in San Francisco and introduced me to her great friends. It has definitely contributed to some of my best experiences here.

THIS SUMMER HAS WITHOUT doubt been one of the best in my life and I have gained a lot of experience in so many areas, both personal and professional. I would like to direct special thanks to my manager Henrik at Nicira who hired me, and to all my fellow colleagues who have made my introduction to the company and to the US so seamless. And also to CETAC and Chalmers, which provided the platform that made all of this possible. Thanks. ■



SUNNY, VIRTUAL DAYS

WHEN I FIRST CAME TO CALIFORNIA IN JANUARY I WAS KIND OF OVERWHELMED. JUST TWO MONTHS EARLIER I HAD BEEN SITTING IN MY ROOM WATCHING SOME TV SHOW. ONE RANDOM MIDNIGHT PHONE CALL FROM A FRIEND AND TWO MONTHS LATER, I HAD HALTED MY STUDIES AND QUIT MY JOB, TO COME TO SILICON VALLEY FOR A SIX MONTH INTERNSHIP.

TEXT + PHOTOS: TOBIAS SVENSSON

YOU TRULY CAN NEVER know how tomorrow will turn out! I had a different experience from the rest of the CETAC members, as I got my internship 'off-season'. Most members arrive in the summer, but I arrived in January, so I came alone and missed out on the New York trip. It is a bit more scary to manage everything by yourself, but it worked out fine.

AFTER I LANDED IN California, I started out renting a room from a lady, who had furnished her home so thoughtfully that all the air vents were blocked and she could not turn on the heat. So my first two weeks I sat inside in cap, gloves and a thick jacket, until I found an apartment close to work.

I WORKED AT NICIRA Networks which is a rapidly growing upstart company in Silicon Valley. The company started as a Stanford University research project and now develops virtual networking solutions for large data centers. Computer virtualization is a recent, hot technology that has become widely used. Virtual networking however is a new, unexplored area aimed at improving networking performance and the users control over the network, in which Nicira are producing some amazing new technology.

MY INTERNSHIP AT NICIRA started off with a brick-wall feeling as I had never worked with virtualization or networking before. The first day was particularly scary as I had everything introduced to me at once and a task to get to work on immediately. I got the hang of it quickly though, and soon I was

managing large server clusters with hundreds of hypervisors.

I WORKED ON THE quality assurance team, testing product functionality and stability, attempting to find and diagnose bugs. We used Python and the work mostly consisted of developing automated testbeds large scale and functionality tests, which would run daily. I also managed some of their development environment, like the requirements database and test report systems.

MY MANAGER, HENRIK, WAS a hands-off kind of manager. You would get a project or a problem to solve, and then be left to work it out on your own as best as you could, asking for help only when you need it. Working like that teaches you quickly to be independent, improve your communication skills and to solve problems efficiently, which are extremely valuable skills to have. My co-workers were all very experienced and helpful, I was able to learn a lot from them, ways of working and thinking, but also from the feedback during the code review process that every piece of code must go through.

AS WITH MOST WORKPLACES in the US, people worked hard. Late nights and weekends were not at all uncommon, especially bad was the release of our product this summer. It was not all work though – the company had regular poker and ping-pong tournaments, after-work meet-ups, a

TOBIAS SVENSSON

age: 24

bachelor: COMPUTER SCIENCE

master: ALGORITHMS, LANGUAGES AND LOGIC

best us memory: LOOKING OUT OVER NIGHTTIME SAN FRANCISCO FROM A HOT TUB ON A ROOFTOP.

pinball table, and more. I am proud to say I left as the poker and pinball champion, although I was probably company-worst at ping-pong.

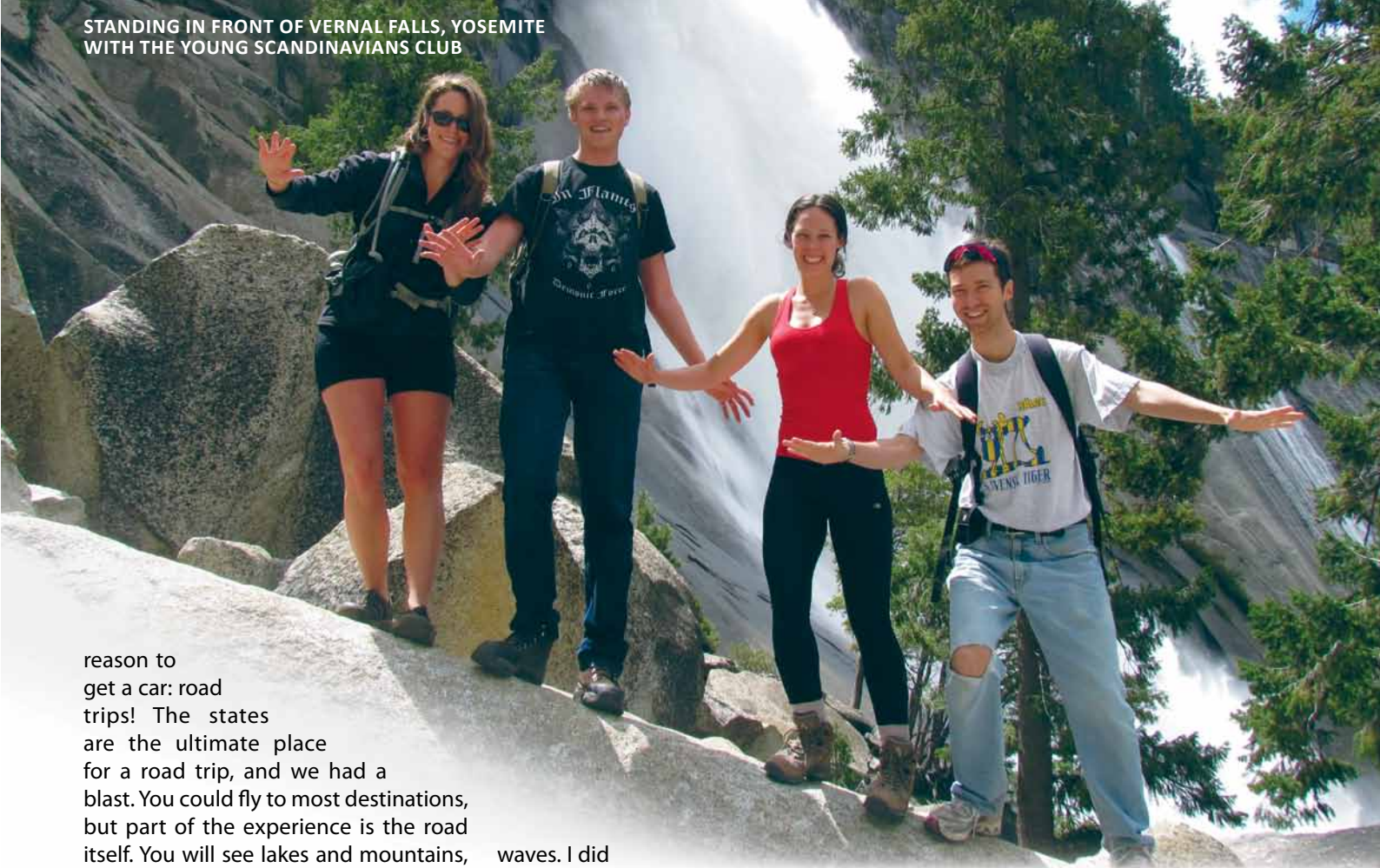
LIFE IN THE BAY area is sunny and warm, the area is beautiful, and you are only a short trip away from California's second largest city, San Francisco. The city however is surprisingly cold; winds from the pacific blow over the Golden Gate and through the city, so even on a sunny day can still be chilly. Shops thrive on summer tourists who packed only shirts and shorts, then rush to get a sweater out of sheer panic.

THERE IS A BIG mix of cultures, as people from all over the world come to Silicon Valley for IT jobs. All the different people and cultures come together without any problems; SF is known as a city of love and understanding, partly thanks to the hippie movement, and you can feel safe regardless of ethnicity, sexuality, etc.

I DECIDED TO GET a car to get to work which turned out to be a good move, since outside the big cities, you will need one to get around easily. I also had a second



SANTA MONICA BEACH



reason to get a car: road trips! The states are the ultimate place for a road trip, and we had a blast. You could fly to most destinations, but part of the experience is the road itself. You will see lakes and mountains, California's beautiful country side, and experiences like night drives through creepy, desolate desert roads in Nevada. Finally, my worst U.S. experience: getting stuck in one of the fabled LA traffic jams.

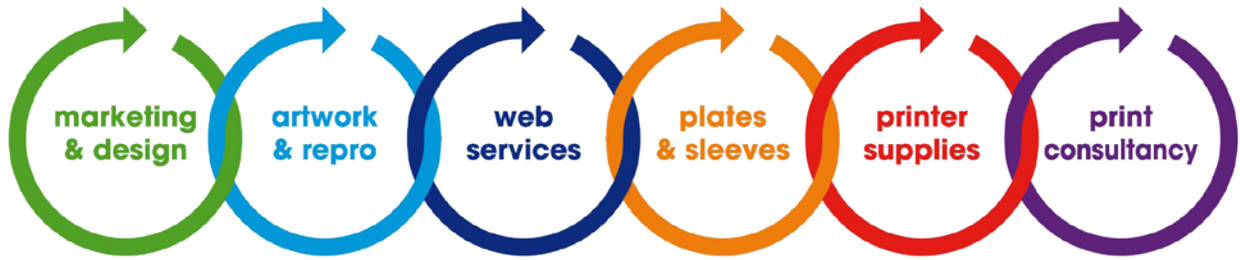
I ALSO CHECKED SOME things off of my bucket list! Being in California I just had to try surfing, and it is actually easier than you would think once you are on a wave, but paddling out there can drain your energy before you even reach any

waves. I did water-skiing, lots of hikes as I love walking through nature, lightened up my wallet at a casino, and randomly got an opportunity to fly in a small plane around the bay.

SO, THANKS TO HENRIK and the QA team, it has been an invaluable experience and I have had an amazing time! Further thanks to all the CETAC guys who helped me, you know who you are! As I am writing this, my girlfriend and I are

packing to go to New York and then back home to mother Sweden, and we just realized we have a problem. We have two full backpacks, and two backs among the two of us so that is OK, however we also have five heavy stroller bags but only four hands. So, this seems headed for disaster, but that is what travel is all about! ■





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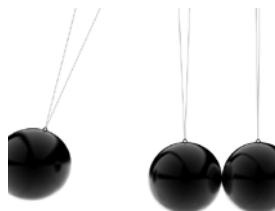
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BE SURE TO WEAR SOME FLOWERS IN YOUR HAIR

IN THE BEGINNING OF APRIL I GOT A REPLY FROM DELPHIX, SAYING THAT I WAS WELCOME TO JOIN THEIR QA TEAM FOR SIX MONTHS. SUDDENLY THIS U.S. TRIP WAS NO LONGER A FANTASY BUT I STARTED TO REALIZE THAT I WAS REALLY GOING.

TEXT + PHOTOS: CARL SYLOW-RYNNING

AFTER SPENDING A GREAT week in N.Y. with my fellow CETACers I landed in San Francisco. A couple of days later I was in the Delphix office down in silicon valley. In my time at Delphix I together with two colleagues were responsible to develop and enhance the automated test framework. The framework is written in Python, a language that I was completely unfamiliar with when arriving, which I now have come to love and was soon up there with objective-C as my favorite languages to write code in.

THE MAIN PRODUCT FROM Delphix is the Delphix Server (delphix.com). Initially it has been sold to companies mainly by addressing the database administrators and persons responsible for the infrastructure, under the motto: "Provision your databases twice as fast and just use a tenth of the space". This is enough of an argument to get people to understand the cost savings they can gain just from the storage space saved. Now Delphix is in a phase where Data as a Service (DaaS) should be introduced. Do not be surprised if a Delphix server or two are standard software in any company cloud infrastructure in a couple of years from now. Already now companies like Comcast, TiVo and SuccessFactors are important customers.

AT DELPHIX, A DRIVE like I have never seen before, exists. Instead of the normal 9 to 5 feeling, like I have experienced in Sweden, my co-workers here are driven by their own

interests. This is a collective force that helps Delphix to keep momentum, expand and succeed. It is easy to see how specific implementations affect the company and the product, and this is what makes people take it up a notch. Imagine a group of people that together, focus and put in an effort, to make success. That is the feeling I get from my colleagues at Delphix.

DELPHIX WAS FOUNDED IN 2008 and half of all employees joined in the last year. Since I started two months ago, about ten more people have boarded the ship. The size of the company still allows a great portion of information sharing. Even I, as an intern, am aware of what is going on on a more strategic level and get continuous information of sales figures and design decisions.

DURING MY TIME IN San Francisco I have met a lot of people that work in the tech industry down in the valley. It seems like every one works as an engineer at one of the software companies, or at least in its meta industry like sales, marketing or support.

THE ONE THING THAT has struck me the most so far is the entrepreneurship that seems to have been coded in to the DNA of all Americans. All over San Francisco you see these little shops, newly opened restaurants and the common denominator is that you can see how these were just recently taken from idea to reality. This also make companies facilitate this entrepreneurship in various ways. My favorite company that I have come across, so far, is Square (squareup.com). I think their product really points out how easy it is to take your idea/hobby to a profitable business

WHEN I ARRIVED IN San Francisco my two roomies-to-be and I had just done some brief craigslist browsing for possible places to live. We had a couple of preferences though. We were

CARL SYLOW-RYNNING

age: 28

bachelor: SOFTWARE ENGINEERING

best us memory: HALF DOME HIKE, YOSEMITE NATIONAL PARK, CA

not going to live in the area called the Tenderloin and we wanted to stay close to the CalTrain to shorten our commute as much as possible. After two weeks of intensive apartment hunting alongside work we finally signed the contract. Where did we end up staying? In the Tenderloin of course. My roomies and I have come to love this neighborhood with all its ups and downs, but every time somebody asks where we live, and I tell them, the normal reaction would be this facial frown and the question; Why?

AS FOR LIVING TOGETHER I have been blessed with two awesome roomies (CETACers) and we all go along really well and have a great time together. But I guess this is more of an exception. My advise to anybody that is planning to live abroad for a while would be to live together with the "natives", as the cultural experience would be enhanced a lot.

I HAVE, FROM LIVING in a dorm the last year come in contact with an organization called couch surfing (couchsurfing.org). I convinced my roomies that we should host some surfers while staying in San Francisco. A fantastic choice. So far more than 20 people from Sweden, Denmark, Norway, Canada, USA, Germany, France and Austria have visited us. The cultural experience is fantastic and all these visitors make us as hosts more active getting out to explore this fantastic city.

THERE ARE TWO THINGS we noticed when arriving in San Francisco. The

employees: 60

location: MENLO PARK, CA

web: DELPHIX.COM



SAILING IN THE BAY



4TH OF JULY CELEBRATION IN DOLORES PARK



SAN FRANCISCO PRIDE COSTUME

weather and the homeless people. OK, so San Francisco is located in California. California is endless summer. False! People that visit San Francisco and want to go to the beach to get tan have obviously chosen the wrong destination. Even though it is warm during the day, you quickly learn that you always bring a hoodie or jacket if you are going to leave the house for more than an hour. For some reason the cold arctic winds can push the fog in over San Francisco before you even have time to react.

HOMELESS PEOPLE SEEM TO be everywhere in downtown SF. One reason for this would be that there is no other place in the U.S. where you as a homeless have a better setup to get by. At first I had somewhat of a problem with this. I thought that it was annoying that this phenomenon was like ashes on an otherwise polished facade. After a while when I started to understand the almost non-existent social safety net, I came to realize that the situation could be so much worse. Now I have learned to

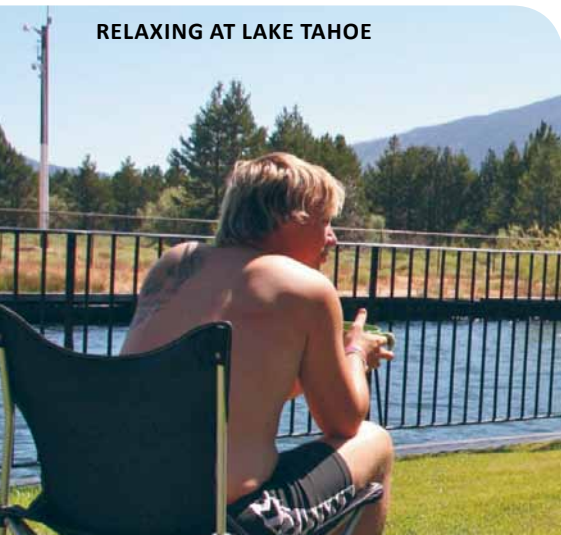
appreciate all those characters that stroll the streets of San Francisco. Everyday someone says something to me while passing by that cracks me up. I love the fact that these people can keep their sense of humor even though their living conditions are more harsh than I can ever understand.

RIGHT NOW I AM living in a wonderful mixture of languages, cultures, rich and poor, ethnicities. And I would not trade it for anything in the world. ■

AT WORK



HIKING IN YOSEMITE



STOCKHOLM SALES TRIP

AS THE SUMMER OF 2010 WAS TO AN END, A NEW YEAR OF STUDIES AWAITED FOR THE MEMBERS OF CETAC 2011. I BELIEVE THEY WERE ALL EXPECTING THIS YEAR TO BE SLIGHTLY DIFFERENT, IT WOULD BE THE STARTING POINT TOWARDS AN UNFORGETTABLE ADVENTURE AS AN INTERN IN THE U.S.

AN EARLY SEPTEMBER MORNING, about three weeks in the first semester, the committee made the annual trip to Stockholm. This has become an appreciated tradition among the members since it gives a great opportunity to strengthen the group and get to know each other. It also fulfills a different purpose which is to introduce the members for their upcoming work in finding sponsors for the trip.

THE PREPARATIONS FOR THE trip had started two weeks earlier by dividing the committee into groups of five. Each group tried to contact and set up meetings with companies at a given location that might be interested in sponsoring. The internship coordinators of the board were approaching the trip in a similar manner but with the intention of finding companies that was related to the states.

AS THE TRAIN ARRIVED at the capital, the internship coordinators headed to the north part of the city for a meeting while the other members found their way to the hostel, in the central part of the city, which was to be called home for the upcoming days. Thereafter, each group headed off to different parts of the city while the rest of the board was acting as a communication central for the groups in case they were not able to answer any questions. By the end of the day, the back cover of the Trainee Report was sold along with several other ads.

NEXT DAY THE MEETINGS continued and a few more ads were sold. This was not the big event for the day though. Later, the whole group went out for a dinner that had been arranged in collaboration with CETAC Alumni. Here, we met up with some old members and mingled. It was great to listen to stories about what was about to come and also in what way CETAC had affected their career and life. The night continued and all of us moved on to nightclubs in order to celebrate a well executed weekend.

THE NEXT DAY IT was already time to go home. Tired because of an energetic weekend but proud for what had been achieved, the members of CETAC found their way back to Gothenburg, now as a unit. ■

TEXT: JOHAN ÖSTMAN, PHOTOS: CETAC 2011



THE AMERICAN-SCANDINAVIAN FOUNDATION 2011

The Chalmers Engineering Trainee Appointment Committee of Chalmers University of Technology and The American-Scandinavian Foundation began working together back in 1980. Since then, the Foundation has provided visa sponsorship to hundreds of CETAC committee members in the fields of electrical engineering, software engineering, engineering mathematics, engineering physics and computer science, among others.

The American-Scandinavian Foundation is a publicly supported non-profit organization located at Scandinavia House: the Nordic Center in America. Founded one hundred years ago, the ASF fosters cultural understanding and exchange between the U.S. and the Nordic countries through fellowships, cultural grants, internships/training, publications, exhibitions and other public programs.

The American-Scandinavian Foundation's Internship & Training Department, designated by the U.S. government as an Exchange Visitor program sponsor, provides young Scandinavians and Americans with the unique opportunity to receive practical on-the-job experience abroad. Approximately 200 Scandinavian students and young professionals participate in the program each year in a number of different fields, including architecture, law, business, design, journalism, and, of course, engineering.

In order to receive visa sponsorship, prospective interns and trainees must complete an application and their host firms are required to provide an internship plan. Once ASF confirms that the internship is appropriate and meets program requirements, it issues the U.S. government documents required by the U.S. Embassy for an Exchange Visitor J-1 visa.

When in the U.S., interns have the opportunity to dive into American business culture and put their knowledge into practice. And host firms reap the benefit of adding a highly motivated and skilled young Scandinavian to their staffs.

Congratulations on an excellent and productive year, CETAC 2011. It was a pleasure working with all of you. We at ASF hope that you had a wonderful experience here in the U.S. Your energy and ambition are sure to take you a long way and we wish you nothing but success for the future.

ARIANA TIZIANI
The American-Scandinavian Foundation

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Edward P. Gallagher

PUBLICATIONS
ASF shares information on Scandinavian topics through its journal *Scandinavian Review* and its membership newsletter *Scan*.

MORE INFORMATION
www.amscan.org

CETAC 2011 STATS

12
The total number of interns that participated in the Chalmers/ASF program for 2011

6
The total number of states that students interned in

6
The average length of 2011 internships in months



CETAC Alumni

CHALMERS ENGINEERING TRAINEE APPOINTMENT COMMITTEE

CETAC Alumni all have a couple of things in common. Not only do we have (or will soon have) a degree from one of the best technical universities in northern Europe. We also had to spend a year fighting for something that we really wanted. Even more importantly, we have all practiced our engineering skills during a couple of months in a foreign country. I believe that these are things that make us extremely capable to solve future problems. I also believe that when great people come together, great things happen, and this is why CETAC Alumni exists.

CETAC Alumni was first started in 2006 and it is with great pride that I now continue this legacy with help of the CETAC Alumni board. We have now over 100 members and we are growing steadily every year.

Our activities vary from arranging dinners to sending out newsletters to helping CETAC attract new students.

Together, we are helping CETAC grow while at the same time growing ourselves. CETAC Alumni is a place to share memories, meet friends and discover new opportunities. Joining CETAC is not only a great chance to do an internship in the United States, but it is also a chance to join CETAC Alumni.

Best Regards

Tomas Gille, Chairman of CETAC Alumni



PHOTOS FROM THE ALUMNI PARTY 2011 ORGANIZED BY CETAC 2012. TO THE LEFT: NEW CHAIRMAN VIKTOR ANSUND HOLDING A SPEECH. TO THE RIGHT: CHAIRMAN 2011 NIKLAS ANDERSSON AND TREASURER 2012 JOAKIM ZAAR. PHOTOS: MICHEL EDKRANTZ



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THE CHAIRMAN SPEAKS

JUST ABOUT A YEAR AGO, WE STARTED OUT AS A SMALL GROUP OF STUDENTS WITH A COMMON GOAL; THE AMBITION TO TRAVEL TO USA TO PUT OUR HARD EARNED EXPERIENCES FROM OUR EDUCATION AT CHALMERS INTO PRACTICE. I HAVE TO ADMIT THAT I, EVEN AS THE CHAIRMAN OF OUR ORGANIZATION, HAD MY DOUBTS IF WE WERE GOING TO MAKE IT.

BUT HERE WE ARE, on the airplane heading from Sweden to New York with our internship positions signed and work visas settled. And in what a way we did it. It is unreal.

LOOKING BACK ON OUR year, it feels like it almost flew by in an instant. Yet did we get so many things done. It has been a lot of hard work to put into this organization and it has turned out to be very well-rewarding. First off, we have been working on making us more visible and well-known around Chalmers. We have been taking part in career fair days, launched a new, better looking and informative homepage and managed to settle a new room at the Chalmers campus where we will get greater exposure to students. This for recruiting new members but also to provide a better marketing value to our sponsors.

WE HAVE BEEN WORKING more closely with our alumni organization to better pass on past experiences from previous CETAC years to upcoming ones. We can also be proud of probably one of the best sets of internship positions in a while.

ONE OF MY BEST memories from this year though, is to have experienced how all of us have grown - both in a personal and professional way. I will

never forget the day when we held our last presentation to a group of about 40 ambitious students, whom were interested in joining the board of CETAC for the upcoming year. The self-esteem and proudness of the board members was breathtaking. Especially for me, that had seen this presentation a year earlier which we held for the recruitment of our members. The difference was astonishing. And not to mention when we all met up in New York, everyone with a big smile on their face. The happiness and enthusiasm of what we had accomplished and to the big journey that was about to begin was so inspiring to see. That makes it worth it all - several times over.

CETAC REALLY IS AN amazing organization. It provides the whole platform to take you from a student to a real world high-tech job abroad. We provide lectures and workshops for resumés, cover letters and interviews. We provide the connections in the US to settle the work visas and internship positions which are both challenging and matches your education and interests. We work together to sign up sponsors that help us cover the initial expenses of moving abroad before we receive our first salary. It really is too good to be true.

WITH THIS BEING SAID, if you are reading this as a current CETAC member or thinking about joining - I hope to see you on an alumni event soon. I would also like to take this moment to express my greatest gratitude to the key organizations that have helped us make all this possible. Thanks to Ariana Tiziani at the American Scandinavian Foundation, who tirelessly helped us settle most of the work visas. Thanks to alumni that invited us to a number of events during the year which furthered inspired us for our time in the US. Thanks to all our sponsors, without whom this journey had never been possible. Thanks to all the American host companies and universities that continue to provide us with internship positions, which is the key component of our organization. And finally, thanks to all the members of CETAC 2011 - we made this dream come true. ■

Niklas Andersson
Chairman CETAC 2011



THANK YOU

For fantastic support and essential contributions to making our project possible, CETAC 2011 would like to direct our sincerest gratitude to our advertisers and to all of the following:

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NYC TAXI. PHOTO: NIKLAS ANDERSSON



INDEX

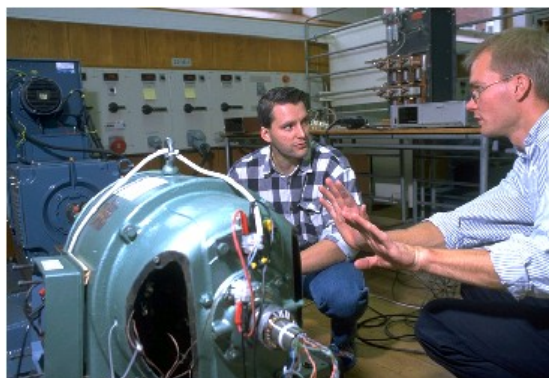
A		
ABB Inc.	22	
ABB AB Kabeldon	54	
About CETAC and How to Apply	6	
Ageto MTT	10, 49	
Alps Electric Europe GmbH	10	
Amerden Inc.	12	
Am.-Scand. Foundation	53	
Andersson, Niklas	44	
Aros Electronics AB	7	
Att Söka CETAC	6	
B		
BEPE Elektronik AB	10	
Brother International Sweden AB	10	
Berkeley Lab	32	
C		
Cactus Automation AB	18	
CBRITE	16	
Cegumark Patentbyrå AB	36	
Celltech Energy Systems	37	
CETAC Alumni	54	
Cypress Private Security	20	
The Chairman Speaks	57	
Cornell University	40	
D		
Daloc AB	56	
Delphix	50	
E		
Eaton Holec AB	56	
Elforsk AB	60	
Eriksson, David	28	
Eriksson, Mattias	34	
F		
Fraunhofer-Chalmers Centre	2	
Flexplus HB	7	
Furberg, Andreas	22	
G		
Gulliksson, Gustaf	12	
Gustafsson, Sebastian	40	
H		
Helukabel AB	19	
Hittite	19	
Husqvarna AB	11	
I		
IFÖ Electric AB	19	
Infineon	14	
Ingeniörsfirma G.Karlbom AB	18	
Inst. för Data och IT	7	
Inst. för Kemi och Bioteknik	11	
Inst. för Signaler och system	31	
Inst. för Teknisk Fysik	48	
Inst. för Tillämpad IT	55	
J		
Jones, Mathias	22	
Juhl, Johanna	28	
L		
Lawrence Berkeley National Lab	32	
M		
Miller Graphics AB	48	
Miltronic AB	55	
Mirkovic, Nikola	14	
Multi-Teknik Mönsterkort AB	56	
N		
NASA	28	
New York	8	
NIBE Industrier AB	18	
Nicira Networks	44	
NVI Inc.	28	
O		
Ottosson, Kristoffer	16	
P		
Progressive Marketing AB	36	
Proxitron	55	
R		
Ranatec Instrument AB	54	
Rothenbuhler Engineering	42	
S		
Santic, Senad	20	
SEW-EURODRIVE AB	19	
Strålsäkerhetsmyndigheten	49	
Stockholm Sales Trip	52	
Swedish Match AB	56	
Söderenergi AB	25	
Sylow-Rynning, Carl	50	
T		
Teknikskifte inom Batterivärlden	38	
Teknisk Akustik, Chalmers	48	
Thank You	58	
Tibco Spotfire	34	
Trilogik Konsult AB	49	
U		
Uddevalla Energi AB	49	
Uddeholm AB	18	
V		
Vehco	25	
Vectura	36	
W		
Wilhelmsen Callenberg AB	55	
Wenmec	36	
Z		
Zorikhin-Nilsson, Ilya	32	
Ö		
Östman, Johan	42	

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