



# cetac

CHALMERS ENGINEERING TRAINEE  
APPOINTMENT COMMITTEE

INTERNSHIP  
REPORT **2019**  
**54<sup>TH</sup> ED.**

# Apply to *CETAC*...

## Oh, I mean

# *CESIP*

**T**hat's right. After 54 successful years of hard work and dedication in helping students get the chance of working in North America, it is time for a new chapter in CETAC's story. We are teaming up with our sister organization, AMCIP into what will become Chalmers Engineering Student Internship Programme (CESIP).

With that out of the way, CETAC is a student-led nonprofit organization at Chalmers University of Technology helping students find internship placements in North America. Since our start back in 1966, we have managed to send a vast number of students to internships all over North America. Over the years we have had students working for companies such as NASA, Tibco Spotfire, Bracket, Apple, Intel, Microsoft, VMware, Ericsson, Princes Cruises and Sun Microsystems, to name a few.

The duration of our internships varies from one summer up to a year. However, some decide to stay in North America and others choose to return after completing their education. CETAC also stresses the importance of finding internship placements that are both interesting and fitting for engineering students.

An internship in North America does not only offer students valuable work experience, but also an insight into a different culture. Experience and understanding of different cultures is a highly demanded skill in our ever more global work

environment. Good English communication skills are also highly sought after since most engineers nowadays need to be able to convey ideas in a world where the English language is the main language used by most businesses.

Starting in this year, 2020, CESIP will be welcoming motivated students who wish to get a little extra out of their studies. If you are interested in applying for an internship starting the summer of 2021, the application period for this will be in late August and September 2020. Before going on your internship you will be active within the organization for one year, helping CESIP in both finding and funding the internships you will later apply to. This is an exciting year where you will get to know other students from all over Chalmers as well as prepare you for an upcoming internship!

If you have any questions, do not hesitate to contact us through our website or social media!



Website



Facebook

# Editor's Note

This magazine, which is the 54th edition of our yearly Internship Report, tells stories from all over North America of ambitious and adventurous students from Chalmers University of Technology. Everyone experiencing something completely new, and very different from life in school. In addition to all the real-life work experience gained, new lifelong friendships are formed. North America truly is the land of opportunity.

CETAC will continue its legacy into 2020 together with AMCIP under the new name of CESIP. With some luck, wit and determination, next year we might be reading about your big adventure!

I hope you enjoy the read!

**Sidner Magnéli**  
Editor of CETAC 19/20

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Est. 1966

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# CHALMERS





**Stefan Bengtsson**  
President and CEO at  
Chalmers University of  
Technology

# Chalmers International Outreach

**O**ur vision – Chalmers for a sustainable future – permeates everything we do. It requires us to be connected and engaged, both locally and globally. It makes international networking and collaboration key priorities in education, research and innovation.

Chalmers alumni have careers in diverse and internationally connected companies and organizations. Hence, developing and supporting activities that provide Chalmers students with international experience, as an integrated part of their education, is essential.

CETAC is a student led organization, that supports Chalmers students in their quest to find companies in the US and Canada offering internships. Its committee is dependent on your support to ensure the continued success of the program. CETAC plays an important role in providing opportunities for international experience to Chalmers students and I fully support the program.

## About Chalmers

Chalmers University of Technology, founded in 1829, conducts research and offers education in technology, science, shipping and architecture with a sustainable future as its global vision. Situated in Gothenburg, Sweden, Chalmers has 10,300 full-time students and 3,100 employees.

Chalmers is well-known for providing an effective environment for innovation and has 13 departments. Graphene Flagship, an FET Flagship initiative by the European Commission, is coordinated by Chalmers.



**CHALMERS**

# CETAC MEMBERS

 *San Francisco*



**Name** Johan Gustafsson  
**Education** Engineering Mathematics  
**Internship** Agari Data, Inc.  
**Location** San Mateo, San Francisco Bay Area

# IN THE USA.



**Name** Belmin Dervisevic  
**Education** Computer Science and Engineering  
**Internship** Bison / Cobalt



**Name** Eric Shao  
**Education** Software Engineering  
**Internship** Rema Tip Top



**Name** Rickard Karlsson  
**Education** Applied Physics  
**Internship** NVI Inc. (NASA)



**Name** Hanna Ek  
**Education** Engineering Mathematics  
**Internship** NVI Inc. (NASA)



**Name** Gustav Molander  
**Education** Applied Physics  
**Internship** Amerden Inc.



**Name** Isak Ernstig  
**Education** Electrical Engineering  
**Internship** Amerden Inc.



**Name** Mateo Raspudic  
**Education** Computer Science and Engineering  
**Internship** Royal Caribbean Cruises Ltd.





# IT in Bosstown

**T**ouchdown Boston. Right after my last exam I had less than twenty-four hours to clean my apartment and get everything ready before leaving Gothenburg. With a big suitcase and my backpack I headed to Stockholm to visit a friend of mine. From Stockholm I took a plane to Dublin and from Dublin to Boston. On arrival I was greeted by my now friend and past year CETAC 18 member Marcus. It was a surrealistic feeling. I had left everything in Sweden behind me for twelve months to go abroad and work for a startup I really did not know much about. I couldn't really grasp the fact that I was actually in Boston and that I was going to spend my next coming twelve month here. I was excited about it but still, I had no idea about how it would turn out.

I now live in a three bedroom apartment in middle of Davis Square which is a 1 minute walk to the subway station, on the red line. Both my roommates are Americans from Massachusetts and we are all good friends. My daily commute to the office is roughly 25 minutes. I would recommend you to invest in a quality pair of noise cancelling headphones, it has hands down been a game changer for me and worth every dollar during my daily commute to the office.

Living in Boston during the winter is very similar as living in Sweden. Boston certainly has more snow than Gothenburg but nowhere near the north of Sweden. However, during the summer it is considerably warmer than back home. Temperatures up to 35 degrees celsius are not at all uncommon and it is often quite humid

which makes the perceived temperature even higher. I work as a fullstack software developer for a startup called Bison. I was hired to be part of the Bisons development team and was more than excited to start learning about the technologies and frameworks used in the application.

Bison is a software company working to develop and suite of business intelligence tools for the front offices of the private markets fund operators and investors. The two products are called Cobalt GP & Cobalt LP. I love working at Bison because every day

*“Boston is actually the capital of the world. You didn't know that?”*  
- John Krasinski

presents new challenges, opportunities to learn, and the chance to make a meaningful impact. It offers that unique opportunity to come in and learn while also making an impact from day one. Bison has really streamlined their intern onboarding process. I managed to write, merge, and have code promoted to production in my first few days. The company has a lovely way of keying interns into the development work by throwing a more substantial project at you at the start of your internship.

My first project at Bison was to build an internal configuration system which is used by the developers at Bison to upload and store various configurations and data. As of writing this I am on the Limited Partner team and work closely with our partner Hamilton Lane on the Cobalt LP product.

The Office is located in the heart of Boston, namely the financial district. It is on the 8th floor with a fantastic view of city. We have a kitchen comically packed with snacks and drinks, a couple of secluded rooms when you need to 'stay in the zone' and juggling balls all over the office, if you've got restless hands. We also have a fantasy football league going on in the office which I highly recommend to participate in.

Something I realized the first day was that there is a huge difference between talking English in a classroom in Sweden versus working and communicating in a fast paced, American office environment in the middle of Boston. A few months into the internship mental changes occur, your thoughts are in English. You find yourself looking for words when talking on the phone to Swedish friends and family. What you were previously mentally translating from Swedish to English, you now have to translate in the opposite direction.

We developers have a desk island which we share with Design & UX. Having adjoint desks with senior developers is something I honestly believe every startup should have. The ability to ask various questions and collaborate closely with people more experienced than me on the fly is highly valuable.

If you are into sports, as I am, Boston might be the ideal American city. We have the Bruins, Celtics, Red Sox and the Patriots to watch and support. There are plenty of sporting events in the city. Watching the Red Sox play at Fenway Park while eating sausage with fries and drinking a Bud Light is probably the most American experience I will ever have. Boston certainly has much to offer besides sports, me and a colleague went to a python meetup in downtown and met a bunch of people and worked on a hobby project together.

Also, I spent the fourth of July together with my friend and colleague Jonathan (CETAC 17), and his friends in New York. We watched the thirty minute firework show near the Brooklyn Bridge. It really was thirty minutes of nonstop fireworks. I had an absolute blast and was completely blown away by the size of the city, I now know why New York is sometimes referred to as the concrete jungle. We also had time to explore some great breakfast and brunch places in Manhattan and to meetup with my friends who did their internships at NASA Goddard near Washington DC.

Bison holds team events semiannual. This years holiday party was at an axe throwing bar in Somerville followed by dinner, never would I



have thought that competitive axe throwing could be so much fun. Unfortunately, I did not win the competition but I got the technique down quite well. Lastly, if you enjoy beers I would highly recommend all the fantastic local breweries the greater Boston area has to offer. There are a bunch of them in Cambridge within walking distance to each other which most definitely will be a great time. In Conclusion It's now been over six months since I arrived, and let me tell you, time flies when you're having fun. My

experience has been absolutely fantastic so far, and if you're considering an internship, I can't recommend it enough. I have learned so much about software development, made some new friends across the other side of the Atlantic Ocean and grown as a person. I suggest that everyone who wants to travel and work abroad applies to join CETAC, it has truly been the most exciting time of my life.

### Belmin



<b>Name</b>	Belmin Dervisevic
<b>Education</b>	Computer science and engineering
<b>Internship</b>	Bison / Cobalt
<b>Location</b>	Boston, MA
<b>Duration</b>	12 months





**Institutet för rymdfysik**  
Swedish Institute of Space Physics



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# What's in IT for me?



#### Programmes at Chalmers University of Technology

- Computer Science – algorithms, languages and logic
- Computer Systems and Networks
- Data Science
- Embedded Electronic System Design
- High-Performance Computer Systems
- Interaction Design and Technologies
- Software Engineering and Technology

[chalmers.se/cse](http://chalmers.se/cse)

#### Programmes at University of Gothenburg

- Applied Data Science
- Computer Science
- Game Design & Technology
- Software Engineering and Management

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# It's So Miami

**M**y internship is at Royal Caribbean Cruises Ltd. (RCL), and I work as a Full Stack Developer focusing on both web and mobile applications. RCL manages a worldwide fleet of over 60 ships spread over six subsidiaries. My station is at the RCL headquarters that are conveniently located at PortMiami, boasting front-row seats for the Miami skyline. The department I am in is called Global Marine Operations, and I work in a team where we develop applications to optimize, digitize, and improve different processes within the company. I do UX/UI design, create reports, and develop applications that are for both shipboard and shoreside use.

What I love about my position is that I felt like I made an impact from day one. For instance, my very first task was to create a web application where ships log their engine and fuel use in preparation for the IMO 2020 Sulphur cap. This data is then used to gain better insight into compliance of regulatory requirements at sea and in port and has allowed the shoreside senior leadership team to make real-time decisions and assign priorities in funding and resources.

My first challenge, while still in Sweden, was to try to find an apartment in Miami. I knew that the South Florida area had many Swedes living there, so maybe I could reach out to them. However, I spoke to a friend who had lived in the US previously, and his advice to me was to try to find people from other cultures and live with them; that way I would be engaging and practicing my English more than if I had stayed with Swedish-speaking people. I downloaded the Roomie app and set my filters to apartments within 2 km of the office.



<b>Name</b>	Mateo Raspudic
<b>Education</b>	Computer Science and Engineering
<b>Internship</b>	Royal Caribbean Cruises Ltd.
<b>Location</b>	Miami
<b>Duration</b>	12 months

**Best Memory**  
Holding the Dolphins flag on the field during the pregame flyover (Miami Dolphins – Cincinnati Bengals).

**Worst Memory**  
Watching Miami Heat concede their first loss to LA Lakers at home by 3 points.

**Future Plans**  
Ultra Music Festival, visit Charlotte and Los Angeles, watch more Heat games.

The first apartment that caught my eye was the one I ended up staying at, so I was incredibly lucky. I have two amazing roommates; one is German, and the other is American. The biggest perk of living with people who already have established lives in the US is that you get a head start on meeting new people and that they know about all hidden gems already.

I live in a beautiful 3-bedroom apartment on the 21st floor overlooking South Beach and Miami downtown. On weekdays I normally stay in and watch sports with my roommates or play soccer

(football) with people from work. The weekends are reserved for Wynwood, the Premier League, and going to the beach. Wynwood is an area in Miami where the walls are covered in graffiti artwork, and the dining options are many. It is a very artsy place where you will find many bars, restaurants, and galleries. Every second Saturday of the month, you will also be able to attend the Wynwood Art Walk; music blasting, food trucks set up, street performers, and a block party are some of the things you will be able to experience.

As you might have deduced, my roommates and I are quite into sports (they even bought a second TV to enable us to watch more games simultaneously). I mostly watch soccer (FOOTBALL!) and the NBA. Since the AmericanAirlines Arena (home to the Miami Heat) is less than 1 km away, I attend a game now and then. It is safe to say that basketball is my favorite sport in the US.

Recently, however, I have gotten more into the NFL. Thanks to great colleagues, I managed to make my first football tailgate party a great one. We met up at the parking lot outside the Hard Rock Stadium in Miami at 9 in the morning. We had a couple of drinks and grilled some food as we waited for the Dolphins to go head-to-head against the Bengals. Before the game, we were invited into the stadium for the pregame ceremony where we got to run out on the pitch with the big Dolphins flag and hold it as the players were introduced; that was probably the coolest experience I have had so far in the US.



*Waiting for the signal to go out on the field*

Moving to Miami was way different than I had expected. Even though I had visited the year before my internship started, I would not ever imagine the diversity of the city. Most people speak Spanish and are from countries such as Cuba, Nicaragua, Colombia, Venezuela, and others. Let's just say living here gives you a great opportunity to learn a new language.

For Thanksgiving - 5 months after my internship had started - I booked a flight and went to Boston to celebrate the holiday with my roommate's family. As I disembarked in my sweatshirt, I was welcomed by 4 °C (39 °F) winds. Coming from 28 °C (82 °F), the climate was not optimal for me at the time. However, I did get used to it, and oddly enough, it felt more like home to me than Miami. I spent Thanksgiving with my roommate's family in Westford, right outside Boston. After hanging out with his family and eating a lot of food, I went into Boston to meet



up with Belmin (CETAC 2019 Sales Manager), who's an intern at Bison. I instantly fell in love with the city as it reminded me much about my favorite city, London. It did not take me a long time to return. Just a couple of weeks later, I booked my ticket to Boston again for Christmas and got to spend the holiday season in a Swedish manner; cold weather, Swedish Christmas food, a gingerbread house, and of course, glögg.

As I am typing this, I am at Belmin's office waiting for my bus to New York, where I will be welcoming the new year. Thinking back at my time in the US, it is safe to say that it has been a great ride so far, and I am looking forward to what more is to come. I am now at the mid-way point of my internship, and I have learned a lot about software engineering since I came here, but I have a lot more to learn. Let's see what the next half brings me.

Ya Tu Sabes,  
**Mateo Raspudic**



View from my apartment



**Study “Wireless, Photonics and Space Engineering”**  
**A two-year Master’s Programme at Chalmers University of Technology**

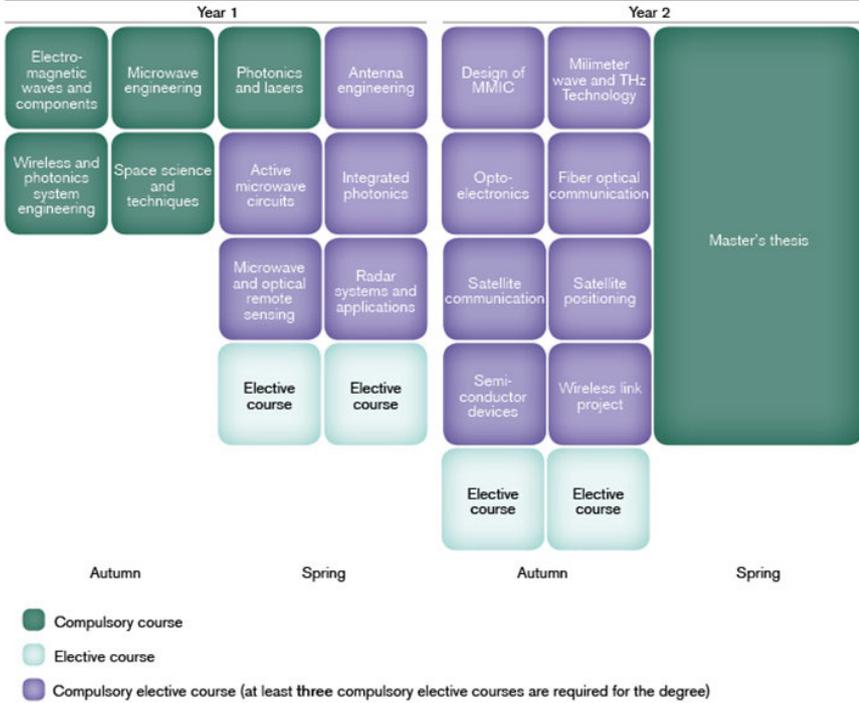
**Wireless, Photonics, and Space Engineering, MPWPS**

The backbone of modern telecom infrastructure consists of optical fibre-based systems in combination with wireless technologies. Medical applications of photonics and microwaves are numerous, and sensing applications include radar, environmental monitoring and radio astronomy. Satellite-based microwave systems aid our everyday life, e.g. television broadcasting, navigation and weather forecasts, and are used in remote sensing of the Earth and space geodesy.

**Programme description**

Over the past decades, photonics and wireless technology have grown at an exceptional rate and investments in future telecom systems will have a profound impact on social and economic development, but everything wireless needs hardware. This programme offers a unique opportunity to study a combination of subjects for which Chalmers has world-class facilities: Onsala Space Observatory with radio telescopes and equipment to study the Earth and its atmosphere, the Nanofabrication Laboratory with a clean-room for research and fabrication of advanced semiconductor devices and integrated circuits, and research laboratories with state-of-the-art photonics and microwave measurement equipment. We focus on applied science and engineering, where we combine theory with hands-on practise, labs and projects. We are involved in cutting edge research and the manufacturing of components for e.g. microwave and millimetre wave electronics, instruments for radio astronomy and remote sensing, optical fibres, lasers, and microwave antennas.

As a student of this programme, you will gain solid knowledge in wireless, photonics and space engineering as well as specialised skills in a chosen sub-field. You will be prepared for a career in the field through studies of wireless and optical communication components and systems, RF and microwave engineering, photonics, and space science and techniques. Roughly 30% of the students are international students with a bachelor degree from different countries across the world, whereas the remaining 70% have a bachelor from Chalmers.



Visst är det knepigt att tänka på alla detaljer?  
 Ännu knepigare är det att sätta ihop dem till en lösning.



Bli en duktig problemlösare, sök Teknisk fysik på Chalmers.



# A Very Long and Broadening Internship a.k.a VLBI

**It is the middle of July and early in the morning, but the temperature has already risen above 25 degrees. We are driving along the highway outside of Washington D.C. in our boss' car that we have borrowed for the past week. Soon an exit sign appears a couple of hundred meters in front of us, this is our exit. We are on our way to work and the sign says "NASA employees only". After having pulled off the highway, we stop at a security gate to show our badges and then we continue to our office. This was an ordinary day for both of us during an extraordinary summer at Goddard Space Flight Center.**

**W**e worked for a company called NVI Inc, who is a contractor to NASA that specializes in geodesy using a technique called very-long-baseline interferometry (VLBI). The core principle of VLBI is to measure the time difference between the arrival of a radio signal to several antennas. In this case, the radio signal comes from distant quasars in space and the antennas are spread around the globe. As a matter of fact, there are a couple of sessions where signals from outer space were measured by radio antennas located at both Onsala Observatory near Gothenburg and NASA Goddard Space Flight Center. Among other things, VLBI helps the scientists at NVI to measure the distance between the antennas with a millimeter resolution and how the earth rotates. Also, the first image ever of a black hole, which was released recently, was captured using VLBI.

Our first day at work started with us waiting on the bus for 45 minutes since it never showed up (which we would soon find out was quite common..). But since we both were quite nervous and therefore took a very early bus we still managed to be first to arrive at the NVI office. We spent the first hours of our first day having a meeting about what we would work with during the summer. We were assigned a software project to write a program that would visualize VLBI data, this would be done in Python. This is the data that is measured by the antennas during a VLBI session. It contains everything from the atmospheric pressure and air humidity to the local temperature and the antenna's angle.





The rest of the day Hanna spent installing Python and getting familiar with the language while Rickard who already had worked with Python started with understanding the format of the stored VLBI data,

The project that we worked with was just us two working directly on so that gave us quite much independence on how we wanted the program to look and what it would do. It was a great experience working on a project like this and we learned a lot of programming skills which is a great complement to our backgrounds in mathematics and physics.

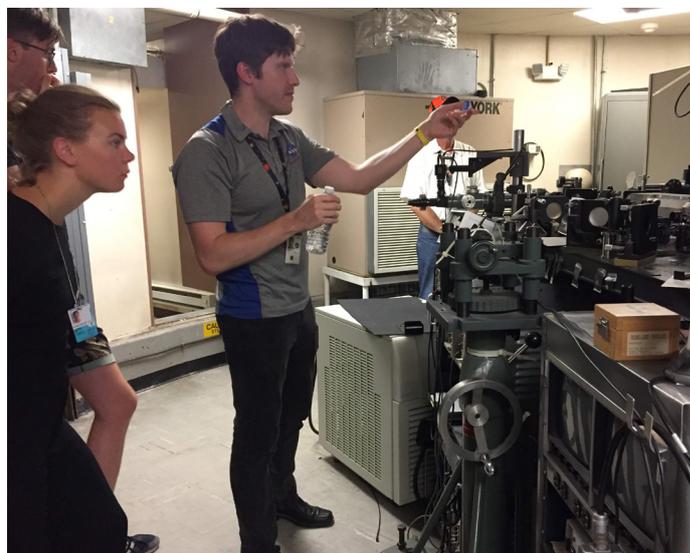
Then, it was time for lunch and the company took us out for south Indian food (another thing we learned this summer was the difference between north and south Indian food) and we got to meet most of the NVI staff. They were all very welcoming and interested in getting to know us. We both got a great first impression of both the food and our coworkers. Soon we learned as well that this was only the first of many visits to Indian restaurants since this was a popular lunch destination among our colleagues.

Given the bus experience earlier that day, we decided to ride home with our new bikes which our boss lent us for the summer. Another co-worker showed us the way home, but not without first doing some sightseeing along the way. When we were just outside our co-worker's house, Hanna got a flat tire. This would be the first out of nine in total during that summer. Let's just say that there was a lot of glass on the roads, but somehow this only seemed to

affect Hanna and not Rickard. After fixing the tire we biked the last miles home and that was the end of our first day as interns at NASA.

In conclusion, we had a great first day. It is hard now looking back to describe the feelings we had this day but they were all great, perhaps except for the flat tire. But actually, even the many stories about fixing the bike in the middle of the night are nice to think back at, like the time that Hanna had to ride the bus home with both wheels detached in one hand and the frame in the other.

During the first four weeks of our internship, we worked at the NVI office which is located about 1.5 miles from NASA Goddard Space Flight Center (GSFC). We could not enter on the site initially since we were foreign interns and we had to apply for a



visitor's badge. Since most of the staff were located at NASA we only shared the office with another NVI intern. So we had a lot of space and the working hours got very flexible. We usually met up with the rest of NVI for lunches, weekly meetings and when they came to help with our project.

However, after the first weeks, we got the badge that allowed us to get on-site at NASA which meant that we spent the following weeks working there. This was very cool, even though the working space actually was a bit more nice at the NVI office.

During our internship was the 50th anniversary of the moon landing. This was greatly celebrated. Among other things, a documentary about the moon landing was shown at the GSFC site. But before the movie started a host asked the audience if there were anyone there who had worked with the Apollo missions. Several hands were raised in the room. We just looked at around and were starstruck by the situation we were in. This is a favorite memory because it is a situation that one could never beforehand imagine being in and afterward it was difficult to grasp that it had happened.

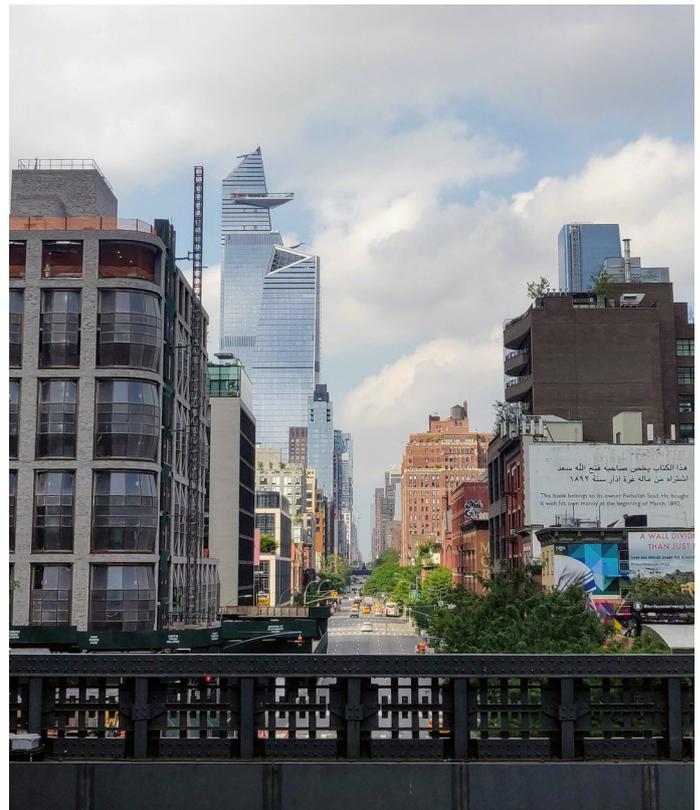
Both of us really enjoyed Washington D.C. One could say it is the smallest large city in the US with around half a million citizens. In the center, there are huge monuments and open areas, with the White House right in the middle. However, we must admit that the White House was not as big and cool as we imagined it to be, at first did we not even realize that we were standing next to it.

But when you leave the most tourist-infested areas then there are a lot of nice bars, restaurants and areas to hang out at. We lived a bit outside of Washington D.C. in an area called College Park

but it was easy to commute to D.C. with the metro. There is something about the American culture that makes you want to do and explore more than at home. We went on many smaller adventures in the nearby areas after work and then we went on longer trips during the weekends. In D.C. there were a lot of free outdoor workouts every week which Hanna regularly attended. There were activities like yoga in the park next to the White House to Tabata by the riverside. This was also a nice way to meet more locals and also feel like a local yourself.

From D.C. there were a lot of buses each day leaving to different nearby cities. This is something that we utilized a lot. We went to Philadelphia, New York and Baltimore to mention some of our long weekend trips. In New York, we visited two members from Amcip who worked as interns there. Some weeks later they visited us as well, and so did the two CETAC members who worked in Florida. So even if members from CETAC and Amcip are spread out over all of the US, you still meet them more than expected.

Our coworkers from NVI showed us many of the exciting places in Washington and nearby, such as the best place to brunch, a national park called Shenandoah and many cool restaurants. It almost feels like we have tried more restaurants in Washington than Gothenburg. Also, the company had events like an annual pool party and a bowling competition. All of the people working at NVI were so interested in spending time with us and showing us around. We got to see places which we would never have found on our own but it also made us feel welcome and we are happy for having our newly received friends in the US.





After the internship had ended both of us wanted to take advantage of the fact that the visa allowed us to travel for a while in the US. So Hanna went on a 2 week-long trip together with another friend who was visiting from Sweden. First, she paid a second visit to New York City where she met up with our friends from Amcip. Then, she flew to San Francisco where she rented a car and drove to LA. On the way, she visited Yosemite, Silicon Valley, Highway 1 and Death Valley. The US is big and the distances are long so having a car is highly recommended, and the gas is of course much cheaper than at home.

Meanwhile, Rickard went to visit CETAC members Gustav and Isak in St. Augustine, Florida. He got to hang out at the beach, snorkel in a cold water spring and surf when the sharks were not nearby (actually, the week before had three people in the area been

bitten on the same day). Then, he went to Boston to meet up with Belmin who works at Bison there.

Boston offered wonderful craft beers, a healthy amount of American history, good burgers and a visit to the MIT museum.

There are many memories from the summer that we spent outside of Washington DC and traveling around the US. Such as the sushi we ate each Monday lunch with our colleagues, all the visits to many of the museums near the National Mall or the outdoor cinema where we watched Jaws at a cemetery. And all of the nice bars during our visit to New York City, both those that were at rooftops but also the speakeasy bar where we had our drinks while sitting in an empty bathtub. But the best part was perhaps the countless amount of bagels that we ate.

In the end, both of us are very happy with our summer at NASA while having such welcoming

and friendly colleagues. It will be difficult to decide what was the best part of our journey. Whether it was all of the Indian food, the fact that we got to work at NASA or something completely different. However, it was definitely a once-in-a-lifetime experience that showed us a chunk of the American culture and its people.

After our internship, both of us returned to Sweden to start our master's studies. But we didn't feel quite done with living abroad and discovering new places. So Hanna is going to spend the first year of her master studies in Austria in a city called Graz and Rickard is going to study half a year in Delft in the Netherlands. Let's hope those adventures will be as good as the one this summer in the US.

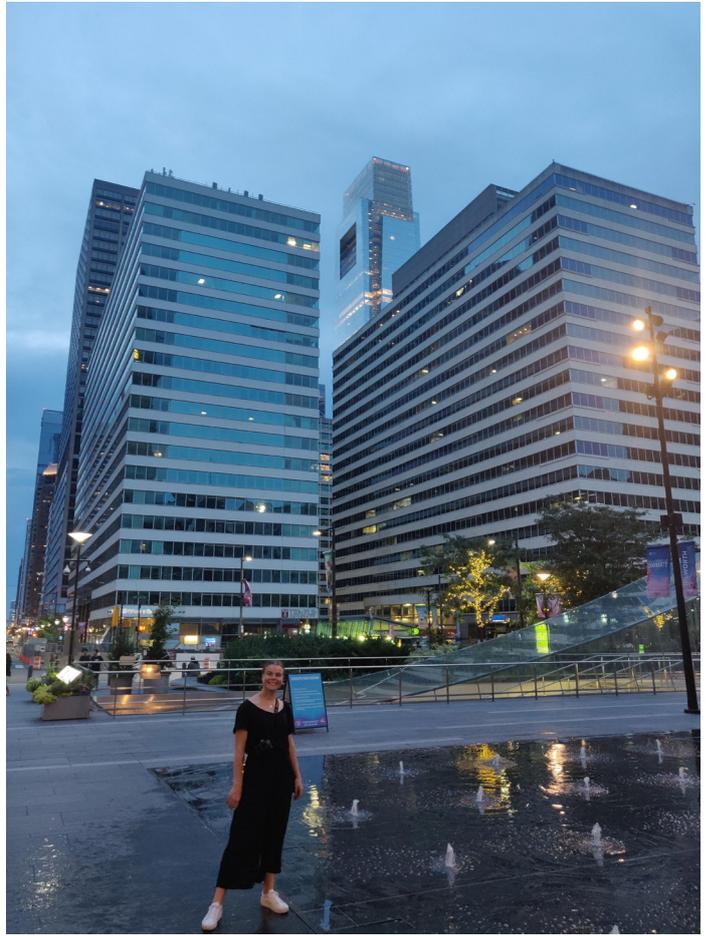
### Rickard & Hanna



**Name** Hanna Ek  
**Education** Applied Physics  
**Internship** NVI Inc. (NASA)  
**Location** Washington DC  
**Duration** June - August



**Name** Rickard Karlsson  
**Education** Applied Physics  
**Internship** NVI Inc. (NASA)  
**Location** Washington DC  
**Duration** June - August



# Apply to the Complex Adaptive Systems Masters Programme!

## Programme description

To understand the dynamics of increasingly complex phenomena where standard simulation methods are inadequate, stochastic algorithms, game theory, adaptive programming, self-similarity, chaos theory and statistical methods are used to describe and increase our understanding of complex systems in nature and society, in the end trying to predict the unpredictable. The programme is truly interdisciplinary and encompasses several theoretical frameworks, this programme provides you with a broad and thorough introduction to the theory of complex systems and its applications to the world around us. The programme is based on a physics perspective with a focus on general principles, but it also provides courses in information theory, computer science and optimisation algorithms, ecology and genetics as well as adaptive systems and robotics.



## A student's perspective:

**Jesper Larsson**

What's your background and why did you decide to pursue your master's studies at the Complex Adaptive systems master's programme.

My background is in Engineering Physics. I decided to pursue my master's studies at the Complex Adaptive Systems programme when I realized that I liked the more practical courses in programming and systems more than the traditional physics courses during the bachelor years. The CAS programme offered mandatory courses such as Simulation of Complex Systems and Artificial Neural Networks that seemed very interesting and matched the elements I liked the most. The rest of the programme is highly customizable and allowed me to postpone my decisions and get a better feel of what I wanted to work with. In the end I decided to specialize more into the field of machine learning.

## Favorite course so far.

My favorite course so far has been the course in Deep Learning. There we used a lot of cutting edge techniques for artificial neural networks in a way that is practically applicable on real world tasks. The course also had a flipped classroom approach where I felt that I really learned the important concepts well. Most insightful moment at the programme. The greatest insight I have had on the programme is probably the importance and value of high quality data in today's technical society. Machine learning algorithms in all forms are replacing older systems but are only as good as the data we provide them. Many potential areas are currently held back by this.

## Plans for the future after graduation.

My plans for the future are at this point a bit unclear. I hope to find a position where I can further improve my skills in the field of machine learning and programming. There are several companies in the Gothenburg area that specialize in this field. Working for such a company would be a great opportunity to really learn from the best.

## Any Thesis plans?

I will do my master's thesis at Zenuity AB together with Mattias Sjöstedt. There we will investigate the performance of Bayesian neural networks for threat assessment in a collision avoidance system. Bayesian neural networks give a certainty measure for a given output which tells us information on if a result is to be trusted or not. We hope that this can yield better results than the existing methods.

More information at [www.studycas.com](http://www.studycas.com)



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Tillväxt 18,5 %  
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# Concrete Jungle Hijinx

Moving back to the United States wasn't too hard for me as for perhaps others. The company that I was going to work for goes by the name Rema Tip Top. They are a globally operating system provider of services and products in the field of conveying and treatment technology as well as tire repair. They also provide a global service network and offers a broad range of polymer-based products, linings and coatings for the industrial as well as for the automotive sector. I was to be placed in their headquarters, located in the small town of Northvale, New Jersey. While the company itself has locations all around the globe, the office that I worked in had around 15-20 employees. Their main customers are other large-scale businesses and distributors. The day I landed in Newark International Airport wasn't too bad, except for the part where I was told by the company to take an Uber to a given address where I will be staying, but then left stranded when the owner of the house wasn't even home and with no contact information or communication method at hand. I waited roughly one and a half hour with all my luggage at a internship host finally replied to my mail saying that she to pick me up. Not the first impression I was expecting, but for the night, I woke up early the next morning to go to the everyone there and was shown my desk as well. I was going 3 (including me) in the IT-department. Throughout my time there, I was given a multitude of various tasks, all ranging from fixing printers to running errands picking up milk to working on databases. In the beginning, I was mostly tasked with helping any employee experiencing any technical



<b>Name</b>	Eric Shao
<b>Education</b>	Computer Science and Engineering
<b>Internship</b>	Rema Tip Top
<b>Location</b>	Northvale, New Jersey
<b>Duration</b>	June - December

#### Best Memory

When my girlfriend flew over to visit me in September. I missed her so much! We went shopping and attended Electric Zoo together.

difficulties with their computers. For example, I would routinely receive calls about an employee's laptop acting up or not starting. Most of the time I would simply ask them to turn the device off and on again, and it would solve most problems. Hey, if it works then it works, right? Some time into the internship, I then got to work a bit on the databases and create some projects around that. This was the most interesting part, I'd say. I got to handle large amounts of data and numbers within a cool development environment using some interesting Microsoft software. As a whole, I got quite a mixture of experiences from working there. I learned how to analyze and develop smart solutions for everyday problems, such as automating tasks within a large-scale corporate company, and seeing how different parts of a company work together. I would say, however, at times I felt that the different sectors of this company would suffer from communication errors, or a lack thereof. This was a simple observation I made during my time there and realized even more how important communication is between teams for a more efficient work process. This was stressed during my studies back home in Sweden, and I got to see in first-hand how important it could have been in a company like this. Before flying away to another country, I was working in a startup in Gothenburg. As such, it came to me as both a shock and a surprise when I had to communicate with my co-workers in the States using Office 2010 and via email. I was so used to using Slack and any newer tech stack available to the world, that having to send emails back and forth seemed absurd. I also had to answer phone calls and call people all the time if I wanted something urgent, instead of sending a direct message. It all seemed so strange to me, needing to use decade-old technology when there are better alternatives. It made sense, however, that if you were to introduce a completely new communication tool to an already established corporate company with mainly baby boomers working in, that it would cost tons of time and resources. As they always say: "if it ain't broke, don't fix it", I guess?

I didn't really spend much time in my town where I worked. There wasn't much to do there, and it was extremely suburban. I was told that there were a ton of mountains that I could climb every weekend but that wasn't really in my interests. I would much rather spend my time in urban areas and exploring busy streets. So, in my free time, I'd meet up with friends inside New York City. It would take roughly an hour and a half to drive there. It wasn't cheap, either. I would much rather have lived in NYC as it suits me better. I already had enough of the boring, slow-paced lifestyle of Gothenburg. Why would I want to experience that again? On my weekends I would always plan to travel somewhere with the company car. I've gone swimming by the beaches, attended music festivals, and went Black Friday shopping during my time there. This was all on the NYC side of the Hudson River. As mentioned before, the town I worked and lived in was extremely bland, with nothing to do.

**Eric Shao**





# The President Speaks

I could never have imagined the adventure that was waiting for me when I received the news in early 2018 that I would become the next chairman of CETAC. Just over a year later I left Sweden to work in Washington D.C. for an intensive summer. Now can I only look back at my time in CETAC with joy. It feels good to say that I have fulfilled one of my bucket list goals by going abroad during my studies, but I am feeling even better about the memories and friends that I have obtained along the way.

CETAC has sent students to North America from Chalmers every year since 1966. I can not emphasize enough what a great opportunity this is, much thanks to CETAC's connections that have been built upon over the years. If you have ever considered studying abroad then you should consider the possibility of an internship abroad as well. Beyond getting a good-looking resume, it is also a unique opportunity to use your engineering knowledge in practice while working and living in another culture. After having met alumni from CETAC as well can I say that I am not the only one who believes that it has been a once-in-a-lifetime adventure.

However, the past year and a half have also occasionally been a bumpy journey that has required effort and endurance, so I would like to thank those that have been involved. Thanks to the

American-Scandinavian Foundation who helped us with the visa process. Thanks to the companies in North America that are taking interns, CETAC would not have existed without you. However, my greatest thanks are addressed to all members of CETAC during my year, including my fellow board members, whom this journey would not have been possible without because of their hard work and cheerful spirits.

Also, I would like to wish good luck to the new members of CETAC who have joined after me. I am confident that they are going to accomplish good things during their year and that they will bring many opportunities abroad in North America

At last, my adventure with CETAC has come to its end. But if you are reading this and thinking about going abroad, then your adventure might just be about to begin. If you want to live in sunny California, work in the financial district of Boston or go somewhere in between those places, then chase the American dream by applying to CETAC. You will not regret it, I promise!

**Rickard Karlsson**  
Chairman CETAC 2018/2019



# A Year of Robots in Sunny *Florida*

**Living in Florida is a unique experience for a Swede for sure. Even more exciting is the possibility to work on-site all over the United States. During a regular workweek, we assemble robots in the workshop and program the logic in the office. On weekends we hang out at the beach, surf, visit thrift stores and enjoy the nightlife in St. Augustine. Our time here so far and the experiences are hard to convey through a short text, but we'll try our best...**

**N**ot many people know the fact that Sweden has intimate ties to American robot systems in the form of Automated Guided Vehicle Systems (AGVS). Being the leader in the industry during the late 1900s, the NDC AGV system company from Gothenburg was booming. Much has changed since then, but the Swedish-American innovation ties live on. In St. Augustine, Florida, a small company by the name of Amerden builds automated robots. The company was founded by a Swedish engineer who wanted to combine American and Swedish technologies, hence the name Amer-den. Living in St. Augustine has a lot to offer; from the nightlife to the miles of beach just a stone throw from the house



to the beautiful state park up along the beach, you can understand it's quite easy to stay busy outside of work.

We began our American adventure by travelling up to the AGV headquarters in Virginia to learn more about the closely guarded secrets of automated robotics. During our training in Virginia, we also took a weekend trip to Washington D.C. to visit our friends at NASA. The Capital is full of things you probably have only seen in pictures, the White House, the Abraham Lincoln Memorial, Capitol Hill,

the Washington Monument and more. We had a blast during the whole trip, but after two weeks of sightseeing and training, it was time to head back to Florida.

Back at home base, a lot of different projects are going on simultaneously, all from retrofitting an old newspaper plant robot to equipping an old jail with robots there were a lot of things to focus on. Both of us went on our first job adventure during the autumn: the cloth factories of Milliken in South Carolina. There, our abilities were put to



the test, Gustav was in charge of managing most of the stationary PLC, making sure the vehicles charged properly and running an upgraded system alongside an old one. Isak went between two plants and configured a new communication system for one of the factories. Getting to know a lot of the culture of the Southern United States was also a very interesting experience. The people, their history and their food were great.

We have had the opportunity to take more vacations than traditionally is possible in the United States, undoubtedly a perk of our internship. During Hurricane Dorian, the beach area that we live in issued a mandatory evacuation for all residents, and us Swedes not really knowing much about the tropical storms of this hemisphere decided to skip town and head to the amusement parks in Tampa and Orlando.

At the beach, in Jacksonville, we visited a U.S. Air Force

Airshow, a marvelous display of aeronautics. After a few trips to Miami, we got acquainted with the culture of Miami with our dear CETAC friends Mateo Raspudic and Anton Matsson (see CETAC internship report from last year about Anton's adventure at Berkeley).

Isak also got the possibility to upgrade the Jail System in Dublin, California. A unique experience for sure. Seeing the west coast and San Francisco was an interesting and very different experience compared to the east coast in a lot of ways. A similar yet different culture within the umbrella of the United States is a subtle thing and probably quite unique to the United States. Combining business

with pleasure is also always a good idea, solving difficult problems on-site during the week and exploring San Francisco during the weekend. The only let down with the trip to the jail was the fact that Isak never managed

to get his hands on some "Pruno" (toilet wine brewed by the prisoners) as the prison guards had made a big bust just before the super bowl.

All in all, travelling the United States and Seeing another side of the world has been a great experience and is something that strengthened our reverence for the United States and has widened our scope of what we want to do in the future. Industrial automation has been a booming industry since the 20th century and will probably continue to improve throughout the 21st century. We're both excited and exhilarated to see both the development of the U.S. and the automation industry in the future!

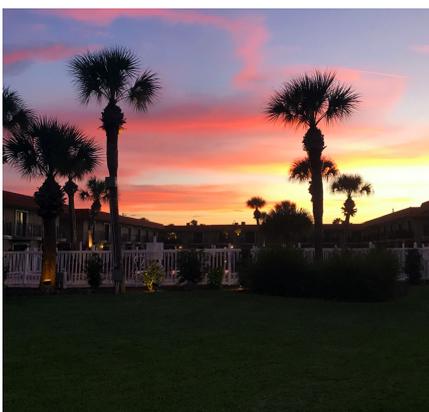
Over and out,  
**Isak Ernstig &  
 Gustav Molander**



**Name** Isak Ernstig  
**Education** Electrical Engineering  
**Internship** Amerden Inc.  
**Location** Saint Augustine, FL  
**Duration** June - June



**Name** Gustav Molander  
**Education** Applied Physics  
**Internship** Amerden Inc.  
**Location** Saint Augustine, FL  
**Duration** June - June





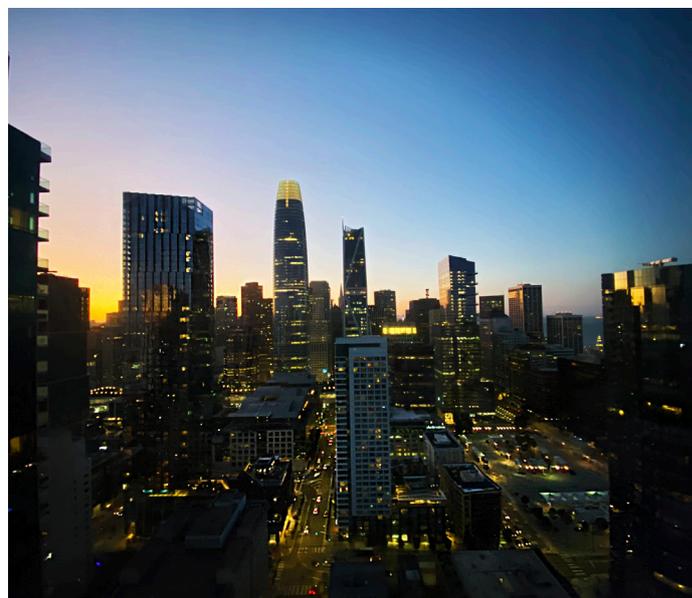
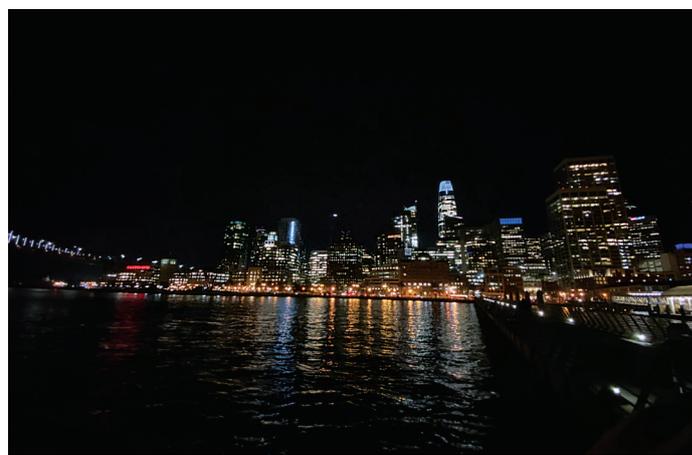
# Phishing Around *Frisko*

**I have vivid memories of waking up feeling groggy in a small room in a snowless Kyoto. It took me a second to realize that I had just received a late Christmas present. I was going to the even more snowless California.**

**B**ear in mind, it took a while for this to become a reality. You can probably imagine all the forms. Each of us had to go visit the embassy to finalize the process. There was plenty of time spent waiting. Summer approached quickly, though, with a mind lost in statistics. I barely had time to put down my pen before finding myself on a flight towards San Francisco International Airport.

The first couple of days were honestly nerve-racking. I had never done anything like this before in my life. There was a lot of work to be done when I arrived. I needed to find housing, get a bank account, and a mobile carrier while simultaneously learning the ins and outs of Amazon Web Services. At the time, even the slightly different crosswalks felt like enormous obstacles.

The first workday was no different, but a turning point. I finally got to meet the other interns, future colleagues, and see the breathtaking view of the office. I could feel all of my doubts and fears morph into excitement. I didn't know it at the time; some of these individuals would go on to become some of my best friends. I have them to thank for many of my fondest memories here. Agari was founded



around an email authentication protocol. It was designed by a group of technology companies to curb the increasing problem of domain spoofing. Adoption was slow at first because it needed the singular focus of a company. That was ten years ago, and the company has since launched other products in the email space. It has maintained a culture of openness, respect, and talent despite its growth.

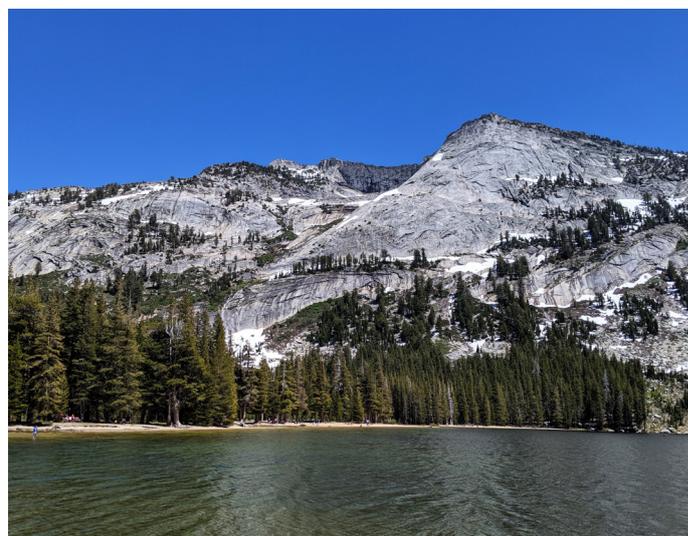
The headquarters has been through two iterations before arriving at the current one. The first office was shared with the venture capital firm that kept the company alive in its infancy. When the number of employees overtook the firm's, they realized that it was time to get out. The second office was located in San Mateo, halfway between San Francisco and Palo Alto, and where I ended up settling. There is another office in Raleigh, North Carolina, but a large number of colleagues work exclusively remotely. Since traffic is notoriously bad, it is not unusual for people to work from home a day a week.

My work has been mostly dealing with software testing, cost savings, and cloud infrastructure. I start my day with a train ride to one of the neighboring stations. From there, the building

operates a shuttle service that goes the last stretch. I always eat breakfast in the office while checking emails and doing some code reviews. I do some work and participate in the daily scrum before the time reaches lunch. One of the days is the food truck day. Another day, we get catered lunch in the office. Sometimes there's an all-hands meeting or a tech talk held by one of the engineers. I keep working until one of my running buddies suggests that it is time for a run along the bay. If the weather allows it, we drive to a nearby brewery or end with a game night

after the workday is over. However, my personal favorite is Friday. That is when we drive to one of the parks to play ultimate frisbee.

There are lots to do outside of work too. It doesn't really make sense to take weekends off when there is so much going on. Before I arrived in the country, my to-be boss invited me to celebrate my first Fourth of July in one of the many national parks. The nature was obviously stunning, but bathing in hot springs while watching the Milky Way takes the cake. On the way back, we passed by Yosemite Valley. You cannot fully appreciate what Alex Honnold and Tommy Caldwell did until you stand there yourself.





A couple of weeks later, the engineering interns and I drove down towards Monterey. The route there is known for its many scenic sights. We passed by Point Lobos, Bixby Creek Bridge, Big Sur, and Carmel-by-the-Sea. After having some fresh seafood, we went to bed early so we could catch a glimpse of some humpback whales in the morning.

There are countless other road trips I could mention. Santa Cruz, Los Angeles, and Berkeley. I could keep raving about nature, the city, and the food, but the real gems of this place are the people. This place really is a magnet for some of the best and brightest of this planet. One of my friends took me for lunch at the Googleplex. Another friend took me for a spin in the staff-exclusive self-driving cars developed by Waymo. I have

been to brunches with early employees of Twitch. I have been in wine bars gossiping about the management of Neuralink.

I have been discussing the statistics of discrimination with data scientists from Airbnb.

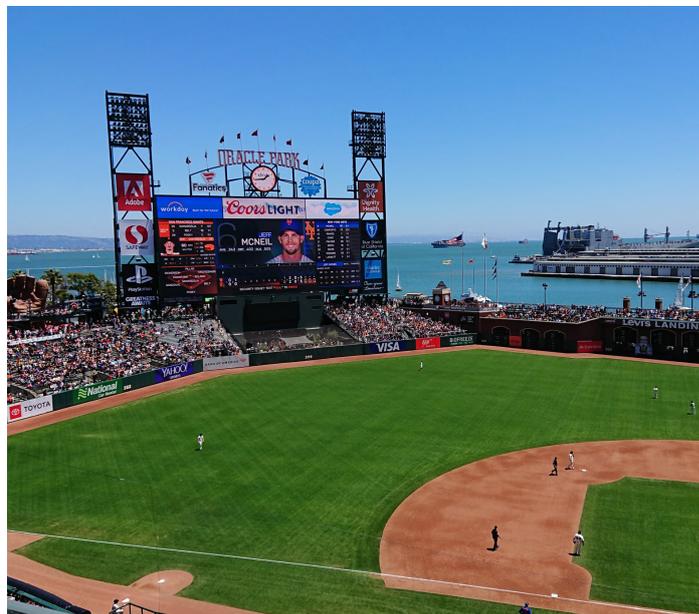
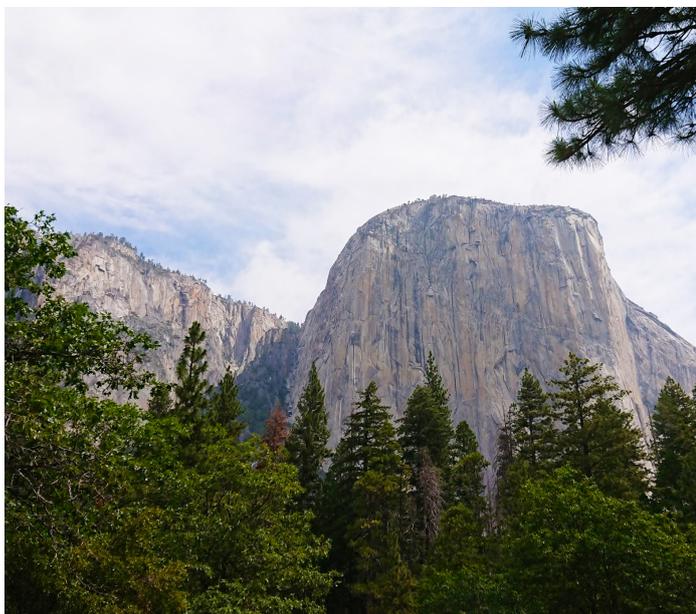
I don't think I could ever express what this journey has meant to me. You would need to read books about entrepreneurial icons and watch documentaries about technological pioneers. You would need to go buy Klein bottles, from Clifford Stoll, over in Oakland. You would need to see what I have seen and meet the people I met.

Words alone can not describe how something as trivial as having one's first corn dog can be such a life-changing event. I got an excellent start to a career in software, made friends, and found inspiration to last

a lifetime. Some things are better left experienced. Seeing something in a movie is not quite like being there, and being there is quite much more like being in one. What is the worst thing that could happen if you apply?



<b>Name</b>	Johan Gustafsson
<b>Education</b>	Engineering Mathematics
<b>Internship</b>	Agari Data, Inc.
<b>Location</b>	San Mateo, California
<b>Duration</b>	June - June



# Thank You!

**On behalf of the board and members of CETAC 2019, we would like to thank all our corporate partners and other contributors that made this project a reality.**

## Corporate partners

Institutet för rymdfysik IRF  
Masterprogrammet Wireless, Photonics and  
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The American-Scandinavian Foundation  
  
Stefan Bengtsson,  
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