



STINT Teaching Sabbatical 2018  
School of Computer Science and Engineering  
Nanyang Technological University  
Singapore

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## Introduction

During fall semester of 2018, I had the honor and opportunity to spend almost five months at the School of Computer Science and Engineering (SCSE), Nanyang Technological University (NTU), in Singapore under the STINT Teaching Sabbatical program. This is the final report from that stay.

First, I would like, together with my family, to show my gratitude to STINT, Nanyang Technological University, the School of Computer Science and Engineering and Umeå University for giving us the opportunity to a full semester in Singapore. This experience has been amazing, both professionally and personally. It has given me the opportunity to expand my view on teaching, learning environments and students' learning, but also been an opportunity for the whole family to experience a new country, city and cultures. There are, furthermore, so many individuals that deserve my gratitude for both making this teaching sabbati-

cal possible but also for enhancing the experience. You all know who you are, and I will always be grateful.

Being part of the STINT Teaching Sabbatical program gives the fellows an opportunity to stay at one of STINT's partner universities during one semester. This is one of few programs in Sweden that is focused on teacher exchange and not on research. It also provides means for the fellow to bring the family on the sabbatical. In my case I brought my partner, Sofia, and our daughter, Lovisa during the trip.

Nanyang Technological University (NTU) is one of two major universities in Singapore, the other being National Univer-

During the full length of the stay I have written down my thoughts on planning, teaching and staying in Singapore during my STINT Teaching Sabbatical in a blog:

[www.mejtoft.se/thomas/stint2018/](http://www.mejtoft.se/thomas/stint2018/)





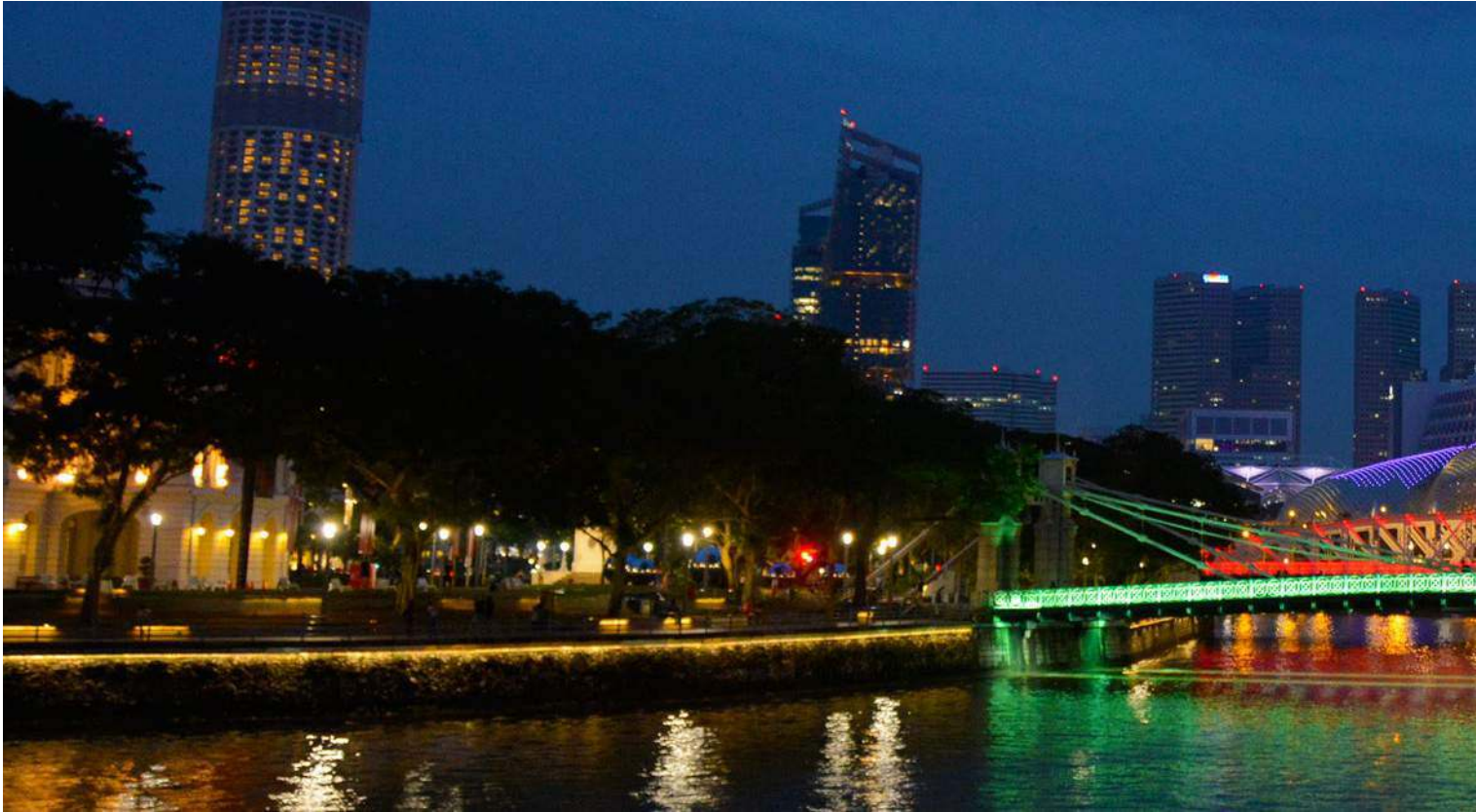
Mid Autumn Festival in Gardens by the Bay

sity of Singapore (NUS). It is a fairly new university, founded in 1991, and has gradually become one of the best research and educational institutions in Asia and in the world. In the beginning of 2018, NTU had approximately 32'000 students, out of which three quarters were undergraduate students. In total there are just over 8000 staff and almost 70% of these are international. NTU is organized into six different colleges - College of Humanities, Arts & Social Sciences, College of Science, College of Engineering, College of Business, Lee Kong Chian School of Medicine, and College of Processional and Continuous Education. Each of these colleges are then divided into schools. NTU also has four autonomous Institutions - National Institute of Education (NIE), S. Rajaratnam School of International Studies, Earth Observatory of Singapore and Singapore Centre on Environmental Life Sciences Engineering.

I was hosted by the School of Computer Science and Engineering (SCSE), which is part of the College of Engineering. SCSE has about 100 faculty staff plus technical staff, administration etc. They also have around 10-20 visiting faculty. The school offers several undergraduate education programs - Bachelor of Engineering (Computer Engineering), Bachelor of Engineering (Computer Science), Bach-

elor of Science in Data Science and Artificial Intelligence. Furthermore, graduate education in forms of Master of Science in Information System and a PhD program. The double degree programs have become increasingly popular throughout the world in recent years and SCSE offers Double Degree in Business & Computer Engineering or Computer Science, Economics & Computer Engineering or Computer Science and Computer Engineering/Computer Science with a Second Major in Business.

This report is based on blog posts done during my time in Singapore. However, the blog contains even more thoughts and reflections on issues and things that happened during the Teaching Sabbatical, please read through the blog if you have time.



## Preparation and Planning

In late December, I got the notice that I had been chosen as a STINT Teaching Sabbatical Fellow at Nanyang Technological University and that became the starting point of a year-long journey involving the whole family. To prepare a family (where the youngest member was not yet born) for a temporary move to Singapore, a lot of planning is necessary. The six-month planning is also important to be able to take as much advantage of the opportunity to work in a new teaching as possible.

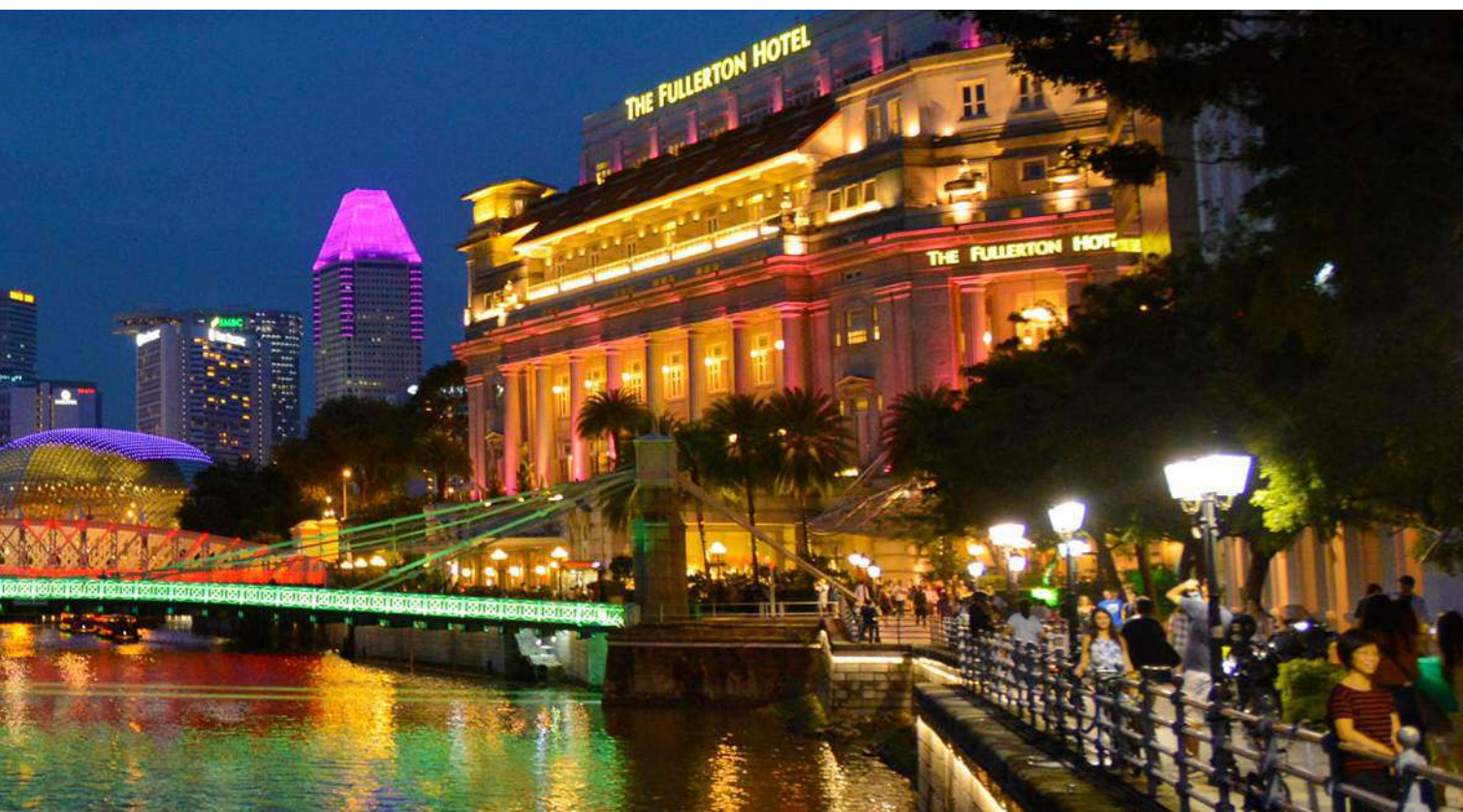
In beginning of January I contacted my faculty and administrative contacts at NTU to sort out how to begin the Visa procedure, get some support regarding the housing situation and to set the dates for my planning trip during spring. During the contact with my faculty contacts at NTU via email, it became clear that the semester in Singapore starts in August. Hence, I needed to be in place at approximately mid-August to begin my teaching. However, the semester ends (in contrast to Sweden) in the mid-December. During the first couple of weeks everything was spinning fast and after discussions with my contacts at NTU, it was decided that mid-March, after recess week, would be a great time for visiting the university and discuss my details regarding teaching, VISA and housing in person.

Most of the courses at NTU already are assigned by the time I got in touch with them regarding the sabbatical. This meaning that the courses that had the best fit with what I teach in Sweden and where I could benefit the most from teaching at NTU already had been assigned. Since the planning process at most universities are far ahead, it would have been even better if I had the opportunity to contact the host university even earlier. This, however, was

not a major problem or set back, but a nice challenge to meet the students and use my teaching skills. Consequently, they had some new courses that were going to be developed and wanted me to give some of the lectures on one of the courses. Furthermore, I was going to assist in tutorials and workshops in HCI (Human-Computer Interaction) during the fall semester.

The first part of my recce trip in March 2018, I choose to stay on the NTU Campus. This was a great opportunity to get a first glimpse of how I would be to live on campus during fall (ok, so they do not really have seasons in Singapore, so let us just call it the first semester). During these days, I had the opportunity to meet with some of my future colleagues at the School of Computer Science and Engineering, the International Office and Faculty Housing. The School of Computer Science and Engineering (SCSE) is one out of many schools at NTU. It is located in the N4 block of the huge North Spine complex in the middle of the NTU Campus. This school was my host during my STINT Teaching Sabbatical and I had my office there. According to the 2018 US News Education Ranking, NTU's Computer Science, as subject, is ranked no. 3 in the World.





Cavenagh Bridge and Singapore River

The recce trip was essential for getting the best possible value out of the teaching sabbatical. Without the opportunity to meet future colleagues, staff and other important contacts, the start-up time had been far longer in August.

## Visa application

To work or stay for a longer period of time in Singapore you, of course, need a visa. The visa application to work in Singapore is fairly straight forward (if you have been in the "getting visa business" before) and having NTU as a sponsor made the process really easy. However, since I was going to bring my family, I needed dependent visas for them. In my first contacts with NTU we started to discuss the visa and the problem that me and my partner are not married but, what we in Sweden call, a "sambo", meaning that we live together more, or less, as a married couple. This is the closest thing that we in Sweden have to what is usually known as a common-law marriage. Realizing that only my (at the time unborn) daughter could get a Dependent Visa to Singapore (since the baby is, even under the laws of Singapore, mine), but my partner could not since we were not legally married. Nevertheless, there is a visa for common-law supposes called "long term visit pass", which we were aiming for. This being practically the same as a dependent visa but could be applied for by a broader audience.

**First tip of the day:** Do not procrastinate! Start with the Visa process as soon as possible, it tends to take much longer than anticipated especially when having a full-time job and a family to take care of at the same time. Bring everything signed and ready when visiting Singapore, it is so much easier to go through on site than over distance.

After we found this visa, we also realized the next problem – in Sweden we do not have a certificate for a common-law marriage or a "sambo". This being, one of the alternatives for the document we could provide was a notarized self-written statement about our situation. I contacted the Swedish Embassy in Singapore for assistance in the matter, since I thought they had some experience. After a couple of days I got an email saying that they could help us with a letter if we could provide an extract of the population register saying that we

live at the same address (and had been doing so for a longer period of time) and copies of our passports. The letter had to be collected at the Swedish Embassy in Singapore (+ an administrative fee of 30 SGD) and was done during the recce trip to Singapore in March.

The Swedish Embassy in Singapore is on a parallel street to Orchard Road and is pretty easy to find.

There were three different Visa applications, using three different application forms, to be submitted:

**For me:** Employment Pass (for sponsorship cases)

**For my partner:** Long Term Visit Pass

**For the baby:** Dependent's Pass

When the forms were completed and signed, most of the Visa process was done by NTU and took about two months to complete before the Visas were issued. The only thing



Nanyang Heights

that was bit of a problem by the end of the day was that we needed medical examinations including chest x-ray to prove we do not carry active TB. This was not super easy task to accomplish in Sweden since most of our health care is tax funded and it is not easy to get (more advanced) medical examination for money. However, asking around among friends we found a clinic that shot x-ray. This is, however, very random if this type of medical examination is needed or not, I guess, we were unlucky in that sense.

When applying for a Visa to Singapore, don't forget:

- Copies of passports
- Recent passport photos (taking your own semi-professional photos work just fine)
- Certificates that prove that you are married, in a common law marriage (see above to solve this problem if you're Swedish), that you are the father/mother/legal guardian of a child etc. most of these can be printed (or ordered) from the website of the Swedish Tax Agency.

It took some time, but it was a great relief that all family members had in-principle approved Visas for Singapore before leaving Sweden.

When arriving in Singapore, we needed to take the documents of our in-principle approved visas and trade them for

residence cards. This needed to be done at the Employment Pass Services Centre (EPSC) at the Ministry of Manpower down by Clarke Quay. It was fairly straight forward to book a meeting for the whole family down at the service center. We passed on all the necessary documents, paid a (fairly hefty) fee, took some photos and signed some papers. Even though it took a fair bit of time, the staff was really friendly and nice and the air condition was cold and cozy.

**Second tip of the day:** You will need a local mobile number to have the cards delivered since they will (or rather must) send you a text the day before the delivery (that is in person and needs to be signed). Without a local mobile number they cannot finalize the card process and you will (probably) need to go back downtown to the EPSC again at a later date. Hence, if you do not have a local Singaporean mobile number – get one before going to the EPSC. When buying a sim card you will need to have your passport present at point of sales to register the sim card. But otherwise there is no problem to buy a local sim as a foreigner. (Note: Some cards are mostly for tourists since they are less long-term than the ordinary ones, avoid these). We got \$15 pre-paid card from StarHub, got some initial data and worked like a charm!

The delivery was very smooth, you just had to give the name(s) of the ones that was authorized to sign for the cards and they came straight to your front door. An email and text was sent the day before the delivery with a five-hour delivery window.

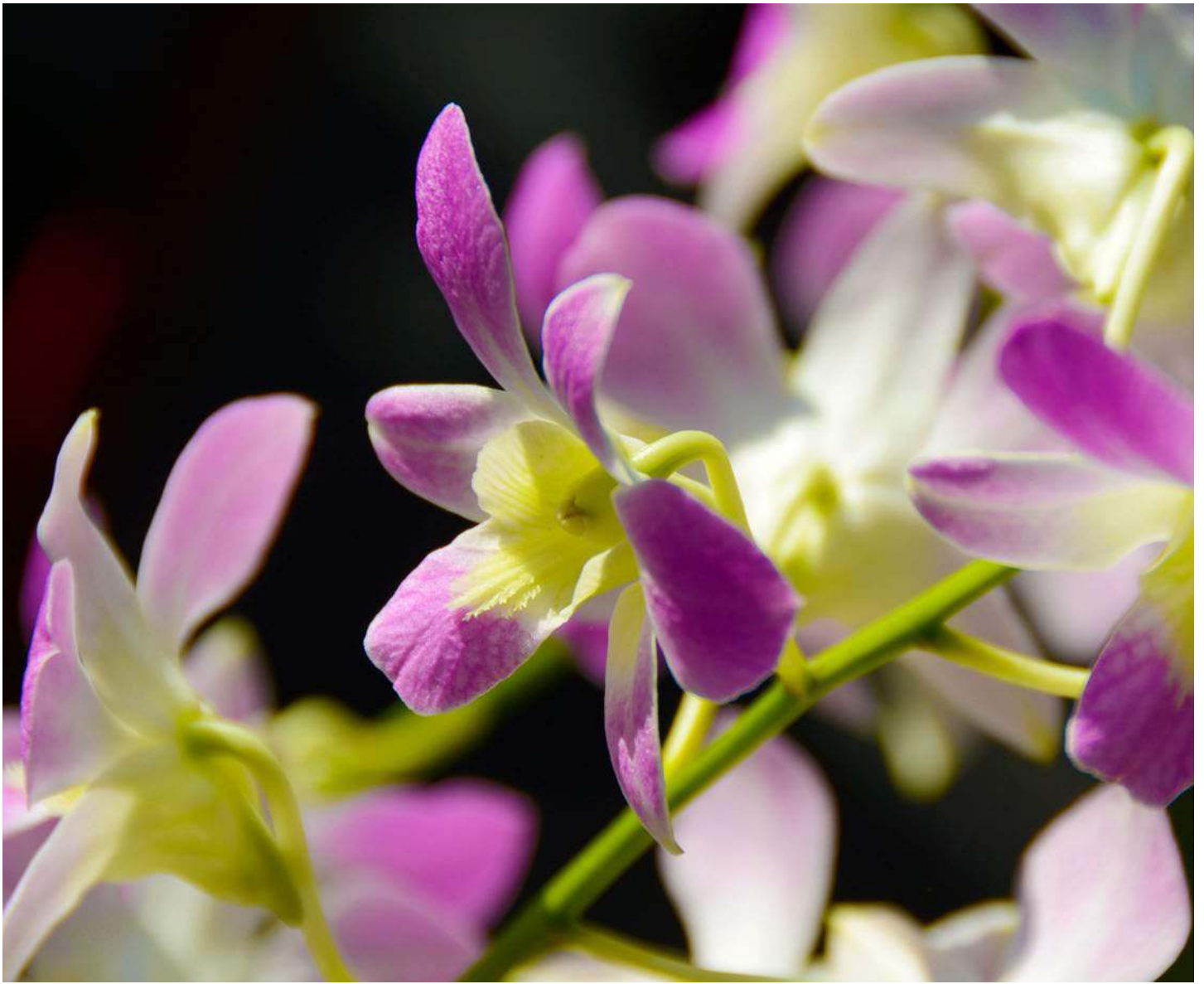
## Faculty Housing

Going to Singapore with an infant, one thing that needed to be sorted was the housing situation. Since both my partner and me had been to Singapore before, we decided on staying either closer to the city centre or closer to the NTU Campus. After some discussions it was clear that we would have more quality time together as a family if we stayed on (or close to) the NTU Campus.

NTU has a fair amount of faculty housing on campus and, according to my students that have studied at NTU during their exchange semester, both the faculty housing and the campus is nice, quiet and kids friendly. They thought that it was a little too quiet from time to time at the campus, but, in our case, I thought that it would fit a family with an infant perfectly! I got in contact with NTU as soon as possible to try to arrange the housing situation, and got an answer from my administrative contact at NTU that it would be possible to apply for faculty housing. However, formally Faculty Housing does only consider you for housing one month before arriving. Although my contact at the campus stated that they had vacancies at the moment and was not too worried about the housing situation. We decided on me looking at the housing when I was coming on my recce trip to Singapore in March.

The housing for faculty staff on NTU campus is great, they have both non-furnished (for longer stays) and furnished (for shorter stays) apartments. Due to our short stay we wanted a furnished apartment with the option of elevator to





Singapore Botanical Garden

be able to bring the pram up to the apartment. After reviewing a couple of options, we decided that the best option for us would be the area called Nanyang Heights, close to the Executive Center, the training facilities, the bus stop and many of those nice canteens on campus.

When arriving in Singapore, we picked up our keys at the desk at the Nanyang Executive Center and moved into our apartment at Nanyang Heights straight away. It was a 60-ish sqm newly renovated apartment with a small kitchen, a master bedroom of nice size (meaning that we could easily fit a cot beside our bed and still have a desk in the room) and a spare room of decent size, that was now used as nursery. The apartment was equipped with a selection of random items in the kitchen, a TV, and all furniture we needed for living here short-term.

There were just some minor problems when moving in, a broken tap in the kitchen that sprayed water all over the wall when used and some termites living in the wooden frame of the bed in our spare bedroom that we found after a couple of weeks. However, all of this just turned out all right after some time...

The outdoors environment was really family friendly and calm. There were two playgrounds just in this area and it

is clean, and then I mean clean. They clean the playgrounds at least twice a day using pressure washer and sweep the yard in the morning. I wish I did this back at our house and when was a playground cleaned back home, ever? At least two thumbs up to Faculty Housing, both for the facilities, the service and for the outdoor environment!

The NTU Campus is located in the western part of Singapore and the time it takes to go into Singapore CBD is fairly long if you are doing the commute every day (it takes approximately an hour and twenty minutes door to door). You need to catch a bus to Boon Lay Interchange and swap to the MRT to go downtown. However, if shopping is the goal, there are several (rather huge) shopping centers close to the campus, Jurong Point at Boon Lay being the closest, about 10 minutes with bus way from campus. At Jurong East, three MRT stations towards the CBD there are several shopping centers, catering all the stuff you needs (and more).

After staying at NTU for almost five months, we are glad to say that this was absolutely the very best choice for us living here in Singapore. As an extra bonus, the other two Swedish families staying at NTU as STINT Fellows were also living at Nanyang Heights.



The Arc

## Teaching and Learning

Even though teaching is something that is in focus no matter whether in Singapore or Sweden, having the opportunity to think about and reflect over teaching experiences and students' learning is something that is scares back home. During the sabbatical, I focused on being part of education and meeting students in their studies.

The main duties have, of course, been teaching and during the teaching sabbatical I have tried to be involved in different teaching activities at SCSE. The academic year can be a little bit different at different universities in Singapore. The 13-week semester at NTU is divided into two parts, separated by a recess week in beginning of October. Starting January is the second semester of the academic year with the same structure. The academic year ends with Special Term 1 and Special Term 2 of 5 teaching weeks each. This compared to the Swedish two 20-week semester and additional summer units.

In principle there have been two courses that I have had my involvement in – *Physics for Computing* and *Human Computer Interaction*. Furthermore, there have been lectures, tutorials, laboratory work and eLearning that have been in focus. Besides my own teaching, I have also spent time observing other teachers to get a better understanding for their way of lecturing and working with students.

An important part of NTUs vision, for some time now, is striving towards a majority of their courses being flipped classroom. This meaning having most of their material online and using the student-professor time for actually working with the material instead of delivering it. I believe that

flipped classroom is great. However, I do not believe that the traditional lecture is a waste of time, both rather the opposite if it is turned into an interactive session that increase the students intrinsic motivation. At NTU the interaction are during the tutorial sessions, but more on that later. Even if the course is not flipped, there are eLearning weeks on many of the campus-based courses at NTU.

## Physics for Computing

One of my main tasks that we decided on before coming to Singapore was that I would take part of planning and executing a new course called *Physics for Computing*. This is a course that had been in planning for years, but did not become reality until first semester 2018. In other words, I have been part of the planning and creation of part of this course. This is a course for the first year students on the BSc program in Computer Science and Computer Engineering. The idea is that the students in computer science need basic knowledge within physics for their future profession.

My role was to teach the lectures on classical mechanics in relation to the future profession within IT and take part of the general laboratory work. Classical mechanics is a



really important area for CS students due to its use in, not only, the traditional applications, such as games and simulations, but also in constructing Graphical User Interfaces (GUI). In general having the physics right is really important for most visible application of CS/IT nowadays, since most of our use of IT is clearly integrated into (what some people would call) real life. The students on the course were fresh at the university with a limited background in physics, which made the pedagogical grip on the lectures important for the students' learning. After some discussion with the other professors on the course, we landed in the most fundamental understanding of force, motion, mass, momentum etc. I had a lecture series in the TCT Lecture Theatre at NTU that I called: "An introduction to classical mechanics". We went through the basics in mechanics and calculated how to make a perfect Angry Birds shot, how to throw things perfectly into the infinity pool of Marina Bay Sands and played a little game I like to call "Which one is most

likely to break?". These lectures were later reorganized and recorded to be reused next year on the course.

I was also responsible for constructing and putting together the theme for the eLearning week in the middle of the semester. This year the eLearning was focused around prototyping, which is an important area to introduce early in education programs for engineers. I visited the Center for IT Services and the Interactive Recording Studio to take my video lectures for eLearning. The six video lectures ended up to become just above 45 minutes in total.

## Human Computer Interaction

The other course have been Human Computer Interaction, this is a basic course in Interaction Design and Human Computer Interaction (HCI) that is thought on the second year of the BSc program in Computer Science and Computer Engineering. On this course I was responsible for four of the tutorial groups. This course is very similar to



The cockpit at TCT Lecture Theatre

the courses that I currently have at Umeå University and this was a great opportunity to experience delivering similar material in a very different setting and with different resources.

## Lecturing

Designing educational experiences is something that I really enjoy. This goes for everything from workshops and tutorials to Lecturing. Here at NTU, I have been teaching larger groups than I am used to from back home in Sweden. My largest group in Sweden is during the first unit for the new MSc in Interaction Technology and Design students that arrive every fall. We admit around 50-ish students and that is what I have to work with. At NTU over 400 students are enrolled on the courses on their engineering programs. That is a big difference and the methods for keeping interactions with students during lectures do not work. This is why tutorials become very important for the student-professor interaction.

I had my lectures in Tan Chin Tuan Lecture Theatre (or just TCT-LT for short), which is regarded as "small" and cozy with its seating capacity of 306. Some of the other lecture theatres can take up to 700 students. It is a very nice lecture theatre and I must say that I really enjoyed having my lectures there. It had an amphitheatre kind of style, which made the physical distance to the students decrease, and the interaction to increase (at least a little bit). The lecture theatres are all equipped with everything that you might possible need, from computer to document camera. Everything is controlled from a rather impressive cockpit.

Compared to Sweden the lectures are shorter. In Sweden, we usually have two-hour blocks for each lecture with 15 min break in the middle of the session. Even though I might be a master of long lectures, I really enjoy the shorter format. It makes you focused, prepared and deliver the material in a high quality fashion. However, the lower level of interaction that follows larger groups makes the lecture be more of "deliver the material in the book" sort of lectures. This is not what I want with my lecturing. But this is prob-





Lecture in TCT Lecture Theatre

ably why many students do not show up for lectures, but watch them online later on.

At NTU almost all lectures are automatically (as from the teachers side) recorded live and uploaded onto the educational platform (in their case NTULearn, which is an implementation of Blackboard). This makes it unnecessary for the students to attend the lectures if they do not want to since recordings of all lectures are available online just shortly after the lecture has ended. On the positive notice all students can benefit from the material, even if you are sick or unable to attend class. Even though this greatly supports the idea of flipped classroom, this is also in some sense unfortunate. It decreases the possibility of interaction between the lecturer and the students during the lectures. In other words having prerecorded structured lectures might even be better than the live recordings if (at an extreme) no students attend the lectures at all.

From my point of view, as a lecturer, the technical aspect of live lecture recording is really simple. I just start talking on time and the lectures are recorded. I do, however, need to use a microphone while lecturing and have it turned on. That is pretty much it. Coming into the lecture theater for the first time, I had no idea how this worked and I just asked the nice professor that had his lecture before mine. He told me: "It works all automatically, just have the mic turned on and you will be fine. And if you forget the mic, you will hear this voice in the speakers saying – 'Turn on the microphone, please'. Don't worry, they will just appear on NTULearn...". And I did not have to worry since everything just worked automatically.

However, of course automatically is not really automatically. The lecture recording is done from within a Centralized Command Center for Lecture Recording (CCCLR) at NTU's Teaching, Learning and Pedagogy Division (TLPD).

Automatically recorded lecture of one of my lectures in classical mechanics on the course Physics for Computing





The lectures are recorded when they start and the recording ends after the lecture ends. The recordings are done by paid student assistants. The only thing you need to do as a lecturer is to remember to turn on and use the microphone. Today, the live lecture recording service is available in all common lecture theaters at NTU and selected school-based lecture theaters and seminar rooms. Lecture recording have been around since 2003 in different ways at NTU and is regarded as a success factor. In 2010 NTU centralized the lecture recording instead of having around 40 on-site recordings at the same time. The recorded lectures are not (by default) reused for next year's course and are kept in the archives for approximately two years.

Even though this is an amazing service, I believe that there are some pros and cons regarding live lecture recording:

- + Students are able to benefit from the material even if unable to attend.
- + It supports the idea of flipped classroom (event though not totally).

- + Easy for the lecturer, no need for any technical knowledge or setup.
- Students are less interactive.
- Students do not attend as much as if lectures are not recorded.
- Students are sitting in the back of the lecture theatre to avoid being seen on recording.
- Students avoid asking questions to avoid being heard on recording.

## Tutorial sessions

When having really large groups in the lecture theaters, there is a need for teacher-students contact. This is what the tutorials are for. During my time at NTU I had tutorials on the course Human Computer Interaction several times a week. Each group has about one tutorial every other week. The tutorials are in the so-called Tutorial Rooms (TR), or Learning Spaces, spread throughout campus. Since 2010 most tutorial rooms have gradually been converted into cre-



Tutorial Room in The Arc

ative learning spaces, and that is what I have been using during the tutorials. These rooms are amazing. Today approximately 280 rooms have been converted and plans are to convert even more, especially the larger lecture theatres. Properly used I believe that they can create true learning experiences for the students and positive challenges for the teachers.

Even though the tutorial rooms are spread out over campus, a lot of them are located in the two main Learning Hubs - Learning Hub South (a.k.a. The Hive) and Learning Hub North (a.k.a. The Arc) with over 50 tutorial rooms each. These provide 24/7 access for the students and a creative environment for everyone involved. Any time you walk past one of these building, there are always students studying, preparing and just relaxing. I had my tutorials in

both The Arc and in the N4 wing of North Spine. All my groups were between 25-30 students and the rooms were design for 6 groups with 6 students in very group.

The rooms have a similar structure with a number of round tables that has access to their own screen and are sitting around a round table. The tutorial rooms usually have a projector for the teacher to use (or any other screen can be used also) and whiteboards throughout the rooms. Some rooms even have whiteboards throughout the whole room. A neat feature, I have become a huge fan of. Like in the lecture theatres, everything is controlled using a control panel from the cockpit :-). You can either use your own laptop or you can use the desktop computer provided. Document cameras are also available. The different groups can connect to their screen and it is the teacher that can control



what information is displayed on which computer. This is a fairly intuitive interface that is easy to use and efficient.

My thought about these tutorial rooms is that they are truly great. However to take advantage of the high-end equipment and the structure of the room, the tutorial questions should also be designed accordingly, that is to increase interaction between students. Of course having smaller groups to start with and not having to split the class into smaller ones is a luxury that we have from time to time back at the Swedish Universities. I would gladly move teaching, workshops, tutorials, my office, yes, everything into these type of rooms back in Sweden.

## Laboratory work

The entire laboratory work on the course Physics for Computing were conducted in the Hardware Physics Laboratory on the first floor of the N4 wing at North Spine. Since I spent some serious time in this lab it is worth mentioning.

This lab is huge (compared to similar labs at Umeå University) and is based on workplaces where all students have some fixed equipment at each station and the lab specific equipment is placed at each station for the individual labs. The lab is more or less two parts with 33+32 workstations. Half of these workstations are booked by thesis students and long-term projects, while the other half is used for coursework, mostly on undergraduate courses. This is why the lab groups on the course are between 25-30 students.

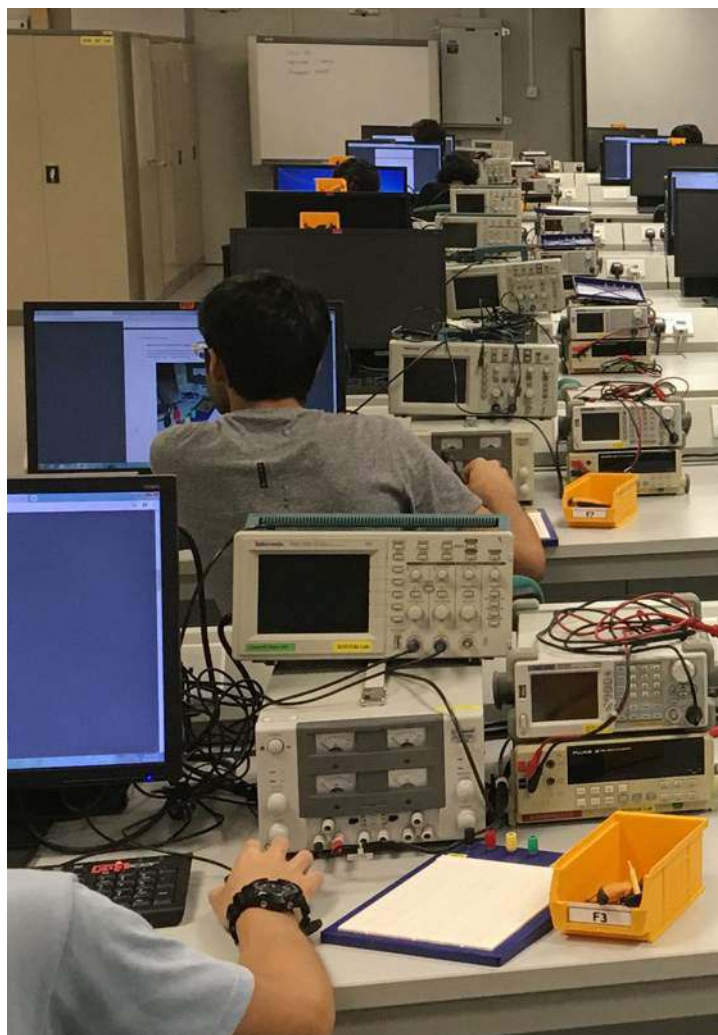
Now to the best part. The lab has a reception desk and technical staff that helps out during the laboratory work and are in charge of all the equipment and setting up the individual lab sessions. Behind the reception all technical staff have their desks, equipment and preparation space.

Each lab session on Physics for Computing is two hours. During this time the students set up the equipment, solve the problems, record the answers and get examined. Fast paced, but nice that the students actually go through the lab in a controlled environment and it is possible to know, as a teacher, that each student have solved the problems. Very organized, but also very efficient if 400+ students are passing through each lab on a course. The examination is either by showing the results, by handing in a short form with questions or a combination of these. Each lab was rewarded with 5 marks. During this time one of the technical staff is on site, helping out with the lab and any technical issues that can (and will) occur.

## Recording eLearning

I had the privilege to be in charge of the content for the eLearning week on one of the courses that I was teaching at NTU. This meaning that the content had to be recorded and put up online as eLearning material. This was a huge opportunity to learn about the recording facilities at NTU.

The Interactive Recording Studios (IReS), there are currently 10 of them for supported recording, are built to support teachers in the development of video-based learning content. This is in line with NTU's vision on going towards a flipped classroom approach as much as possible. The recording can be done either by making appointment with the studio staff, that help you record your lectures or by booking a DIY studio for recording. 6 studios are located



Students working in Hardware Projects Lab

at the Centre for IT Services (CITS) and the rest are located throughout Campus. The 6 studios at CITS are built for different purposes, (1) Picture-in-Picture using a PowerPoint presentation, with the focus on the presentation, (2) Full-screen switching, presenting standing in front of a large monitor, (3) Simple Chroma, superimposing into virtual environment using green screen, (4) See through light board, and (5) just recording audio. Each studio is located in a fairly large room and is sound proof. Similar equipment is available for self-recording.

As a help for creating nice presentations there are Learning Designers (LDs) at the division Learning Tech and Digital Media of the Centre for IT Services available for your help to go through presentations and help with part of the creation. I booked a LD to go through my presentations before recording. During this session they also went through all material used in the prevention to see if there are any copyright violations or other problems.

To prepare the lectures, I split my approximately two-hour lecture on prototyping into smaller chunks that can either be seen as a series of videos on prototyping or standalone videos on different areas.

After going through all options for recording, I went for screen recording with audio for this first recording session since I wanted the student to focus on the content on the slides and me, as a lecturer, was not as important. In the studio, I was using a large Wacom tablet that allowed an-





Recording session at the Interactive Recording Studio

notations on the PowerPoint presentation. Afterwards, I must say this was the right choice for me in this case. Having a technician working alongside you when recording is luxury. They had nice tricks for highlight that should be cut out during the editing stage. This made the recording easy and quite straight forward. All six short presentations (46 min of final material) recorded in 90 minutes!

The end result was six videos - Product development (length: 8:44), Target audience (length: 6:46), Usability (length: 4:54), How to use prototypes (length: 3:50), Different types of prototypes (length: 10:44) and User tests (length: 11:26).

At the end of the stay at NTU, I went back to IReS to record short video lectures introducing Classical Mechanics. These videos were, in other words, just recordings of the LT lectures that had in the beginning of the course Physics

for Computing. I had to redo the lectures a little bit to fit the shorter video format instead of the longer lecture format. The result was five videos - Introduction, Newton's Laws of Motion, Kinematics, Momentum and Impulse, and Energy. The idea is that these recordings can be part of the eLearning material for next year's and that my colleagues at NTU do not need to lecture my material in the future. Everything went smoothly and after my previous recordings, I do believe that I felt a little bit more comfortable this time sitting in the recording studio.

Recording lectures in a professional studio is an amazing experience, and if you ever have the chance, do it! The staff has been more than helpful and it has been so much fun to both get the experience of being in front of the camera as well as seeing all the work behind.

Technical Staff helping out during the recording sessions





## Other Activities

Singapore is a country in one big city in an amazing garden, and there is a lot going on at the time. I wish I could spend all my free time just visiting all the Conventions, Conferences and Fairs that are constantly popping up at Conventions centers and Expos throughout Singapore.

During this time my main focus has been teaching and learning environments. However, I have also started some discussions about small joint research projects, which we hope will be formed in the near future.

It is not hard to fill the days at NTU with interesting stuff to do and that what I tried to do. Together with the other two STINT Fellows, Marcia and Lena, I went to pedagogical courses at the Teaching, Learning and Pedagogy Department (TLPD), visited the Lee Wee Nam Library and went of a field trip to National University of Singapore (NUS). During my time at NTU, I had the privilege to take part of two one-day courses *Assessment: Constructing Effective Multiple Choice Questions* and *Creating Video Based Lesson for*

*Flip Classroom*. This was a nice opportunity to meet teachers from other disciplines and discuss students' learning in different settings.

During the visit to NUS we had lunch with the management from the Centre for Development of Teaching & Learning (CDTL) discussing their work on development of teaching skills and the idea of teaching sabbatical, a meeting with Duke-NUS Medical School discussing their efforts in team-based learning, a campus tour with some very nice students and a meeting with School of Continuing and Lifelong Education (SCALE) discussing their Lifelong Learning Initiatives for both NUS alumni and the public.





Singapore Flyer, ArtScience Museum and Marina Bay Sands

When living in a country that easily can be crossed in two hours, it is very convenient to visit and take advantage of everything that is happening in the city. However, due to the location of Sands Expo & Convention Centre in the middle of the city, this was the venue that I visited the most during my time in Singapore. Some of the events I visited were the following:

**NTU Internship Fair.** A one-day fair with local and international companies looking for contact with students for recruiting interns.

**NTU ICT Fair.** A one-day fair with many national and international ICT firms seeking contact with students at NTU. This was a great opportunity to get in contact with the industry in Singapore.

**Singapore Week of Innovation & TeCHnology (SWITCH).** A very nice event with speakers and exhibition of innovative products and service from (mostly) small startups from Singapore and around.

**TECHInnovation Singapore 2018.** This event is based upon the ideas of open innovation to bring international

and Singapore technology providers and seekers together to explore both technology and business collaboration opportunities.

**Cloud Expo Asia 2018 and Smart IoT Singapore 2018.** This was a huge event with speakers and exhibitions showing new (and old) applications within cloud computing and IoT.

**TEL FEST 2018.** Small exhibition at NTU on the future of Technological Enhanced Learning.

Out of all of the events that I visited, I must say that the best one was probably **TEDxNTU**. This is the biggest TEDx in Singapore and hosted in the 1689 seat strong Nanyang Auditorium in the middle of the NTU Main Complex. It is a free event for all students, staff and even for the public. Even though this is a huge theatre, the event was sold out. I must say that I was lucky to get a ticket at the event, since I booked fairly late.





Victoria Harbour, Hong Kong

The key takeaways from TEDxNTU were that...

- ... we will be able to live, as humans, in an Industry 4.0 society.
- ... everyone has the right to education, no matter if you are running away from something or not.
- ... even though cancer is a bitch, we're starting to understand it.
- ... everyone deserves a job, no matter your disabilities.
- ... all the bad reasons for food waste are possible to overcome.
- ... that we should change our field of view.
- ... the society is a complex organism, where everyone has an important place.
- ... true love does not happen online.

Furthermore, In December 2018, I was invited to Edith Cowan University (ECU) in Perth, Australia, to give a speech on my experiences of being on a teaching sabbatical.

## STINT Seminar in Hong Kong

On October 25, 2018, we had the STINT Fellows Mid-term Workshop with all the nine current STINT Fellows located in Asia and the STINT management from Sweden. The sem-

inar had been in Singapore for the last couple of years. However, this year we had the great opportunity to travel to Hong Kong and meet up at the Chinese University of Hong Kong (CUHK).

The day had a simple, but efficient, program, with presentations from all STINT Fellows and their experiences so far of being in the wild. We discussed the difference between Singapore, Hong Kong and Tokyo, both in term of teaching, students, group size and a lot of other aspects.

Part of the day was dedicated to our host, CUHK, and we got overview presentations by the Centre for Learning Enhancement and Research (CLEAR) of College System at CUHK and a very nice tour of the Wu Yee Sun College!

## Activities as a family

When gratefully accepting to become a STINT Fellow, this automatically became a family event. During the second half of 2018, we have tried to spend time as a family and visit in many of the amazing events that are happening all over Singapore all the time. Some of them are shown on the next page.





Island Lights at Sentosa



National Day



Tuesday dinners



Deepavali



Singapore GP



Sentosa Sandsation

Singapore Night Festival



Christmas Spectacular



Mid-Autumn Festival







## Final Reflections

An intense year of planning and working at a new university with new subjects, new students, new systems, new facilities, new technology, new colleagues in a new city, takes time to reflect thoroughly. Working for a University in Sweden, it is hard to find time to reflect. This has been one of the greatest benefits of being on a teaching sabbatical – I had the possibility to reflect on my teaching and my work, while actually doing it.

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Almost everything I did at NTU was new, I had far larger classes than I have in Sweden, I used other administrative systems, I taught a new subject and I had new colleagues. The main thing I am going to discuss here is the large classes and how to handle them. This is something that we might face at engineering educations in Sweden in the future and something that we have to prepare for since we get less and less time to teach each class.

Working at NTU is a fantastic opportunity to work with amazing technology. However, I have been reflecting a lot

on how this technology can actually enhance learning. Today, we are talking a lot about TEL – Technology Enhanced Learning. This means that the learning is in focus and the technology somehow support an enhanced learning experience. Investing in the technology needed, today, for converting Universities into interactive arenas for educational experiences, is huge and it is important to give teachers the opportunity and the support in changing their teaching to work take advantage of the technology.

Every day I reflect over my teaching and there are so many experiences that I will continue to work with:

- The experience from teaching large groups have made me think about my teaching and what will be possible to do when we in Sweden gradually are getting larger groups and the time spent teaching each course is decreasing. I have adopted new ideas on how to create educational experiences while teaching large groups of students.





Super Trees at Gardens by the Bay

- I have further developed my skills in eLearning and flipped classroom. This including not only teaching but also developing efficient material for eLearning
- I got more insights into the cultural differences in teaching and learning and an even better understanding of the need of intercultural education.
- It got me started to think even more on what kind of support needed for successful teaching and the importance of different roles at the University.
- I have a far more concerned attitude towards the work needed to convert our current teaching and learning into teaching for today.

Personally I am taking back some of the small details of the things I have been reflecting on above. Even though I do not have any large classes today, I will still set up a (more) fixed schedule with supervision each week. By doing this I hope to get a better structure on the course and give the students a better opportunity for learning. I have always worked with a system of workshops on most of my courses, these will be complemented with a series of tutorials to strengthen the students' theoretical skills. I participated in short courses at Teaching, Learning and Pedagogy Division that would give me knowledge on how to handle new technology and larger groups, since this knowledge is not as strong back in Sweden.

Even though I have discussed the use of TEL in classroom situations at the department for a long time, I will contin-

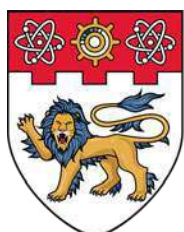
ue to work towards constructing interactive tutorial room. Hopefully this will be something that can be discussed on university level. However, during the time at NTU I have realized the need of redesigning the education to fit the facilities.

I will also continue to work with my colleagues at NTU in different ways. I have been invited to come back to SCSE and if it will be possible to combine with upcoming work in Sweden and parental leave, I will visit NTU for a shorter period of time in end of 2019. During this time I hope to find more cooperation that is possible to continue when working on different continents.

Even though there are many things that can be done at NTU, with their resources, there are also many things that I have realized that I can do with smaller groups in Sweden. The groups I work with on my advanced level courses in Sweden are about the size of a tutorial group at NTU. Hence, it is possible to create interactive situations even in lecture situations. There are always pros and cons with having large groups – better resources comes with the cost of having larger groups and more of an industry scenario of the education. Even though I have experiences and increased my knowledge and thought on teaching in many ways, I have also confirmed that students appreciate my way of teaching and creating learning experiences.

One thing is for sure – I will continue to strive towards high quality education at our department, at Umeå University and in Sweden.





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