

## MY IAESTE MT CHINA INTERNSHIP



First of all, I want to say Thank You to everyone involved in this project. Thank You to IAESTE and MT, Leyna, Rebecca and Amber, Zhang Yu, Zhang Song, Master Wang, and of course all the other fellow interns to make this experience an experience I will never forget in my life. It for sure was the most interesting experience I ever made in my life and I really can not say Thank You enough times to show how much I appreciate it.

## DAILY LIFE IN CHANGZHOU

A normal day starts with my phone ringing at 6.45AM, me waking up at 7AM and me finally really getting up at 7.15AM. For breakfast, my host family always prepares porridge with Chinese bread or some dough typically for the Northern part of China, where they come from, as well as some other dishes (vegetables and meat). Taking the E-Bike, the workday starts at 8AM. Lunchtime is at 12PM, usually together with my mentor :) The workday officially ends at 5PM. At home, dinner is already waiting for me, prepared by my lovely host family. After that, usually Leyna took me and the kids outside to the park or stayed at home, just playing with the kids or talking about anything and whatever. Going out with the other interns after work was also in common mood to explore Changzhou, Chinese lifestyle and just having a good time here.

## HOST FAMILY



I had the chance to live together with Leyna and her family - just to make it quick: I really can not imagine to have a better host family. I really felt like being a part of their

family, making me really sad to have to leave now already. Leynas family consists of her, her husband, herparents in law, two adorable kids, a fluffy dog, and me :). Her husband even studied in Germany and worked there for several years, and basically speaks German at work everyday, so that it became much easier to me to integrate into the family as expected. Her parents in law are a really adorable old couple, leading a dancing group in the evening together and basically spending their total life together. The apartment lies about 5 E-Bike minutes away from Wanda Plaza, located right next to a really nice park. The location is really really good, as



everything in need is pretty close. The company is reachable in about 15-20 E-Bike minutes. Food was always prepared by her parents in law, so I would never have to worry about breakfast, lunch or dinner. Additionally to that, the food was really really tasty everytime. For breakfast, normally porridge was prepared together with some other

vegetables and meat. With that, Chinese bread or something from the Northern part of China, where they come from, looking like a big taco, helped to stuff the stomach for the morning. For dinner normally rice with various different dishes. Normally, they even prepared much more than usually, as they knew that I really love Chinese food and would eat bunch of it. After dinner usually we went to the park with the kids, or just talked, chilled, or played with the children at home. The kids are really really active and deeply in need of big attention - but I like it. I really love children and love to play with them, as I'm also still a child to some degree. Just making them laugh makes me feel really happy, turning bad mood instantly into good mood. Most times, if I just sit in my room, the kids enter it to steal some candies or annoy me, but I really love it. To some degree at first I was a little bit scared as the kids are really very very active and I was worried about my future life, when I have kids on my own. But I got used to it very quickly and currently really don't want to miss them out of my life anymore. For any concern, problems, questions, anything: Leyna was a really really helpful person in basically every situation. With that, it was very easy to me to get used to life here in China very quickly. We could talk about everything we wanted to talk about, so



that I really felt like being a part of the family. I really highly appreciate every single effort she put into me, making me feel home here in China.

## WORK LIFE



Work life starts at around 8AM. Usually I went to work using my E-Bike, taking about 15 to 20 minutes of my lifetime. After arriving at the company, my normal work day starts. Between 12 and 1PM is lunchtime, normally together with my mentor Zhang Yu, my Indian office neighbor or any other person(s). A normal workday ends at 5PM, but depending on the workload, a longer stay at the company to get to the goal was needed. The company food most of the times is very delicious actually. If I'd go to a restaurant and order the same, I would be totally satisfied. Taking double portions was also nearly never a matter - the canteen workers already knew that I always want double meat and double rice, so they automatically gave me bigger portions. The best thing were chicken wings. Unfortunately, they were served only 2 or 3 times, but that chicken wings were from heaven! I'd overstay every day to have dinner at the company, if it was chicken wings. But nevermind. Chinese people are so much willing to help, no matter what it is about. Especially if you are a foreigner. Normally, I try to not annoy other people with my work, as they have their own business ongoing. But still, for example for soldering tiny electrical components to a breadboard, they did it for me, as I'm not really skilled in soldering SMD components. "Tiny" things like that made me feel really welcome in the company, as if I wasn't an intern. Chinese Co-Workers are so kind, as they always offer their support for whatever work is to be done, even if it's not being asked. The office is a big big open room office with many people working in there. With that, finding another person to talk with is really easy, as they are to be found quickly. However, there are still quiet lots of things I can really just complain about. A big room office with hundreds of people can work well. Big advantage to me is that I can easily find any person I need and ask whatever. However, the biggest disadvantage to me is that it is way to noisy, as people chat everywhere, have loud ringtones repeating every few minutes, random noises etc. Many times it just distracts from work, as it may be really really annoying. I know there is not really much to do about it, but it is to be said. This is the first time working in a real company. I only gathered work experience while working for my Bachelor Thesis before in a research center in Germany, and I really have to say, I feel so much better working here at MT than in that research center in Germany. People there didn't even really greeted me, introduced themselves or wanted to talk to me (maybe because most of them were physicists). I didn't feel like they would appreciate me. Here at MT I experienced something completely different - a working environment in which I felt being wanted, being appreciated, being respected and being loved. People gave me food,

asked me lots of questions, talked to me for hours and just made me feel home here in China.

## LEPA ACTIVITIES

HR organized many activities for us to spice up normal working life much more. Starting with an introduction round to welcome everyone to the company, many many activities followed: A culture day, where every intern presented his own country, a trip to the Bamboo Forest, an OpenDay for kids, where every country offered some typical food/drinks from his country, a game-day with lasertag, parkours and team competitions as well as a city rush. Without all these activities, the life here would probably not have been so much fun, as I barely think anybody of us would want to do so much effort and planning for these activities. These activities were a very good opportunity for all of us to create really good friendships with all the people here, as they are fun, charming and basically unique.



## MY PROJECT

My project was basically about hardware optimization. Load Cell Simulators are an essential part for engineers at MT to test out a terminal without a real load cell.

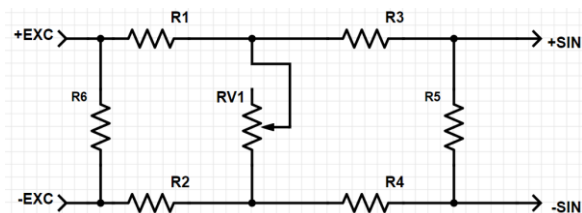
The requirements are easy: accurate and thermally stable. With that, my work was basically about finding a way, to realize a very precise and thermally stable load cell simulator. Basically, a load cell simulator is a controllable voltage converter. It converts an input voltage (excitation, EXC) to another output voltage (signal, SIN). Using a variable resistor, this output voltage should be controllable. My “voltage converter” should give out a 2mV/V output at the peak, spoken in formulas, it would mean a relation

like  $\frac{V_{SIN}}{V_{EXC}} = 2 \frac{mV}{V}$ . If for example the excitation (input) voltage lies at 5V, the load

cell simulator should output a voltage between  $V_{SIN} = 0 \dots 10mV$ . This voltage should be controllable using a potentiometer (variable resistor). The challenge in this work lies in getting a really precise and linear output voltage using the potentiometer. A possible realization for a Load Cell Simulator can be seen in the schematics shown here. In this, the output signal is not linear, when adjusting the variable resistance. The signal follows the simple relation  $V_{SIN}(R_V) =$

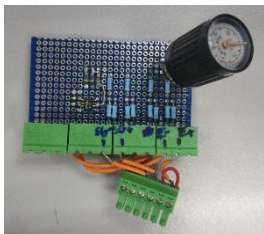
$\frac{R_V \cdot R_5}{(R_1 + R_2)(R_3 + R_4 + R_5) + R_V \cdot (R_1 + R_2 + R_3 + R_4 + R_5)} \cdot V_{EXC}$ . Keeping out an eye on  $R_V$ , clearly to be

seen is that the function  $V_{SIN}(R_V)$  is not linear at all. The percentage of non-linearity of this function represents the basic failure rate of the load cell simulator.



To lower this failure rate was the main focus of my work. For that, really many calculations as well as coding work had to be done. After all the theoretical work, I started with practical work: Creating a prototype (with the help of some Chinese), doing measurements on that at different temperatures and analyze the data. To further improve this device, I made up a plan and hardware concept to implement much more features with a theoretically really low failure rate. Unfortunately, this improvement was not possible to be integrated, as time issues and needed components take way to long to be delivered. We had multiple problems ordering and getting the components I needed, so that in the end only a draft, but no second prototype exists.

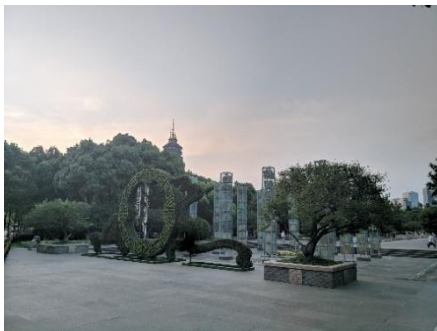
Another big part of my project lied in documenting everything I've done in a welcoming style, so that people reviewing my project can easily understand, what I've been doing the whole 3 months. My documentation ended up being longer than my Bachelor Thesis: 80 pages. Sounds much, but I tried to make it as detailed as I can, as I know, that there are other people reviewing my project. For this, it is essential to have an understandable document. Even if doing all the documentation and reports is boring and stressful to some degree, I would not want to leave it out. It is the best way to review a project and also to review what I've done on my own. If I look back to my Bachelor Thesis now, I can really see what I did better in this internship here. Reviewing this internship in my next internship or when I'm in my masters, hopefully I will say the same.



I really realized that to some degree, I don't work completely structured, but more chaotic without making a plan from ahead. With that, many times I start to waste much time doing work without purpose. That's a big issue I need to overcome, as I could have much more work output if I could clear up everything from the beginning to not waste time. Further, generally the way how I organize all my output and its style, is shortly said bad. Having everything organized well creates a clearer mindset. I really want to say Thanks to my mentor to give me that opportunity to realize that and to open my eyes regarding this, as this will help my own development a lot!

## CHANGZHOU

Changzhou is a village - in comparison to other Chinese cities. Compared to European cities, it's a very big city (Berlin has 3.7 million, Changzhou 4.4 million inhabitants). Seeing everything here is very hard. I moved around with my E-Bike through the city multiple times and always experienced new areas and more unexpected things - and I love it! Even if Changzhou is nothing compared to Shanghai, there's still enough to see here, especially many very beautiful parts. I think the most well-known destinations in the city are the Wanda Plaza, Global Harbour, the Tianming temple, the Dinosaur park, the TV Tower, ... and of course the train station to get away from this place :)The big

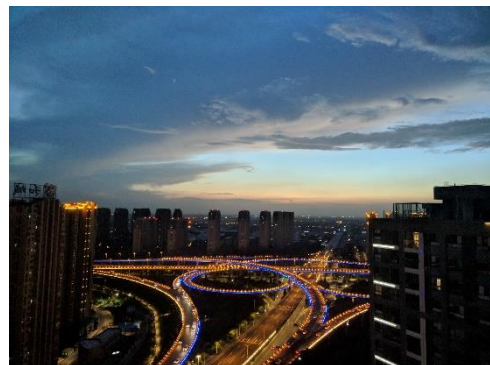


advantage here is that it's not touristic at all. Many foreigners walk around at Wanda Plaza, but they are all for work reason here. The city doesn't feel crowded at all (in comparison to Shanghai or Beijing), making travelling and sightseeing in the city much more enjoyable. While getting around the city, one can really see what Chinese people love to do in their free time after

work/school/university/whatever: Young people play basketball, old people dance around. Going to the park or any public place, basically everywhere large group activities can be seen: many people dance around, do gymnastics, or my favorite: walking around fast - all this in groups of up to 50 people or more.

Unfortunately, I didn't have the chance to experience the subway here, as it is being finished exactly when I have to leave. I personally didn't have any trouble getting around at all, as I had an E-Bike and Leyna. However, Changzhou has a very broad bus system. Getting used to Amaps can make it possible getting around with busses. Only issue: it's all in Chinese, there are no route maps offline or online and of course it's nothing in comparison to Germany. With Amaps however it's still possible to just get around easily.

One of the best things however is to get to the rooftop of any building to just enjoy the gorgeous view over the city - best at sunset after work! Especially when the clouds do some nice walkarounds in the sky showing how beautiful they can be, that's one of the best things to do. On a rooftop you can get a completely new view of the city as you have never seen it before. Most buildings have more than 30 floors, making it at least 60-70 meters above the ground. A highway for example looks cool and all from the bottom, but getting a view from above is just priceless.



## TRAVELLING



China has too much to discover in just 12 low-budget weeks. The good thing is, travelling around here is so much cheaper than in Europe. The bad thing is, most attractive things are too far away to discover on a weekend. However, around Changzhou there are plenty of touristic areas, which are worth it. During my time, I've been to Wuxi/Taihu Lake, Nanjing, Nanshan Bamboo Forest, Zhouzhuang, Beijing, Shanghai and Zhangjiajie. All the places I've been to are so beautiful, but depending on the destination, they may look the same after all. To me, I mainly discovered ffdsd

types of destination: water towns, cities, mountains and temples. Water towns, cities and temples to me most likely look the same. They are all beautiful in their own way, but some of them may give exactly the same feeling and view, making it sufficient to visit it only once. Mountains and natural parks in China however could not be more diverse. Just googling up natural parks in China instantly gives a kick to want to travel



there. However, the weather also plays a very big role while travelling. For Zhangjiajie for example, we had really bad luck, as on mountain tops it was completely cloudy. At first sight it's cool, as everything around is white and you are in a cloud, but having a clear sky would be way more awesome. After the internship I will head to Shenzhen and Hong Kong, to experience the vibe of these cities.

there

all the cities

get to

don't have an E-Bike right now - get one! It's not expensive and you can return it.



Especially Hong Kong fascinated me for so long time already, which is why I really want to go there. However, is so much more to explore here in China, for example Guilin, Kunming, Xi'an, Hangzhou, Chengdu, Chongqing, mountains, all the lakes, etc etc. Travelling to all these might take a bunch of money as well as a bunch of time. Nevertheless, even in Changzhou, just a small 4-million-village, the city can just be undiscovered in so many places. I love to just take the E-Bike and get around anywhere, as everytime unexpected buildings and sceneries might occur and just getting around, one can know the city much better. So if you are reading this and

## FOOD



I can not miss out on this chapter, as the food was one of my main reasons to come here :D Food here is so delicious and cheap. The Chinese cuisine is versatile. In every corner there are some small, lets call it “restaurants”, in which a to me completely new dish for (in comparison to European prices)

ridiculously small amount of money can be purchased. Further, the variation of different dishes is nearly endless. Most of Asia normally eats everything what looks edible. To me, it was a really nice experience, as I like to try out many exotic dishes I would never find somewhere in Europe. Chicken feet, duck neck, duck head, pig brain, scorpions, centipede, spider, ... strange food can be really delicious! And no, I wouldn't try out on a dog, as I couldn't eat such a cute creature :(



## CHINESE PEOPLE

Before I came here, people always told me Chinese people are super shy and are not brave enough to talk to strangers, foreigners and even colleagues. To some degree, it's true. Many times, Chinese people really don't talk that much, but I think it's more because most of the times they just think their English is not good enough, so they are afraid to talk to other people. On the other hand however, I also met lots of Chinese people who are really willing to improve their English so much. To me, they are not shy at all. They ask many questions, try to talk all the time - with many Chinese people I met I really felt that their English improves heavily just by talking to me.

Chinese people are super polite, kind and helping. To me, the Chinese culture is all about being polite, respectful and appreciative against other people. Many Chinese people would do so much effort for you even if they barely know you. That's something I highly appreciate about Chinese people and Chinese culture, as it just leaves positives vibes to step happy through life even on workdays.

However, it is easier to complain, so here we go: walking around China one can encounter many people, where foreigners would only shake the head and be more like “How can a person be like that??”. Many Chinese love to just spit on the streets and make corresponding noises, as like it was a competition who can do it louder. If someone in Germany or generally in Europe would do that, everyone would look at them and think “That person doesn't know how to behave at all”. Also in traffic, people basically just really love to push the horn. Even just to say something like



“Look out, I know you’re 20m away from me but take care, I’m close to you!”. To me, it’s sometimes really annoying, as I’m not used to hear a horn for basically everything and nothing all the time in traffic.

## THINGS THAT MAKE LIFE MORE CONVENIENT

**E-Bike:** To me, having an own E-Bike is one of the most convenient and useful things to have here. With that, I was completely independent from bus, DiDi, taxi, Leyna, or anything else to get around the city, as no matter what time and what place, the E-Bike was reliable. And as if that would not be enough, riding an E-Bike is hell of a fun ride. Before I came to China, I never got to ride an E-Bike or motorcycle. But it took me maybe 2 minutes practicing to get used to it, another 2 minutes to also get used to high speed (which is at 30-40kmh, idk something in between I think).

**Alipay/WechatPay:** Its not common in Germany to pay everything with the mobile phone. However, in China it is. And it is surely one of the most convenient things, as everyone and everything has Alipay. Transferring money, paying for anything or whatever else can be done with money is covered with these two apps.

**Ting bu dong:** Meaning something like “I don’t understand your language”, Ting bu dong was one of the most frequently used phrases for me. I look Asian, so everyone here thinks I’m Chinese. Letting them know I’m not from here instantly makes them feel like “Ahhhh” to find another way of communication. However, in some cases it didn’t work, so that they’d still think I’m Chinese.

**Powerbank:** Whoever runs around without a powerbank is nearly doomed to not get back to wherever he/she comes from. Travelling around a city/scenic area can cost a whole day. Travelling around a whole day and taking pictures all the time can drain the battery to zero really quickly (at least with my phone). A powerbank is not really expensive yet so essential to me.

**Lots of mobile data:** I did not have WiFi connection on my phone in the company. Further, the company laptop does not allow us to set up a hotspot, and registering the mobile phone to get WiFi was too much effort to me, as I had 20GB of mobile data each month from the beginning already. However, not only for work at the company, but also for getting around, mobile data is a must. Mobile open hotspots are rare. For navigation, chatting, contacting, and especially paying, having mobile data is a must.

**VPN:** Most of the apps used outside China are blocked here. The only way out is by using a VPN (pssst!). Without VPN, it’s actually very hard for us foreigners to survive, as many applications as also for example simple orientation applications as Google Maps is blocked, the Chinese versions Amaps and BaiduMaps however only exist in Chinese. Also, to only communicate with friends and family back in the

home country a VPN service is basically a must. I tried many VPN services out. I think, the best way is to download multiple free VPNs (for example WangVPN, ThunderVPN, ...). If one of them stops working well, just switch to another one. However, I didn't find any free VPN service til now supporting WhatsApp calls. ExpressVPN does, but for this you have to pay.

**A good working phone:** As I said earlier already, basically everything here works with the mobile phone. It is one of the most essential survival tools here. Having a potato as phone can still work, but it is much more convenient to have a fast phone. I had to survive with a really slow phone. Sometimes, it took me like 5 minutes just to pay something using Alipay, camera crashes, Amaps works super slow,... I don't suggest to go around with a slow phone, as it creates lots of frustrations.

## THANKS!

I really want to share how grateful I am to make this experience here. It definitely was one of the best times I ever had so far in my life. I really want to say Thank You to my mentor, Zhang Yu, to take so much time in effort in handling me at work and giving me the opportunity to challenge myself in such an awesome project. It was really fun to work on this, also because I really noticed in which aspects I still need to grow and manage myself better, is it hard or soft skills. I also want to thank Master Wang for all the support regarding my project and Zhang Song for being my replacement mentor, when ZhangYu was on a business trip.

I also want to say Thank You to all the other IAESTE interns here at MT. I had really much fun with all of you, I definitely found some lifetime friends here. We will meet each other again!

Further, I want to thank Rebecca and Amber, our HR interns, to help us in so many small things and also organize all the company activities we had together.

Especially I also want to say Thank You to Leyna for facing that challenge to host me. I think, I could not imagine to have a better host family. Living together with her family really made me feel like I am a part of it, they cared about me really much. For whatever, I could always count on help and support of her - even things I didn't asked for. Also for organizing the whole program and supporting us in every situation - I think without Leyna we would not have such an amazing experience here.

I also want to Thank all the Co-Workers at MT, to always be there and be part of my experience here. Everyone made this experience special on his or her own way. I will never forget this time.