Inside the CERN Openlab Summer Program

Juan
Nov 23 · 7 min read

As of this month, **CERN openlab** is accepting applications for the Summer Student Study Program 2020. I was lucky enough to participate in the program in 2019 and it was truly one of the most memorable experiences of my life.

This sculpture sits next to the CERN Globe on the edge of campus

During my brief nine weeks living and working near the French-Swiss border, I had the opportunity to:

- Work with top-notch researchers and connect with 300+ university students from ~100 different countries.
- Visit astounding experiments like the enormous particle collision detectors and the anti-matter factory (somehow, that's not an oxymoron).
- Explore the beautiful countryside and cities that stretch around the majestic Alps, ever-present in the backdrop.

A friend of mine already wrote not just one, but two, comprehensive pieces on what it's like to participate in the program. Instead of rehashing the same topics, I'll focus specifically on what I know about getting into the program and my candid perspective on it as a whole.

Note that I'm talking about the **openlab** summer program, as opposed to the regular summer program, which is similar but concerned directly with physics rather than software.

In the heart of Bern, Switzerland on a Sunday afternoon

The Program in a Nutshell

Every summer, CERN hires undergraduate and graduate students to work and study at their main research centre near Geneva, Switzerland for around two months. CERN hires around 300 Physics students and around 40 students majoring in Computer Science, Informatics, Electrical Engineering, and the like. Notably, if you are an openlab summer student, you don't need any Physics knowledge at all!

Your project as an openlab summer student will likely address interests of your particular team in CERN. For example, you might work on analyzing experiment data gathered by one of the famous CERN experiments like Atlas, CMS, or Alice, or you might work on the CERN cloud service that provides infrastructure to store and process all that data.

The charming view from Restaurant 2 on CERN campus

Getting Accepted

The program is competitive, but experience with topics like Deep Learning or Cloud Computing can make you stand out. The openlab program is focused on computing —as I mentioned earlier, you really **don't need any Physics knowledge!**

Bet It All On Your Resume

Don't worry about the interview. Why? Because there probably won't be one!

As part of your application, you can also submit 1–2 reference letters, but you can definitely get into the program without submitting any at all. Your **resume and transcript** are most important.

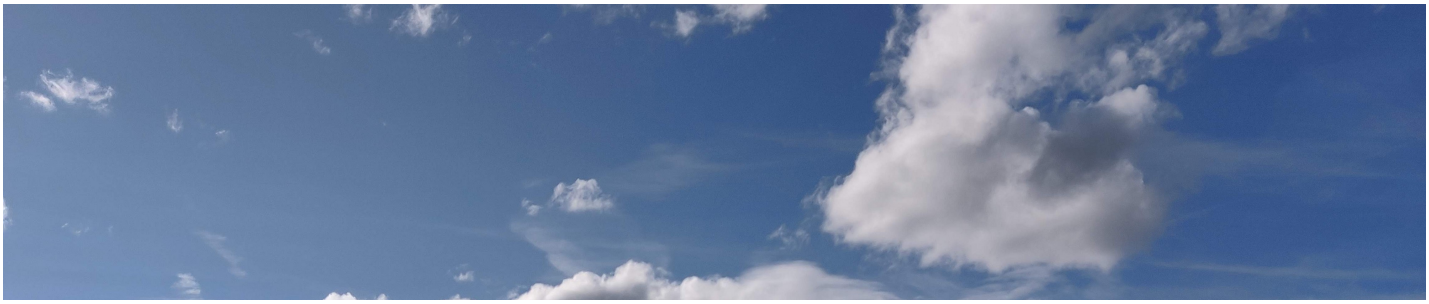
Highlight Your Relevant Skills

In openlab, supervisors select summer students for specific projects. And so, getting into the program is all about whether the skills and experience represented on your resume match what a supervisor wants for their specific, predefined project.

From what I gathered, all the openlab summer students had at least a couple of these items in their application:

- **Machine Learning**, with an emphasis on neural networks; statistical methods are widely used at CERN.
- **Cloud Computing**, useful since CERN hosts its own cloud using OpenStack.
- **Good Grades**, predictably helpful to getting into a research organization with close ties to academia.

My biggest piece of advice: look at the projects from recent years and tailor your application to highlight your skills in the relevant areas; for example, you might want to emphasize your experience implementing Deep Learning models or automating common software tasks. Take a look at the 5-minute project summaries from last year to get an idea. Here are part 1 and part 2.



A slice of the awe-inspiring panoramic view you'll get on a summertime hike near Matterhorn

The Work

All in all, the summer study program is a great opportunity to learn about state-of-the-art technology and enjoy a summer abroad.

Projects and Presentations

Your project may or may not have a well-defined goal. For example, you might be asked to implement a particular machine learning model to solve a particular problem; a friend of mine worked on simulating Spiking Neural Network for Jet Tagging, a well-known problem in particle physics. In contrast, you might be asked to investigate a new technology, play around with it, and find out what it has to offer; I personally investigated Knative as a framework for building FaaS solutions on Kubernetes.

At the end of the summer, we gathered our research results to write a report of ~10 pages and gave a brief presentation to ~50 of our peers, supervisors, and other CERN staff. The environment was encouraging and relatively relaxed. Nonetheless, it was definitely a good opportunity to practice public speaking and add to our CVs.

Work Environment

The truth is that the summer program exists primarily to give students an exciting learning opportunity and to spread the word about openlab. Your work is not dictated by business goals like it would be if you worked at a for-profit software company. In the few weeks you're there, you probably won't be pressured to add substantial value to the team, so you can have a fun, relaxing summer and learn plenty along the way. But if you're looking for a high-pace environment, you might be barking up the wrong tree.

As expected, there are exceptions, but this is what I observed in the general case. There was plenty of time to enjoy the summer.

Basel Minster, a magnificent gothic cathedral in Münsterplatz, Basel, Switzerland

Beyond the Projects

CERN Lecture Series

The program boasts an ample lecture series that spans all of July. During that time, several times per week, various CERN staff members share their expertise, which cover a slew of different topics. With respect to computing, some of my favourite topics were:

- **Quantum Computing**, perhaps *the* next big development in tech
- **Evolution of Computing Hardware**, by the bright Andrzej Nowak
- **Deploying on Containers with Docker and Kubernetes**, an industry standard for deploying applications as microservices

Oftentimes, the topics were interesting and the lectures engaging, but you could stay in your office to work on your project if you preferred.

Field Trips

During our sponsored overnight trip to Zurich, we visited OpenSystems, IBM Think Lab, and ETH Zurich. While the visits to OpenSystems and ETH Zurich were mostly a recruitment and marketing effort, the visit to IBM Think Lab was exciting and highly informative.

At IBM Think Lab, we attended various presentations by IBM researchers regarding their work. I found the ones about Neuromorphic Computing and Quantum Computing fascinating. For those especially interested in the world of computing research, this was a fantastic opportunity to connect with researchers at the front line of innovation in the private sector.

View of Lake Geneva from the legendary Montreux Jazz Festival

The Friendships

Professional and academic benefits aside, CERN's summer programs offer the invaluable opportunity to connect with young, bright minds hailing from dozens of countries around the world. The memories I made and experiences I shared with my new friends were a uniquely enriching aspect of this program. For a brief but packed nine weeks, we spent mornings, lunch breaks, evenings, and weekends together, making memories that will last longer than our professional careers.

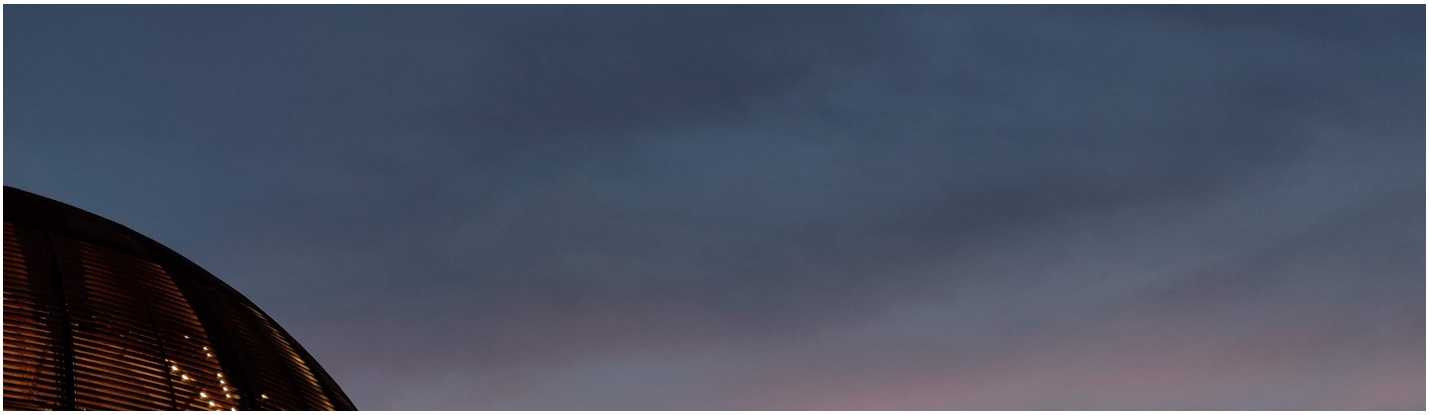
Most of the 2019 openlab summer students and CERN staff who made the unforgettable summer possible.

Last Few Tips

Some quick, last thoughts:

- Expect to live in a **small, quiet town**. You'll have to get all your grocery shopping done before 7pm. The commute to work is delightfully short, but be prepared to take 40+mins of public transport if you want to get to downtown Geneva.
- Get ready to make flatmates and roommates out of perfect strangers for nine weeks. In the best case, you'll get to spend quality time with your new friends; in the worst case… well, bring earplugs.
- The study stipend is definitely enough to live comfortably, and travel on most weekends during your nine weeks or add a bit to your savings (net pay for nine weeks is between 5,000-5,500 CHF.)
- Go hike in **Zermatt**. It'll be one of the most beautiful places you've ever seen.
- Make the most of the **free bike rental**. Technically, it's only for commuting to work, but they can't catch you if you pedal hard! Also, get a basket attached at the garage on campus to carry your groceries (but watch out for hop-ons).
- If you're planning on traveling, consider buying a **Eurail/Interrail** train pass to save on expensive trains (e.g. Geneva-Paris in ~3hours) for less. Just make sure you do your research about reservations, which are sometimes compulsory.
- If you are a music fan, *do not* miss out on the legendary Montreux Jazz Festival; there are several weeks of **free live shows** as well as big-ticket concerts — you should know, it's not all jazz!

PS: I share my photos regularly on my instagram account; feel free to check it out if you liked the photos in this post!



One of many beautiful sunsets on the French-Swiss countryside