David Colonna
dcolonna12.dcgmail.com
+33652258564
Schäracher 2
8053 Zürich

22 August 2021, Zürich.

Dear Sir or Madam,

I began taking a real interest in Computer Science while I was still in my second last year of high school, because I had a course called "Technical Personal Project", where we could choose from a variety of topics regarding Electrical Engineering as well as Computer Science, and develop a project over the duration of a trimester. With my partner we choose to work on a program allowing the user to unlock his computer from his smartphone remotely. This sort of program had already been done for macOS/ Windows to Android/iPhone communication, but not for Linux. This is why we decided to go for the OpenSource System. I was in charge of the application part coding in Java using Android Studio (this was before Flutter got famous), while my colleague worked on the server part that was supposed to run on the computer and receive the communication from the phone. We obviously ran into a number of challenges, for example the fact that the password could only be sent using clear text, which was the opposite of secure, etc…
This project brought me a lot of fun and challenges, and after some long nights we managed to get it working on one phone and one computer, which was a real achievement for us at the time.

As I briefly told you in our meeting, I also have some experience using Ruby. About half a year after my first contact with Computer Science, I noticed that twitter had a large amount of giveaway posts compared to other social media. I read about people writing automation tools to systematically participate in these giveaways, and thus getting a real chance of winning them. So I decided to do my own by building on top of existing ones, and adding some features. In the end, I ended up with a halfway working version of my bot, able to search, comment and like posts mentioning giveaways, but not following the user posting them. Additionally I was able to implement a functionality allowing me to receive notifications on my phone when entering a contest.

My first contact with Python also happened in my last high school year, when I tried to "cheat" on a popular game show with two of my colleagues. The concept of the show was that every day at some precise time you had to go on the app where you watched a live interactive video stream, where the host asked general knowledge

questions and the user had some time to choose from three answers. At each question, the users who didn't answer correctly were eliminated and at the end, the prize money was shared between the remaining participants. In order to best the system, we engineered a python program running on top of an android emulator on a PC, that used a natural language recognition library to detect the current question and answers. Then another part of the program started three Google searches, each containing the question followed by the one of the answers and then queried a JSON answer from the search containing the number of results. Based on that, the last part of the program then emulated a user selecting the answer with the most results. We managed to get a working version after a few weeks, but the issue was that since we used Python as our programming language, the execution of the program turned out to be just a little too slow. We still considered it a success even though we never got to use it.

After my first two years at ETH where I did not have the time to get to any personal projects worth mentioning, I finally got to work on something fascinating these past months. As a matter of fact, my interest was peeked by the endless possibilities of web scraping and the simulation of user input on websites, in other words : BOTS. Maybe this is something you have not heard of, but the website for booking vaccination appointments for Zurich was very badly engineered. Basically, you have to take your two appointments separately, and in the time you choose the time for the second one, it is possible that someone else was quicker than you and already booked your the same as you for the first one and also the second one, and thus you loose both and have to start from the beginning. I found that very cumbersome, and decided that I did not want to spend an hour trying to get an appointment, but rather hours trying to automate the process[1]. By using random delays in my simulated clicks and page refreshes, I managed to get it to work pretty well, even for people who wanted appointments on specific dates and times.

Sincerely,

David Colonna

---

[1] Of course I waited for about a month after the vaccination was opened for young people, in order for people of old age that still had not gotten an appointment to be able to obtain one without being disadvantaged by me.