Mouth Animation

Reflection

Bachelor Applied Computer Science

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1 Introduction

In this document you can read about what I learned from this internship both in soft- and hard skills. I talk about the project itself and what some possible extensions are and which challenges & roadblocks I encountered, and how I tackled them.

2 Performed Work

In this section I will discuss how the internship itself went.

2.1 What did I realize?

I build a couple of extensions on top of the already existing library. These extensions are training on Dutch Data, checking how the Face Detection works and adding the functionality to choose the correct face when a group picture was used. Brainjar can later use this as an example for clients to show what AI is capable of today.

2.2 Extensions

There are multiple extensions still possible. Since it's still a topic that's been heavily researched, it's also possible that in a couple of years there will be better techniques than used in this project.

Some examples of extensions are: make it possible to select the correct face when there are multiple people in a video. The reason this is not already included is because of how the face detection works. It detects every face in every frame of the video. When the faces change position, the order in which they're detected can also change. Because of this you need to check every face which one is the correct one. A picture is easier because the faces stay in the same place, so the extra check to see which one is the correct one isn't needed.

It's also possible to add speech recognition so the model knows which voice belongs to which person and that the model itself knows when to generate mouth animations for the correct person.

2.3 Mentors

I don't think there was a better place to do my internship. Given all the circumstances because the pandemic, Brainjar made sure all the interns were included into the Brainjar family as much as possible. They have an active Slack community and a discord channel. We were also included in weekly meetings which gave more insight what everyone was doing.

For my mentors themselves, I don't think they could've done anything better. The circumstances weren't optimal for me and not for them. Normally everyone is at the office, so it's easier for them to follow up on everything you do. At an office it's also easier to ask questions and you'll get the answer quicker than online. Because you don't really know if they're at their computer when you ask something.

3 Personal Reflection

In this section you can read about what I learned during this internship.

3.1 What did I learn?

Most of the time when you program something you start from zero. In my case I build on top of an existing library instead of doing everything myself. Here I learned how hard this can be because you first need to understand most of the existing code to know which parts you need to change to

add extra functionalities.

You're also attached to the programming style in which the previous code is programmed. Because if you add code in another style there is a higher chance there will be bugs with the existing code.

The biggest lesson is how important your data is. You need to be sure it's clean enough because every anomaly will have some effect on training the model. In my case this was when I pre-processed the data. When there was a video clip with not the right person in it, it only saved the audio and no images. This resulted in errors during training because the length of the frames and audio files wasn't the same.

I've also learned that I'm more interested in the theoretical part of AI than implementing them. Because when I'm changing something in a model it's more trial & error instead of knowing what I'm changing. This is because I don't have the theoretical background to know how everything works. That's why I want to know more about the theoretical side of AI, to know how everything works.

3.2 Growth

In which areas did I grow? I mostly grew in analyzing the problem and existing code to see which parts I needed to adjust. This was important because changing some piece of code could have big consequences when it was also used in other functions. Which would result in failures in those parts.

My writing skills also improved because I documented everything that I did. This was also for when I forgot how something worked, I could look at the documentation. It would have been a waste of time when I would have had to read the entire paper again.

Every week we gave a presentation in front of the whole company to show what we did that week. This helped me improve my communication skills.

3.3 Challenges & Roadblocks

One of the main problems was that it felt more like a big school project than an internship because of the pandemic. You are just behind a computer screen at home instead of at the office. There wasn't a real solution for this, I just tried to make the best out of the situation.

More of a pitfall was when I had to research how a specific piece worked, it was easy to stumble into a rabbit hole of papers to get more information about a topic. When I felt that I was reading too many papers after one another, I just asked myself if the extra information of the other papers was necessary. Most of the time this was more of a nice to know information and not necessary to understand the problem.

4 Conclusion

All in all, I'm happy with what I delivered and how everything went. There isn't anything that I would've done different. I learned a lot and the internship was exactly what I expected from it.