There were also a number of limitations to our approach. We begin with the most obvious flaw. The generation of counterfactuals is always hard to gauge, when it comes to their usefulness. There is no standardized way to evaluate the viability of a counterfactual. In fact, this is still an open reasearch question[**hsieh˙DiCE4ELInterpretingProcess˙2021**, **mothilal˙ExplainingMachineLearning˙2020**]. Therefore, we often have to evaluate the counterfactuals in some subjective and qualitative way. In this thesis, we decided to compare the counterfactuals with another approach in the literature and the factual itself. Because our counterfactuals did not produce nonsensical results, we deemed them viable. A domain expert might strongly disagree. Therefore, we advice to also incorporate experts in the evaluation of such an approach. This is a clear limitation of our approach and we have to acknowledge it.

Next, we introduced a novel way to measure the viability of a multivariate sequence. However, we did not compare its result to other approaches in the literature. Mostly, because very few researchers have touched upon this topic. This lack of good multivariate sequence distances is something that needs to be explored further. However, our viability measure, does introduce new ideas to this sphere of research. Mainly, the idea of incorporating structure. We believe that this might benefit disciplines such as *Process Mining* the most.

The viability components we chose, showed, they were capable of leading to an optimzed solution, but there are most likely better ways to operationalize viability criterions. However, what makes a good counterfactual and how can we quantify that is still a subject of debate. Many researchers fall back to defining their own evaluation methods. However, we believe that a good approach is a direct and qualitative comparison between two different approaches.

Furthermore, we did not take diversity into account. Our models stricly optimize towards the optimization goal. However, as we discussed, diversity can also help us understand factuals better.

When it comes to the evolutionary algorithm, we have to admit, that there are most likely more advanced and more efficient algorithms that utilze the notion of evolution. Our approach mainly followed the basic structure of an evolutionary algorithm. However, there are methods such as CMA-ES, that are capable of improving the efficiency of the evolutionary generation.