Subjective Part

Vitor Daisuke Tamae

December 23, 2022

The subjective part of the Capstone Project is used to show the personal vision of the author regarding the experiences of the project. Therefore, I will take the liberty of describing them in first person.

1 Working in SPIRA

I started working in SPIRA during the discipline MAC0472 in 2021, mainly because of the ideals and goals of the project to help the treatment of patients with Respiratory Insufficiency. I have never participated in an open-source project that could directly impact the life of users in such a critical area like the detection of medical symptoms.

While I could have stopped with my contribution to the project when the discipline was over, I truly enjoyed working on the project, despite all the difficulties I had faced until that moment. For that reason, I decided to continue with it in this Bachelor's Monograph and I am very satisfied with how the system evolved throughout this research.

I do not know if my contribution to SPIRA will end here, but I hope this research serves as the foundation for inferences with SPIRA models and that the practices adopted on behalf of long term benefits set an example of quality assurance so that the project can continue thriving in the future.

2 Lessons Learned

My first attempt at the research was not using the Hexagonal Architecture as described in the Monograph. It was rather an MVC implementation that led to many problems that started piling up. The change in the architecture pattern solved a substantial fraction of the problems I had. After a lot of study about the mechanisms of the architecture and its variants, I believe this has become a valuable tool for my software engineering skill set.

I have worked a bit with Docker before, but nothing close to what I have done in this research. From all the tools I used to make this system, Docker is certainly the one I learned most about. As this research proves, I now know enough about Docker to create the infrastructure of a project and use it to test and deploy systems properly.

Overall, my knowledge about software engineering has expanded considerably. While I had previously studied microservices architecture, I could only understand the real motivations for such a distributed system by implementing

one. The knowledge I acquired about distributed systems was also one of the factors I could improve my proficiency in Docker.

Regarding intelligent systems, I had my first contact with MLOps practices during this research. One of the things I always disliked about Machine Learning were the messy irreproducible training scripts that were constantly in need for a refactor due to their poor maintainability. In some cases, I believe that they were not too far from becoming legacy code.

To build an intelligence system that can automatically store and deploy models, control their version and reproduce them was in some ways a revolutionizing concept to me. This did change my overall perspective over ML engineering and I very much enjoyed to implement it.

I also learned a lot during the deployment process of the system, which was undoubtfully the most difficult part of the project due to the many technicalities of doing so. While I had already deployed systems into services that automate most of the process, I have never **manually** deployed an application from scratch into an on-premise server. This served as a good expericence for me to acquire more knowledge in Docker and also Linux in general.

3 Final Regards

I would like to thank my three supervisors, Professors Alfredo Goldman and Marcelo Finger, and Master of Science Renato Cordeiro Ferreira for the opportunity to work on this project and all the support given to successfully deliver this Bachelor's Monograph.