# COMPSYS 701 Project Reflections

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This project gave us a lot of freedom around the ideas which we could implement. With this freedom came the challenge of using our limited time efficiently. If time wasn’t a factor we could have undertaken significantly more research and development during each phase, to create a far faster and more efficient solution. For example we could have implemented a more efficient hardware filtering solution, using the full width of the AXI Bridge. However for this project we were challenged to research, develop, and test effective solutions in limited time. Another challenge which we came across was that at some stages we were unsure of the limitations around implementing a solution a certain way. For example we processed frames into pixel windows in the software rather than sending raw frame data directly to the hardware filtering solution. This prevented us from implementing daisy chaining and some other optimisation methods. Finally, some of the initial hardware solution provided to us had issues. For example the lower half of our screen was not showing until we made some fixes to the provided hardware solution.

We learned a lot about using an FPGA SoC efficiently, by splitting our implementation into hardware and software solutions. We also learned about the benefits and shortfalls of each communication method for sharing data between these two solutions. The exploration of different optimisation techniques for image processing also helped us to learn about the trade-offs involved when designing these types of systems. From a non-technical perspective we learned about working in a team on an expansive research and development project. This required a scheduling of tasks and ensuring each team member knew what they needed to do in a certain amount of time.

For future iterations of this course we would recommend a little more guidance for students in lectures. More specifically a closer relationship between the lecturing content and the project would be definitely useful. Additionally, it would be helpful to have the initial code be as clear and as simple as possible. This would assist students in working out what is needed to be implemented and how the system works. This would help to get started with the project. The code provided to us was fairly messy and had a few issues in it, which did not help when trying to follow the system flow.

We appreciated the relatively large numbers of TAs assisting with this course, and the weekly lab sessions where we could get assistance. Overall, we enjoyed the course and found it extremely useful in preparing us for Part IV projects and graduation.