

EE/CprE/SE 491 WEEKLY REPORT 2

02/07/24 – 02/13/24

Group number: 6

Project title: Video Pipeline for Machine Vision

Client &/Advisor: JR Spidell / Mohammad Tayeb Al Qaseer

Team Members/Role: Taylor Johnson (DDRM to output display), Deniz Tazegul (Video Stream to FPGA), Liam Janda (VDMA to DDRM), Ritwesh Kumar (Video Stream to FPGA)

- o **Weekly Summary** (Short summary about what the group did for the week. This should be about a paragraph in length. These are just a few questions to help you get started. What was the overall objective for the week? In general, what tasks were completed? Were there any changes made to the project?)

This week, the group focused on submitting the new project proposal and getting familiar with the components that the project requires. The group met with the advisor to discuss the things that the group would need to accomplish to finalize the new project. The group met with the client to edit and complete the proposal while discussing more specific details about the project.

- o **Past week accomplishments** (Please describe/summarize as to what was done, by whom, when, and, collectively as a group. This should be about a paragraph or two in length. Bulleted points are acceptable as well. Please keep only your technical details related to your project. Figures, schematics, flow diagrams, pseudocode, and project-related results are acceptable, but please ensure that they are legible (clear enough to read) and provide an explanation. If researching a topic, please add a few details about what was learned and how it is relevant to the project. If two or more people worked on a single task, be sure to distinguish how each member contributed to the task. Specific details relating to the assistance provided to other members may be included here. **Do not include classwork, such as individual reflection assignments, and group meetings as part of your duties.**)

- Deniz: This week, Deniz worked on understanding the MIPI controller that takes in a video stream from the camera. This entailed reading the datasheet for the AMD MIPI controller. He also created a slide deck where the team can gather information on their separate parts and share with the rest of the team. Deniz also introduced the team members to GIT and started working on a quick reference slide show to check back on when needed, since some members of the team have no experience with GIT or version control software in general. Deniz also submitted a new project proposal with the help of the team to get official course approval on the project

switch.

- Liam: This week, Liam worked on understanding the various parts of the Ultra96-v2 board and systems that we will be using, including the FPGA (Pins, Features, Layout), Memory, and AXI VDMA. The information gathered was transferred to a Google slide presentation where the team will present findings. Liam also created documents to aid in productivity. Liam created a document with all of the project proposal information so the team could collaborate on it. Liam also created a reference folder, where the team can add any important datasheets/presentations that will help with the design process. Liam has been selected to receive an Ultra96-v2 board to set up and utilize it in the following weeks.
- Taylor: Reviewed the hardware IP blocks involved in the display port controller. This information has been added to a Google slide deck containing relevant project information for the team to reference. Taylor also generated questions regarding IP configuration as certain settings have dependencies and must be agreed upon. For example, the resolution will need to be determined in order to set the pixel clock. Taylor accepted the invitation for the new Git repo and began to review the display pipeline code.
- Ritwesh: This week, Ritwesh met with the client 1-on-1 to ask questions on what are the expectations for the project for the upcoming weeks. Ritwesh also used this meeting to update his slide detailing what his plans are for the next week and what is needed to do so promptly. He also met virtually with the advisor to help draft and send emails to the class professors and the client inquiring about the process of creating a new project proposal as well as learning more details on the project itself based on the advisor's suggestions. This inquiry led to the creation and submission of the new proposal after the weekly team meeting with the client.
- Group: The group made progress towards beginning work on the new project. This was done by creating and submitting a project proposal for review by the professors during the team's meeting with the client. A holder of the hardware board for this project was decided and details were shared for the transfer of this device to the holder. Furthermore, a Gantt chart was introduced to the team and actionable items were discussed for the upcoming weeks and for the long term that would satisfy the requirements for the project.

o **Pending issues** *(If applicable: Were there any unexpected complications? Please elaborate.)*

- Deniz: Deniz currently does not have an invitation to the existing code repository.
- Liam: The VDMA was more complicated than anticipated, and Liam was not able to get a clear idea of its function.
- Taylor: None.
- Ritwesh: There is a current issue with accessing the GitHub code from past teams. Once Ritwesh receives the code, he can learn how to use it as GitHub is something he has not used in the past.

o **Individual contributions** *(Creating this section is optional, but it is **Required to include the***

“Hours Worked for the Week” and their “Total Cumulative Hours” for the project for each member somewhere relevant in your report. Your individual weekly hours should be at a minimum of 6-8 hours for this course. So please manage your time well. Also, ensure that individual contributions support your claim to the weekly hours. Be honest with the reports.)

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Deniz	Reviewed MIPI, meetings, GIT presentation, slide deck creation	6	12
Liam	Document creation, Ultra96-v2 Information gathering, meetings	6	12
Taylor	Reviewed the display port controller, updated project information slides, attended weekly meetings, and began a review of previous code.	6	12
Ritwesh	Project proposal work through email and as a team, updating his weekly status slide, and going to meetings	6	12

o **Plans for the upcoming week** *(Please describe duties for the upcoming week for each member. What is(are) the task(s)?, Who will contribute to it? Be as concise as possible.)*

- Deniz: Focus will be on learning more about the MIPI controller, updating the slide show for the MIPI controller and GIT, and reading the existing codebase.
- Liam: A focus for next week will be to learn the interface of the AXI VDMA component and what is required from the other devices for it to function. Liam will also begin to look at the previous team’s code to become familiar with the layout before receiving the Ultra96-v2 board.
- Taylor: Will review the datasheet for the test pattern generator (tpg) IP to gain a better understanding of how it works with the other IPs within the display port controller. Information on the tpg will be added to the team’s Google slide deck. Taylor will learn how to use GitHub for code version control and continue to review the previous team’s display pipeline code.
- Ritwesh: To learn more details on the camera module including documentation (register values and meanings) and access and learn how to use GitHub to draft test files.

Action Item	Task Owner	Expected Date
Access Git Repo and Learn to how use	All	2/19/2024
Review the prior team's code and create a presentation on code relating to individual roles	All	2/25/2024

o **Summary of weekly advisor meeting**

The group met with the advisor this week to discuss the possibility of switching the project to a video pipeline-oriented project instead of the previous hardware design for machine learning. The main worries were getting the new project approved before substantial work began and making sure this was an area with which the advisor had some experience to facilitate learning throughout the project. The advice given during the meeting was to communicate with the course professors and client to resubmit the project, and that it was likely a new advisor would be needed since the new project did not include much hardware design.