

## **EE/CprE/SE 491 WEEKLY REPORT 3**

**2/14/24 – 2/20/24**

**Group number: 6**

**Project title: Video Pipeline for Machine Vision**

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

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

### **o Weekly Summary**

This week, the team focused efforts on gaining access to the Git repository and ensuring that each member understood the basics for being able to push and pull code. Each team member was responsible for pushing a test file into the repository. Additionally, team members continued to research components and add their findings and questions to the team's project information slide deck. The client has confirmed that project equipment has been sent. The team is still waiting to hear back regarding approval for the new project proposal.

### **o Past week accomplishments**

- Deniz: This week, Deniz taught the team how to use GIT and created a “quick reference guide” with instructions on how to get a first commit. Deniz read up on the D-PHY and CSI-2 controller datasheets and put some work into the slide deck to teach the rest of the team about that. Deniz also got access to a specifications manual for both D-PHY and CSI-2 protocol but hasn't started reading on those yet. Deniz looked through the existing code base from previous teams to see where in that code CSI-2 and D-PHY is demonstrated.

- Liam: This week, Liam was able to get a more detailed understanding of each component of the Ultra96-v2 board and the VDMA. Liam understands the interface of the VDMA and what each I/O is and what format they require. Updated the current info slides to be more organized and in-depth, and also added current questions about the components. Presented the information on the slides to the team and client. Did first push to project repo.

- Taylor: Became familiarized with the basic commands for pushing and pulling code in GitHub. Then, cloned the repository, and practiced pushing a test file to the project repo. Taylor continued to read through the datasheet on the test pattern generator (tpg) to better understand how that IP functions. The tpg IP works closely with the VDMA to ensure correct timing of data transfer. The project information slides were updated with info on the tpg.
- Ritwesh: Was able to access the team's Github repository and find which parts he will focus on. Ritwesh created a test file in Github so I am more familiar with this environment. He could access some code through Jupyter Notebook as was suggested by the client. He received the datasheet for the image sensor from the client to cross-reference with the code in Github and put a copy for reference in the group folder.
- Group: The group focus for the week was to get everyone familiar with using GitHub for code version control. Each team member was responsible for reviewing the introduction to git PowerPoint, command sheet, and pushing a file to the project repository.

#### o Pending issues

- Deniz: There is a lot to learn about CSI-2 and D-PHY and how it is demonstrated in the code, it is taking quite a bit of time to get a good base understanding.
- Liam: Has a good idea of the components Liam researched, but still does not have much info on the other components we will be using.
- Taylor: Is having difficulty understanding how certain components of the display port will transfer / be configured in code and what dependencies exist for the display port components from areas outside of the display controller.
- Ritwesh: After going through the documentation more, may have some questions but not yet.

#### 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.)***

<b><u>NAME</u></b>	<b><u>Individual Contributions</u></b> <i>(Quick list of contributions. This should be short.)</i>	<b><u>Hours this week</u></b>	<b><u>HOURS cumulative</u></b>
Deniz	Created GIT guide for team, read documentation for D-PHY and CSI-2 controllers	6	18
Liam	Pushed test file to Git, researched the Ultra96-v2 and VDMA, and finished intro presentation and shared to group.	8	20
Taylor	Accessed Git, cloned the project repo, pushed a test file. Read the datasheet for the tpg IP, updated project info slides.	6	18
Ritwesh	Met 1-on-1 with the client and with the team, accessed the GitHub repository, drafted the first test file, and began looking at the datasheet for the image sensor	7.5	19.5

o **Comments and extended discussion**

The team's new project proposal is still pending approval from professors.

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: Next week, Deniz will begin to look at how data is transferred between (1) the image sensor and the D-PHY controller, (2) the D-PHY controller and the CSI-2 controller, and (3) the CSI-2 controller and the rest of the FPGA board. Deniz will also look through the code to find what existing code relates to this data communication.
- Liam: Next week, Liam will look into the code given by the previous group and get a better idea of the repository structure and manuals available for it. Begin to understand the components of other team members and the intermediate steps between them and Liam's components.
- Taylor: Will be looking over the c code created by the previous team for the tpg and

comparing it to the datasheet to better understand what registers are involved and how to configure this IP in sw.

- Ritwesh: Add to the team slideshow about the image sensor and how to configure the camera properly in the correct format. Also, include information about how this system fits with the other blocks. Begin learning the datasheet and relevant code and how they work together.

Action Item	Task Owner	Expected Date
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 team did not meet with the advisor this week.