

Spring 2023 ECE 445 Team Contract

Instructions: The content of this document should be specific to your goals and needs. Ideas for the content of each section are provided as suggestions.

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| Project No. and Name | Team 29: Portable Thermal Printer |
| Member Name, netID | Gally Huang, ghuang23 |
| Member Name, netID | Jason Liu, jliu246 |
| Member Name, netID | Kevin An, kqan2 |

ECE 445 is a project-based course. The course includes both team and individual grades. Project teammates generally all get the same grade for team assignments based on the expectation that all team members do their fair share of the work involved. The purpose of this contract is to lay out the tasks needed for the successful completion of the project and distribute them in a fair and efficient way to the team members. It will also discuss how the teammates will work together during the project and address any issues that come up. A contract that promotes good teamwork that leads to a successful project should:

- Acknowledge that each team member has commitments and responsibilities outside of ECE 445
- Encourage open communication about challenges that team members are facing, both in and out of ECE 445
- Give team members the benefit of the doubt and the opportunity to explain themselves when something goes wrong and resist jumping to judgement.

Project Description:

Our project is the Portable Thermal Printer, which is a printer that operates without the need for a connection to power outlets, ethernet, and wired data transmission. A user will be able to upload an image to a server, which we have a Wi-Fi enabled microcontroller to automatically get the data from and then send the data to an FPGA for image processing. The data will be sent back to the microcontroller and delivered to the printer, and this entire system will be powered by rechargeable batteries.

Project Goals:

If our team is successful, the achievements that will attest to it will include the following:

- Fully battery-powered system, with an expected battery life of at least 1.5 hours.
- Portable and wireless design, with the entire system requiring a maximum of 12"x12" footprint.
- Hardware accelerated image processing implemented on an FPGA to speedup traditionally poor-scaling algorithms such as Floyd-Steinberg Dithering.
- Start to end time, from user upload to completing the printing, should take a maximum of 20 seconds.
- A (locally hosted) backend server which can handle user uploads and GET requests from the microcontroller.

Expectations (ground rules) for each member:

- Each member will be open to constructive feedback, whether it's from the TAs or another group member, not disregarding any opinions but is willing to discuss outlets for improvement.
- Each member will be responsible for bringing up questions about concepts that may be difficult or hard to achieve, so as to not fall behind and potentially delay the completion of the project.
- Each member will consistently (at least once a day) check the group chat to stay up to date with everyone's input and questions. Responses to each other are encouraged to create a welcoming atmosphere within the group.
- Each member should be able to work on their expected contributions without micromanagement from other members. While collaboration is always welcome, it is important to also be able to work independently and trust one another to effectively do so.
- Each member should be truthful about their own situations. Everyone has their own agenda to attend to outside of ECE 445 as well, therefore it is essential to be upfront about potential events that may arise and conflict with one's ability to dedicate time to the project as soon as possible (i.e., Midterms, another project deadline, etc.).
- Each member should be able to provide help for other teammates in scenarios where the other teammate is unable to successfully fulfill their directed objective. The teammate should not be afraid to ask questions about the idea that they are struggling with.

Roles:

We believe that every member of our team possesses individual skills that are good for this project. Gally has the ability to communicate with members from HP due to his connections so naturally he should be the one advising what the rest of the team should be doing. Additionally, he can also work on the FPGA image processing the most since his work at HP was most similar to the design done on the project currently. As computer engineers, Jason, and Kevin both have skills in the coding/computing side of the project which would allow for them to work with the microcontroller chip and the server most efficiently. Since this part is the central part of the project which controls the flow of data, this task is very important. We also believe that we can all contribute to the power electronics part of the project which would allow for us to be utilize it as a learning experience.

Project Meeting Time(s):

Each of the meeting times with our team's TA are scheduled weekly on Tuesday at 4:20-4:40 PM. In addition, a time we have agreed on outside of this is on Thursdays at 3:30 PM and can go on as long as necessary.

Agenda:

Gally has already set the agenda for the current week and the next week. At this time, we are doing as much as we can before the parts come in, and when the parts come in, we will immediately begin testing. The group has collectively agreed to a majority democratic decision process. Jason will be appointed to keep the records for the group in order to keep the balance of power equal all three members.

Process and penalties for dealing with team issues:

If ground rules are broken by a member, then they will need to explain the situation they are in and propose a resolution in order to resolve the issue. Resolutions can be about changing their approach towards the task or modifying their schedule to better meet project goals. Members should be comfortable in asking for help from the rest of the group, and there should be a level of trust that needs to be in place in order to be successful long term. If the situation escalates beyond that, such as the member still being unable to meet deadlines consistently and being unresponsive to other members, then TA intervention may be necessary, but only as a last resort.

End-of-term agreement on using final peer assessment for grade adjustment:

We believe that while we should be held accountable to the contents of the contract, there are times when we will need to adjust on a day by day basis. We have agreed to meet all the deliverables for our respective subsystems, and when to have them finalized by. The most important criterion for us to meet is to have a completed and polished product, and as long as each member delivers on what is expected, then each member will receive a good peer evaluation.

Signatures: Iterate on this document until everyone is comfortable with its contents and signs (it is okay to type your printed name as your digital signature).

I affirm that I participated in generating this team charter and that I will abide by its contents to the best of my ability. Furthermore, I understand that failure to meet the expectations expressed here can lead to the stated consequences.

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| netID: jliu246 | (digital) Signature: <u>Jason Li</u> | Date: 2/17/23 |
| netID: kqan2 | (digital) Signature: <u>Kevin An</u> | Date: 2/17/23 |
| netID: __ghuang23____ | (digital) Signature: <u>Gally Huang</u> | Date: 2/19/23 |