

## Spring 2023 ECE 445 Team 75 Contract

<b>Project No. and Name</b>	
Member Name, netID	Harrison Liao, hzliao2
Member Name, netID	Girish Manivel, ggc2

### Project Description: *Short description of project*

Our project is creating a camera gimbal that will stabilize video footage along the x and y axes using 2 servo motors and a gyroscope while allowing the user to control the z axis.

### Project Goals: *If the team is successful in its purpose, what hardware and software achievements will attest to this?*

Our project has 3 subsystems: control, sensor, and power. Achievements to attest for our success will be our system being able to stabilize the camera on the x and y axes without noticeable camera shake in the video footage while moving around to film. This will have to be done with a gyroscope sensor that will relay the position to the microcontroller which then will send out signals to the servo motors to counter the movement and thus keeping the camera in the same orientation it was locked into. Our system will also need to have 3 modes that can be accessed with the push of a button. The first button will turn on the system and have the gyroscope start reading; the second button push will lock the camera orientation and have the motors start countering the movement, starting the gimbal mode; and the third button press will turn the system off.

**Expectations (ground rules) for each member:** *Try to list six or more minimum expectations. Consider aspects such as preparation, participation, feedback, responsiveness, etc. Try to explicitly list anything that could potentially turn into a problem. Find ways to encourage everyone to communicate (this may also fall under "tasks").*

1. Maintain communication
  - If you work on the project or come out with some new information about the project, make sure to update team members as soon as you can.
2. Be responsible for your work
  - If you are assigned to do work in the project, make sure you do it to the best of your ability and to finish on time.
3. Be efficient with time
  - If something is taking too much time, try a new approach or ask TA/course staff/other team members for help.
4. Be respectful to all members of the team

- All members of the team should be considered equals and be treated as such. Be respectful and listen to each other's ideas.
5. Stay on (or ahead) of schedule
    - Make sure to follow the schedule listed out in the course calendar as well as the schedule developed in the design document. Complete the tasks on time or even better, get ahead.
  6. Ask for help when needed
    - a. If you are having trouble with a task, do not hesitate to ask other team members or our TA.
  7. Be attentive
    - a. Think of any obstructions that can come about for our project and be sure to notify team members of anything that comes up. Also be aware of upcoming deadlines and any issues that may arise.

**Roles:** *Do you see this team performing well because everyone works together and contributes equally? Are there certain aspects of the project that some teammates excel at? Can tasks be spread among individuals to optimize progress toward the final product?*

We expect our team to perform very well because along with being team members, we are also roommates so communication should not be an issue. We will split the work equally between all team members and plan on working together for most of the project. For the split roles, Girish will be in charge of CADing the motor mounts to be 3D printed while Harrison will be responsible for CADing the enclosure/grip for the gimbal that will also be 3D printed. We will work together on the CAD for PCB as well as the programming of our microcontroller, with Harrison taking the lead on the PCB while Girish will lead the microcontroller programming.

**Project Meeting Time(s):** *The team will meet at the scheduled team meeting with TA each week. Can you also preset an ideal time for team meetings in the lab (your team may need to sign up for lab bench access)? Is your team interested in meeting to work on other aspects of the course together such as project research?*

Since all members of the team are roommates we will not have trouble meeting impromptu. An official meeting time we have set is Tuesdays at 2:00 PM before we meet with our TA so we have everything in order and are ready to update on what we have accomplished for the week. In the future, we also plan on meeting in the lab to do work we have such as soldering and programming the microcontroller. We plan on meeting there on Mondays at 12 PM as neither of us have classes that day.

**Agenda:** *Who will set the agenda? Beyond the weekly meetings with the TA, what will the team do to ensure that it stays on track during the semester? When a decision needs to be made, will it be approved by consensus or majority vote? Will a team member be appointed to keep records?*

Harrison will set the agenda and it will be approved by Girish to make sure it fits his schedule. Approvals will be unanimous and if there are complications, we will work together to make sure the agenda accommodates everyone's schedules and workloads outside of ECE 445. To stay on track we have marked the dates of important deadlines in our calendar's to make sure we don't fall behind. We will make an effort to stay ahead of schedule as we know things can come up that may push us behind.

**Process and penalties for dealing with team issues:** What happens when ground rules are broken? Who intervenes? What happens if the situation escalates? Always remember not to jump to judgement. Give group members the benefit of the doubt and the opportunity to explain themselves when something first goes wrong. TAs and instructors are available to help resolve issues.

When a rule either member feels that a rule has been broken, we will immediately notify the other of what rule he has violated. If both members agree, we will work together to resolve the issue and fix the problem. If there are opposing sides and members do not agree that a rule was broken, we will go to our group's TA and discuss the issue and how to resolve it.

**End-of-term agreement on using final peer assessment for grade adjustment:** Do you believe that this contract should hold your team accountable to its contents or that it may hold little value? There will be two formal peer assessments this semester. The first is used only to provide honest, constructive feedback to each team member. The second peer assessment affects a teammate's grade. Without accountability, many promises go by the wayside.

We as a team, Harrison and Girish, agree to uphold this contract and hold each other accountable to its contents.

**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.*

netID: hzliao2                      (digital) Signature: Harrison Liao                      Date: 2/24/23

netID: ggc2                      (digital) Signature: Girish Gokkul Chinnadurai Manivel                      Date: 2/24/23