Fall 2025 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.

Project No. and Name	**#3, Follow-Me Cart: App controlled smart assistant**
Member Name, netID	Jiaming Gu, jgu13
Member Name, netID	Zixuan Huang, zixuan23
Member Name, netID	Shi Qiao, shiqiao2

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: *Short description of project*

We are building a semi-automatic shopping cart that follows a designated user and can be controlled via a smartphone app. A Raspberry Pi handles high-level perception and app comms; an ESP32 provides low-latency motor control and safety logic. Sensing combines camera and mmWave radar; the cart maintains an 1–2 m following distance and performs basic obstacle avoidance within a relatively static, supermarket-like environment.

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

1. Following accuracy: Maintain 1-2 m distance to the user in our mapped demo area.
2. Runtime: The cart could operate 40-60 minutes continuously on battery to cover a typical shopping session.
3. Maneuver: Achieve a ≥90% collision-avoidance success rate against people, shelves, carts, and common obstacles.
4. App control: The phone app supports pairing, connection status, Follow-Me enable/stop, and speed/distance adjustment.

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. Read the meeting agenda 12+ hours in advance; arrive with code/designs ready to demo or questions ready to unblock.
2. Attend all TA meetings and at least 2 in-lab work sessions/week unless pre-cleared.
3. Acknowledge team messages within 12 hours on weekdays.
4. Update the task board before meetings and flag risks early.
5. Follow repo standards (lint, code review for all non-trivial PRs, reproducible builds, and versioned BOM).
6. Assume good intent, ask clarifying questions first, and give teammates space to explain setbacks.

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?*

Zixuan Huang: CV pipeline(User Detection and tracking), sensor fusion on Raspberry Pi, dataset/ test video capture.

Shi Qiao: ESP32 firmware, motor drive interface, PID speed/distance controller, emergency stop logic

Jiaming Gu:Bluetooth/Wi-Fi pairing, Android App, algorithm for avoiding obstacle detection and finding ways.

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?*

Weekly TA meeting times: Tuesday afternoon (original class meeting time)

Lab meeting (proposed): Tue & Thu 4:00–6:00 pm at 2070

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?*

Agenda: Rotates weekly among members.

Records: One of us will record the log, action items, owners and due dates.

Decision: Aiming for consensus.

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.

We will divide the process and penalties into three steps:

1. Peer raises the issue privately and agrees on a concrete catch-up plan.
2. If it is missed again, please discuss it as a team. Reassign the task or split the scope and set new data.
3. If that still doesn't solve the problem, involve the TA/instructor for mediation and contract enforcement.

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 acknowledge there are two formal peer assessments: the first for feedback only; the second can affect individual grades. We agree that our team is accountable to this contract and that repeated failure to meet expectations may be reflected in the final peer assessment.

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: shiqiao2	(digital) Signature: Shi Qiao	Date: 09/19/25
netID: zixuan23	(digital) Signature: Zixuan Huang	Date: 09/19/25
netID: jgu13	(digital) Signature: Jiaming Gu	Date: 09/19/25