

## Fall 2024 ECE 445 Team Contract - Team 17

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<b>Project No. and Name</b>	<b>Firefighter Health Monitoring Network (Team 17)</b>
Member Name, netID	Bryan Chang, chchang9
Member Name, netID	Kevin Huang, kuanwei2
Member Name, netID	Steven Y M Chang, sychang5

### Project Description:

Our team project is "Firefighter Health Monitoring Network" - a system of wearable devices integrated into firefighters' gear that continuously monitors vital signs. The system uses a mesh network of ESP32-based devices to transmit real-time health data to a central monitoring hub. This allows incident commanders to have immediate, comprehensive awareness of their team's health status, enabling quick decision-making and potentially life-saving interventions.

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

- The system shall continuously monitor and transmit vital signs data and generate automatic alerts for abnormal vital signs or lack of movement within 10 seconds of detection.
- Wearable units shall operate on a single charge for at least 2 hours in typical fire fighting conditions.
- The mesh network shall maintain connectivity in challenging environments (e.g., inside buildings and around obstacles).

**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”).*

- Each member should attend the weekly meetings (if unable to attend the meeting, notify the group at least one day ahead)
- Each member should engage in the group discussion (give feedback or provide their own thoughts and ideas)
- Major design decisions should be made with everyone’s consensus
- Each member is expected to review necessary materials, complete assigned tasks, and be fully prepared before weekly meetings or deadlines.
- Timely communication is crucial. Members are expected to respond to messages or emails within a reasonable time frame (24 hours) unless due to extraneous circumstances that are communicated with the team.
- Each member must take responsibility for their assigned tasks. If challenges arise, members should proactively communicate issues rather than waiting until the last minute.

**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?*

Our team believes in leveraging individual strengths while maintaining a collaborative environment where everyone contributes equally. We have identified the following roles based on our team members' skills and interests:

1. Bryan Chang (chchang9):
  - Lead Hardware Engineer
  - Responsible for overseeing the design and integration of the wearable device hardware
  - Will focus on power management to ensure the 2-hour battery life goal is met
2. Kevin Huang (kuanwei2):
  - Network Communications Specialist
  - In charge of implementing and optimizing the mesh network
  - Will ensure reliable data transmission in challenging environments
3. Steven Y M Chang (sychang5):
  - Software Integration Lead
  - Responsible for developing the central monitoring hub software
  - Will work on data processing and alert generation algorithms

**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 Meetings:** on Tuesdays from 4:30 PM to 5:00 PM.
- **Lab Meeting:** on Tuesdays from 5:00 PM to 10:00 PM
- **Stand-Up Meetings:** on Mondays and Thursdays from 2:00 PM to 2:30 PM

**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?*

**Meeting Preparation:**

- Bryan will be responsible for setting the agenda for each meeting, including the weekly TA meetings and lab sessions
- The agenda will be shared with all team members at least 24 hours before each meeting

**Decision Making:**

- Major decisions will be approved by consensus to ensure all team members are aligned
- For minor decisions, a majority vote will suffice if a consensus cannot be reached quickly

**Record Keeping:**

- Steven will be appointed as the primary record keeper
- He will maintain detailed minutes of all meetings, including decisions made, action items, and deadlines
- Meeting minutes will be shared with all team members within 24 hours of each meeting

**Progress Tracking:**

- We will use a shared project management tool (GitHub Projects) to track tasks, deadlines, and overall progress
- Kevin will be responsible for updating and maintaining the project management tool

**Regular Check-ins:**

- In addition to our weekly TA meetings and lab sessions, we will have brief (30-minute) stand-up meetings every Monday and Thursday
- These meetings can be conducted virtually if in-person meetings are not feasible

**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.

To foster a healthy and efficient team working environment, we will implement a three “strike” rule.

### **1. First Strike: Private Discussion**

If a team member breaks a ground rule, the issue should first be addressed privately and respectfully by one or more team members. The goal is to understand the situation and give the individual the opportunity to explain their side without jumping to conclusions. Encourage open communication to identify any challenges or obstacles the team member may be facing.

### **2. Second Instance: Group Discussion**

If the issue persists, it should be discussed as a group in a calm and professional manner. The team can discuss the problem collectively, identify a solution, and set clear expectations moving forward, including how team members can assist one another or re-delegate tasks to each individual's strong suit.

### **3. Third Instance: Meeting with TA/Instructor**

If the problem continues or escalates, a formal meeting with a TA or instructor should be arranged. The team member will have the opportunity to explain their actions, while the group can outline the steps already taken to resolve the issue.

**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.

Yes, we as a group believe that this contract should hold our team 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).

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*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: sychang5	(digital) Signature: Steven Y M Chang	Date: 09/18/2024
netID: kuanwei2	(digital) Signature: Kevin Huang	Date: 09/18/2024
netID: chchang9	(digital) Signature: Bryan Chang	Date: 09/18/2024