Team Contract Fulfillment - Team 17: Firefighter Health Monitoring Network

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I. Project Goals

Our project aimed to create a firefighter health monitoring network with wearable devices that monitor vital signs and sensor data, including heart rate, GPS, motion, and temperature, and generate alerts. The initial goals were:

- Continuous vital sign monitoring and alert generation within 10 seconds of abnormality
- 2-hour battery life in firefighting conditions
- Mesh network connectivity in challenging environments

We successfully met these objectives. Our wearable units automatically transmit data through intermediate nodes in the mesh network whenever direct communication with the central unit is unable to be established, display sensor data on the central monitor, and trigger audio/visual alerts when thresholds are violated. The units maintain connectivity through building structures to meet range specifications and operate reliably within the specified battery life requirement.

II. Expectations

All 6 expectations set were met by members of our group. All members were present in every weekly meeting with our TA, as well as additional meetings to work on the project. Each member also proactively provided feedback on various subsystems of our project, which was particularly effective in the design of the wearable and central unit software and integration of sensors. All of our major design decisions were made with everyone’s agreement. In addition, each member also completed assigned tasks prior to each group meeting and communicated any immediate updates or challenges that arose in our group chat within 24 hours.

III. Roles

The initially defined roles remained effective throughout the semester:

- Bryan (Hardware Lead): Managed PCB design, power systems, and hardware debugging
- Kevin (Network Specialist): Implemented mesh network architecture and user interface
- Steven (Software Lead): Developed wearable unit software and sensor integration

While we worked independently on specialized components, we maintained regular collaboration for cross-system compatibility. This approach enabled parallel development while ensuring system integration through frequent group discussions.

IV. Agenda

Our team made project decisions through in-person discussions with all members present and, when appropriate, with input and feedback from our TA. Goals were set weekly before our weekly TA meetings and were adjusted based on progress. This allowed for continuous progress to be made and ensured each member had a clear idea of specific tasks that needed to be completed. Whenever issues arose, we reviewed all the notes leading up to the obstacle(s) and discussed alternative strategies that could work before implementing and testing the viability of the solution. To ensure efficient collaboration, Bryan set the agenda, Steven maintained meeting records, and Kevin tracked progress with our project management tool (GitHub).

V. Team Issues

Our team experienced no significant conflicts, making the three-strike system unnecessary. Daily communication and regular in-person meetings facilitated smooth collaboration. The detailed conflict resolution process in our contract, while unused, provided a clear framework for potential issues. The team's proactive communication and shared commitment to project goals contributed to a positive working experience, so we would not have changed anything with regards to team approach.