***Team Agreement***

**EC463/EC464 - Senior Design**

**Fall 2018 – Spring 2019**

We, the members of team number 22, called Running Safety, have entered into a project titled Running Safety Plus for the customer, Alan Pisano (Boston University) as part of Senior Design Project, ENG EC463/EC464.

The general objective of our project is:

To supply a safety device for users that commonly exercise or run alone and may be exposed to a dangerous situation that they would need help. This two part product is a comfortable, affordable, and easy to understand device that will be available to runners of all ages. Safety is our primary concern therefore our device is a wearable device that is discrete and not visible by others.

We expect that our major project deliverables will include the following:

Our product consists of two parts, the first being a shoe insert and the second being a wearable chest strap. The shoe insert consists of a force sensor, a sim module to connect to the web application, and a GPS module to track the user’s location. The chest strap will be where our user interacts with the system through physical buttons, and this strap will also track the user’s heart rate. These two pieces will communicate with each other through bluetooth. A web application will be where our user controls the preferences of their individual system.

GENERAL CRITERIA FOR SUCCESS

We understand that evaluation of our work in Senior Design will depend on several factors. First is our team's success at meeting our proposed objectives, as described by our specifications, and providing our deliverables in working fashion, with the required documentation, by the course deadlines. Second is our demonstration of individual proficiency at design and at keeping adequate engineering records of our work. Third is our individual and collective team skill in listening, helping others to reach their goals, and negotiating technical and team problems. Finally, we understand the department policy for reimbursement of expenditures made in executing our project and agree that anything spent about the amount reimbursed by the department will be equally shared among all team members.

INDIVIDUAL LEADERSHIP

We understand that Senior Design teams shall be organized to give each member clear responsibility for one or more design areas. Several people may collaborate on a problem, but only one person should be the designated 'leader' for a design area. Each of us should be the leader of at least one design area so that we can clearly demonstrate our individual proficiency in design and in keeping professional engineering records (in our logbooks).

RESOLVING TEAM CONFLICTS

We understand that we need to work to resolve interpersonal and technical disputes within our team, in a professional and respectful manner. This will sometimes involve compromise, and we agree to be open to reasoned technical arguments about our individual areas and the team's collective efforts. We will seek faculty or mentor help when problems appear serious and are not resolved quickly by our efforts.

NON-PERFORMANCE OF DUTIES BY A TEAM MEMBER

We understand that each of us must pursue our design and team tasks in a professional and timely fashion to ensure our team's success. Should a team member fail to show diligence and concern for the team, a meeting of the team and the course faculty will be held to assess the situation and recommend specific short-term performance goals for the team member, and possibly the whole team. If these goals are not met, the course faculty may decide to remove the offending team member from the team. The student will then have to complete the course reporting directly to the faculty as a team of one. This is a serious step and suggests a significant failure on the part of the individual, and possibly the whole team. It should not be considered except as a last resort.

QUESTIONS

We understand that students and teams are welcome to approach the course faculty about this agreement at any time.

INDIVIDUAL TEAM MEMBER RESPONSIBILITIES

The remaining pages list our team members and our individual 'leader' responsibilities.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: Payton Hauck

Team Number \_\_\_22\_\_\_ Team Name: Running Safety

I have read this entire document, including my teammates’ descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature

Date:

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

My role on the team is to help work on the web application that the user will interact with to help set their preferences for the device. The particular problem I work on is the login and sign-up function the user must go through in order to user of our web app. In order to login I am implementing the firebase api that is available through Google. This allows users a simple way to login and will not force them to create a whole new account, unless they do not have a Google account to login through.

After the login portion I am also helping to activate the database that will store the user’s personal information, such as emergency contacts that our device will use in case of an emergency. Primarily I have been looking/setting up a MongoDB account that will help us store our data, but I recently saw you can use the database option that is offered through Firebase. Depending on the credentials and what Firebase offers, it may be easier to stay consistent by using the Firebase database. Right now both the firebase database and MongoDB are our top two options that I will soon need to narrow down to one.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: Thomas Cimino

Team Number 22 Team Name: Running Safety

I have read this entire document, including my teammates’ descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature

Date:

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

My role on the team is to implement the hardware portion of the design, including both the shoe device and the chest device. My particular problems include designing each subsystem to handle its responsibilities. The shoe device monitors the force-sensitive resistor while also handling the SMS and GPS capabilities. The chest device monitors changes in heart rate and also features the vibration warning motor and the false positive cancel button. Both devices are connected via Bluetooth. I have been the lead on designing these subsystems and ensuring our initial prototype works as it should.

Going forward, I will be looking into designing custom PCBs for our systems to shrink the overall size of our product, the best battery choice for our application, and overall integration into a user-friendly final product. Making a functional but also comfortable device is paramount, as a device which works but isn’t comfortable enough to use while exercising defeats the original purpose of the device.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: Zexing Gao

Team Number \_\_\_22\_\_\_ Team Name: Running Safety

I have read this entire document, including my teammates’ descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature

Date:

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

I am responsible for design the web application in whole. To be specific, the following functions should be finished my me: login page/home page, jump between those two bages, map view, adding/deleting emergency contacts, receiving data from hardware SMS module, sending text message to emergency contacts, and eventually deployed the entire project on Amazon Web Server so that the web application could be access publicly.

The main development languages I am using are JavaScript, HTML, CSS, and node.js. Google Map API are going to be imported as map view. I will use JavaScript to create user interface and other necessary elements such as buttons and text fields in login page and home page. The most important part in this project is to establish the communication between hardware with Twilio, a web server helps to sending/receiving SMS, and the communication between Twilio with software. I need to individually set up those two communication and then combine them together. this process, sending/receiving text message (SMS), will be achieved by calling Twilio API through node.js. Final deployment of the project will be tested on Amazon Web Server by using node.js. I have to create an student account to gain secondary domain name for the deployment.

After the entire project is finished, I am also responsible for future testing, maintaining and debugging based on future requirements from the client. In order to do so, the structure and framework of the web application should be flexible.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: Cong Han

Team Number \_\_22\_\_\_\_ Team Name: Running Safety

I have read this entire document, including my teammates’ descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature

Date:

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

My role on the team is to help both hardware setting and software design, such as pulse sensor, cancellation device and web app. The particular problem is the data read from pulse sensor is not quite accurate since the pulse sensor’s quality is not high and it will be affected by the vibration from the air. It is also hard for me to define a “danger” because everyone’s heart rate pattern is different. I will find out some threshold or pattern which can cover a lot of the danger situation automatically. Another problem is I created the cancellation device with several buttons and the code for each button may influence other sensors work, so we don’t use this device now, but I will figure out how to make the code work together properly.

In the future, I will spend more time on helping design the web app, such as database. So far I have the login function and database in C#, but it doesn’t meet the requirement we expected, which we want to publish the web app online that every user can use it easily. Therefore, I am looking forward to join software part to help them figure out how to build database in javascript and how to make the web work online. I will learn about MongoDB which is a good way to build the database and try to put the web on the server.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: Yajing Lai

Team Number \_\_22\_\_\_\_ Team Name: Running Safety

I have read this entire document, including my teammates’ descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature

Date:

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

I am responsible for the interface design and background pattern of the website, and working on the enhancement of the map page. I’m going to design a better display of the map and do the location tracking line when the runner is moving and the location is changing. Currently the map cannot show much information about the runner’s location, and the map window is not in an idea size. I will work furthermore on the UI optimization.

Also, I’m responsible for designing the shell of our device. In order to make it both comfortable and feasible for runner, I had to choose an appropriate material which can fit our device perfectly with the shoes and at the same time enhance runners using experience.

The appearance is important for our target customers, so I will do some research about the popular design of similar products and try to design a most favorable one for customers.