Milestone 1 – Planning
COEN/ELEC 390
WINTER 2025
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A. <u>6 OPPORTUNITY STATEMENTS</u>

1. Develop a sensory-friendly mobile app for individuals with ADHD, PTSD, and sensory disorders that detects noise levels with a Sound Detector sensor, provides alerts, and offers AI-driven calming strategies to help manage sensory overload.

2. Develop a mobile app for university students that integrates an alcohol level detection sensor to monitor alcohol levels in real-time, by using the MQ3 - Analog Alcohol Sensor. It will provide personalized alerts when limits are exceeded, and offer resources for responsible drinking, including the ability to call an Uber or notify an emergency contact to ensure safe transportation.

3. Develop an app for home comfort with the digital temperature and humidity sensor. It will monitor temperature and humidity in the house and give alerts on when the air is too dry/humid or too hot/cold. Can also automatically turn on humidifier/dehumidifier to always keep home comfortable for users.

4. Develop a smart BBQ application using a Flame Sensor Module that monitors the grill based on user specified food type/cooking preferences, detects irregular/intense flames, and provides real-time alerts to ensure perfected and safe cooking.

5. Develop a smart diet application that uses Load Cell with HX711 AD load cell amplifier (1KG) to measure food/ingredient weight, track calorie intake, and provide recommendations for meals based on diet preferences.

6. Develop a mobile app that integrates the CS5642C-V3 Camera Module to capture images, utilizing AI-powered facial recognition to analyse a person's features and match them to their celebrity doppelgangers. The app provides the users with the option to share their results on social media and explore other personalized content based on their celebrity match.

B. EVALUATION OF THE OPPORTUNITY STATEMENTS

Market Size: How big is the market size for this opportunity statement.
Competitive Intensity: How competitive is the market for this opportunity statement, where a 10 means there's no competition and a 1 means there's a lot of competition.
Depth of firm's existing market knowledge: Knowledge the team has on the market related to this product.
Depth of firm's existing technological knowledge: Technological knowledge of the team on the project.
Access to customers for Interviews: How easy it is to find customers for an interview.

Evaluation Criteria	Opp 1	Opp 2	Opp 3	Opp 4	Opp 5	Opp 6	Weight
Market Size (1 = Small, 10 = Large)	7	7.5	6	5	9	8	0.20
Competitive Intensity (1 = Lot's of Comp, 10 = No Comp)	8	8	3.5	5	5	6	0.25
Depth of firm's existing market knowledge (1 = No knowledge, 10 = Very knowledgeable)	6	7	9	6	6	8	0.15
Depth of firm's existing technological knowledge (1 = No knowledge, 10 = Very knowledgeable)	6	8	9	7	8	6	0.3
Access to customers for Interviews (1 = Nobody, 10 = Numerous people)	8	9	8	8	9.5	9	0.10
FINAL SCORE	6.9	7.85	7.15	6.05	7.3	7.0	

C. RANKING OF THE OPPORTUNITY STATEMENTS

Ranking from first place (Winner) to last place:
2 (Alcohol Consumption), 5 (Diet), 3 (Comfortable Home), 6 (Facial Recognition), 1 (Sensory Overstimulation), and finally 4 (Smart BBQ).

Opportunity 2 was chosen as the opportunity to be seized by the team.

D. <u>MISSION STATEMENT</u>

<u>Product Description:</u> The alcohol levels monitoring app will provide personalized alerts when alcohol limits are exceeded, and offer resources for responsible drinking, including the ability to call a taxi service or notify an emergency contact to ensure safe transportation.

<u>Benefit Proposition:</u> Drinking and driving is a serious risk, especially for university students who may overestimate their alcohol tolerance. In Canada, individuals aged 16 to 25 make up nearly 13% of the population but account for almost 27% of alcohol-related crash fatalities [1]. Our app helps students make safer decisions by providing real-time alcohol monitoring and personalized alerts when they should avoid driving. Our app makes it easy to track alcohol levels and suggests safer alternatives, such as calling a taxi service or notifying an emergency contact. Additionally, the next day, it offers recovery tips to help users feel better and stay informed about responsible drinking habits.

<u>Key Business Goals:</u>

Our team plans to have the app free to download with the users being able to access certain features. These features could include finding nearest bathrooms, calling a ride or other resources for those who have consumed alcohol. The full functionalities related to personalized alcohol blood levels would be unlocked after the user buys the wearable device which includes the MQ-3 sensor, a small microcontroller, and a battery.

The wearable device would be sold for $45. With the average cost per unit being approximately $25 (*see below*), we would make a profit of $20 for each unit sold.

Our 6 person team will spend 10 hours each week for 6 weeks (360 hours) creating this app at $40 per hour [5] or $86,400 cost. We will need to sell 4320 units to break even.

Since the consumption of alcohol is popular amongst Canadian and US university/college students and awareness of the dangers of overconsumption are becoming more widespread, the team believes we can exceed our break even target. There may also be potential for advertisement for car pickup services or *health products* of interest to users.

Wearable Device Estimate:
Sensor: $3 [2] + Microcontroller: $3 [3] + Battery: $3 [4] + Casing: $8 + Labor: $8 = $25

<u>Target market:</u> Our initial target market will be university/college students who drink alcohol. Students are more likely to use technology to monitor their alcohol consumption to ensure a safe environment for everyone. They also will share the app with their classmates so that the app is shared through word of mouth.

<u>Assumptions:</u>
Assumption 1: University students will be willing to carry an alcohol sensor in a wearable band and use it during their time out.
Assumption 2: University students (of whom are on a tight budget) will be willing to buy the wearable band.
Assumption 3: The application will be used a lot more during the evening/night and during weekends.

Constraints:
Constraint 1: Project must be completed by April 11, 2025.
Constraint 2: Product uses a sensor (in this case: MQ3 - Analog Alcohol Sensor).
Constraint 3: Product must be an android application.
Constraint 4: Team must be updating the Blog throughout the project.
Constraint 5: Implementing the feedback and input from stakeholders.
Constraint 6: Demoing the project to the Scrum Master for each sprint.
Constraint 7: Each person must work around 20 hours for each two week sprint.
Constraint 8: The sensor must be used in temperatures above -10°C and below 50°C.

Stakeholders:
1) Users who will pay for and use the project
   ● University students that drink alcohol will be the main users of the app and will benefit from its different features.
   ● Trusted individuals of the main user may be the secondary users of this app (in case alerts are sent through the app instead of sms). Those are the emergency contacts that will receive alerts.
2) Distributors for the software and the sensors
   ● Concordia Health and Wellness services: May support the app as a means to promote student safety and responsible drinking on campus.
   ● Different concordia student organizations: May support the app to promote responsible drinking for their members.
   ● Parents: may promote the app to their children to ensure their safety while they are out drinking alcohol.
   ● Police and Paramedics (or other emergency services): May support the app as an initiative to promote safe options to university students when drinking alcohol. They could say it is a way to reduce alcohol based accidents in university student communities.
   ● Ride-sharing applications and taxis: Could partner with the app to promote safe transportation options after drinking.
3) Suppliers for the sensors, microcontroller, bands, and batteries
4) Google play store: because it is an android app, it will be distributed on google play store.
5) Providers of alcohol drinking related products or services who may advertise on our app
   ● Alcoholics anonymous
   ● SAQ
   ● Bars/clubs
   ● Wellness centers

E. <u>ABBREVIATED SUMMARY PROTOCOL FORM</u>

See attached document.

F. <u>AI INTENT</u>

The team is not planning to use generative AI for their project.

G. <u>TEAM BLOG</u>

See attached document.

H. Faculty Of Engineering And Computer Science Expectations Of Originality

This form sets out the requirements for originality for work submitted by students in the Faculty of Engineering and Computer Science. Submissions such as assignments, lab reports, project reports, computer programs and take-home exams must conform to the requirements stated on this form and to the Academic Code of Conduct. The course outline may stipulate additional requirements for the course.

1. Your submissions must be your own original work. Group submissions must be the original work of the students in the group.
2. Direct quotations must not exceed 5% of the content of a report, must be enclosed in quotation marks, and must be attributed to the source by a numerical reference citation[1]. Note that engineering reports rarely contain direct quotations.
3. Material paraphrased or taken from a source must be attributed to the source by a numerical reference citation.
4. Text that is inserted from a web site must be enclosed in quotation marks and attributed to the web site by numerical reference citation.
5. Drawings, diagrams, photos, maps or other visual material taken from a source must be attributed to that source by a numerical reference citation.
6. No part of any assignment, lab report or project report submitted for this course can be submitted for any other course.
7. In preparing your submissions, the work of other past or present students cannot be consulted, used, copied, paraphrased or relied upon in any manner whatsoever.
8. Your submissions must consist entirely of your own or your group's ideas, observations, calculations, information and conclusions, except for statements attributed to sources by numerical citation. 9. Your submissions cannot be edited or revised by any other student.
10. For lab reports, the data must be obtained from your own or your lab group's experimental work. 11. For software, the code must be composed by you or by the group submitting the work, except for code that is attributed to its sources by numerical reference.

You must write one of the following statements on each piece of work that you submit: For individual work: **"I certify that this submission is my original work and meets the Faculty's Expectations of Originality",** with your signature, I.D. #, and the date.
For group work: **"We certify that this submission is the original work of members of the group and meets the Faculty's Expectations of Originality",** with the signatures and I.D. #s of all the team members and the date.

A signed copy of this form must be submitted to the instructor at the beginning of the semester in each course.

I certify that I have read the requirements set out on this form, and that I am aware of these requirements. I certify that all the work I will submit for this course will comply with these requirements and with additional requirements stated in the course outline.

Course Number: __COEN/ELEC 390__ Instructor: __Dr. William E. Lynch__

Date: __Feb 4th, 2025__

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I. <u>REFERENCES</u>

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