5 Professionalism

5.1 Areas of Responsibility

Area of responsibility	Definition	NSPE Canon	IEEE
Work Competence	Perform work of high quality, integrity, timeliness, and professional competence	Perform services only in areas of their competence; Avoid deceptive acts.	The IEEE states as engineers we shall maintain and improve our technical competence and to only take on technical assignments from others if you are qualified by training or experience or have specified your technical limitations in regards to the assignment. This differs from the NSPE because it is more specific about tasks being technical tasks. Additionally, the IEEE mentions how one should act when a task is assigned by another person. The NSPE does not do this.
Financial Responsibility	Deliver products and services of realizable value and at reasonable costs	Act for each employer or client as faithful agents or trustees.	Be honest and realistic in stating claims or estimates based on available data. This involves not overcharging for your products and accurately sharing the costs with those who need it. The IEEE and NSPE Canon are very similar in these regards.
Communication Honesty	Report work truthfully, without deception, and understandable to stakeholders.	Issue public statements only in an objective and truthful manner; Avoid deceptive acts.	The IEEE states we shall help society understand the capabilities and societal implications of conventional and emerging technologies. Additionally, the IEEE states we shall be honest and realistic when stating claims based on evidence. This differs from NSPE because it talks more about presenting technical information in a correct

			and understandable way rather than issuing public statements.
Health, Safety, Well-Being	Minimize risks to safety, health, and well-being of stakeholders.	Hold paramount the safety, health, and welfare of the public.	To avoid injuring others and to hold public safety paramount. This is basically exactly the same.
Property Ownership	Respect property, ideas, and information of clients and others.	Act for each employer or client as faithful agents or trustees.	To reject conflict of interest and bribery, and to avoid destroying others' property. This is more direct about what can be done to protect property ownership.
Sustainability	Protect environment and natural resources locally and globally.		IEEE says to strive to comply with sustainable development practices, and disclose factors that might endanger the environment. This means considering the impact your work will have on the environment. NSPE does not give any information on this topic.
Social Responsibility	Produce products and services that benefit society and communities.	Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.	To treat others fairly, to not discriminate, and to help others follow this code of ethics. This differs from NSPE because it is more specific about actions to do.

5.2 Project Specific Professional Responsibility Areas

Workplace Competence - This category refers to the area where our project's professional context is able to perform in a high quality of work, integrity, timeliness and professional competence. To imply this professional responsibility, always ensure that the project has been worked in a proper and equally fair timeliness. In addition, weekly meetings with our faculty would be helpful in order to keep track of our project's status and progress as well as to make sure the work quality plus integrity is always on point. Professional competence plays an important role in terms of our team demonstrating a high ability to complete a task in an efficient way.

Financial Responsibility - This responsibility area applies to our professional context because at the beginning of this project, we were given a budget to work within. Another reason that it applies to our context is that part of the reason for our project is that we could possibly introduce this as part of a class for future students so it would need to be rather affordable. Our team is performing high in this area as we were given a budget of $600 and we were able to use that budget efficiently and got 2 robots to work with instead of just 1.

Communication Honesty - This responsibility area applies to our professional context because in order to create a well-done project, communication is a key factor. With truthful communication, work can be distributed and put in the right hands for how it needs to be done. Our team is performing high in this area as we have weekly meetings with our team and the project leader to go over what needs to be done and what has already been done.

Health, Safety, and Well-Being - Our project only has one potentially hazardous aspect which is the battery. Li-ion batteries have the potential to explode if not handled properly, so we will ensure the battery is properly handled at all times. By training our robot virtually, we minimize the potential for damage occurring to the battery. As this project is scaled up, more hazardous conditions will arise. Larger servos can create pinch points that can easily remove a finger if caught, and the fact that a human is not in complete control can create dangerous situations.

Property Ownership - Our project is going to involve integrating some software tools and resources that were developed by others. Therefore, this area definitely applies to our project. Our team is performing well with regards to this responsibility area so far. At this point there haven't been many opportunities where we needed to make sure credit was given to a product creator, but in our presentations and assignments, we have attempted to note where different products come from (such as our Petoi Bittle Robot) and cited a couple research articles that were utilized. As we pull in these resources, we need to make sure we have an area to document and give credit to those that developed the resources we make use of in our project.

Sustainability - Sustainability of the project will be in consideration based on the materials, methods and practice used to give life to the project. Usages of plastics and microelectronics can have an impact on the environment through how they are sourced from companies. Additionally, other waste may be created by the project. This project performs well with respect to sustainability because it produces very little waste. This is due to the fact that a big part of the project is code (no waste), and the Petoi Bittle is small and tough (will not break, produces little waste if it does).

Social Responsibility - Our project involves social responsibility. Even with the smaller scope of the project, as in the project is meant to specifically create an impact at Iowa State University, the social responsibility extends to the students' education and beyond that student workplace

competency through the framework we hope to create through this project for a future course at Iowa State.

5.3 Most Applicable Professional Responsibility Area

Social Responsibility is the most important professional responsibility of this project. The main thought behind this project is to create a framework for students at Iowa State University in order for students to explore and learn concepts of embedded Machine Learning. Not only do we have a responsibility to provide a useful outline students can use to complete this course, but also the knowledge they learn in this potential course would also extend to their knowledge in the workforce they might need to continue to provide new engineering solutions. Because Iowa State students have been hired for many different positions across the world, the impact for this course could help new engineers apply this knowledge across the many different areas they could work in. As for how the team has demonstrated this responsibility not only through our engagement of students ourselves, but also through the diligent research and the process we are working with to achieve this project. Every team member has gone through self-learning for machine learning and worked to ensure understanding of the concepts before applying them. Through teaching each other and ensuring our design and documentation of the project is thorough, our team demonstrates this professional responsibility in the project.