

5 Professionalism

This discussion is with respect to the paper titled “Contextualizing Professionalism in Capstone Projects Using the IDEALS Professional Responsibility Assessment”, *International Journal of Engineering Education* Vol. 28, No. 2, pp. 416–424, 2012

5.1 AREAS OF RESPONSIBILITY

Pick one of IEEE, ACM, or SE code of ethics. Add a column to Table 1 from the paper corresponding to the society-specific code of ethics selected above. State how it addresses each of the areas of seven professional responsibilities in the table. Briefly describe each entry added to the table in your own words. How does the IEEE, ACM, or SE code of ethics differ from the NSPE version for each area?

| Area of Responsibility | Definition | NSPE Canon | IEEE |
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| Work Competence | Perform work of high quality, integrity, timeliness, and professional competence. | Perform services only in areas of their competence; Avoid deceptive acts. | <p>6. to maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations;</p> <p>Similarly, to the NSPE Canon, engineers should know what they are doing when they are designing something. The difference in the IEEE code is the idea that while you may not be competent in something, you can improve your knowledge to become competent in it.</p> |

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| <p>Financial Responsibility</p> | <p>Deliver products and services of realizable value and at reasonable costs.</p> | <p>Act for each employer or client as faithful agents or trustees.</p> | <p>3. to be honest and realistic in stating claims or estimates based on available data; Similarly, to the NSPE Canon: claims and estimates of projects need to be as accurate as possible. Engineers must act as an faithful trustee. The difference between the codes is that one is to the employer, whereas one is seemingly to the consumers.</p> |
| <p>Communication Honesty</p> | <p>Report work truthfully, without deception, and understandable to stakeholders.</p> | <p>Issue public statements only in an objective and truthful manner; Avoid deceptive acts.</p> | <p>3. to be honest and realistic in stating claims or estimates based on available data; 4. to reject bribery in all its forms; Similarly, to the NSPE Canon, an engineer should be truthful and avoid deception, which would include bribery. The difference between the IEEE code and the NSPE Canon is that the IEEE code focuses more on internal matters while the NSPE canon seems to focus on external matters.</p> |
| <p>Health, Safety,</p> | <p>Minimize risks to</p> | <p>Hold paramount</p> | <p>1. to accept</p> |

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| <p>Well-Being</p> | <p>safety, health, and well-being of stakeholders.</p> | <p>the safety, health, and welfare of the public.</p> | <p>responsibility in making decisions consistent with the safety, health, and welfare of the public, and to disclose promptly factors that might endanger the public or the environment;</p> <p>The safety of the public in both code of ethics is paramount to an ethical project – as such dangers must be properly communicated and dealt with.</p> <p>The difference between the two codes is that the IEEE code explicitly states that you must disclose it, whereas the NPSE Canon does not.</p> |
| <p>Property Ownership</p> | <p>Respect property, ideas, and information of clients and others.</p> | <p>Act for each employer or client as faithful agents or trustees.</p> | <p>9. to avoid injuring others, their property, reputation, or employment by false or malicious action;</p> <p>Similarly to the NSPE canon, the IEEE code acknowledges property is something that needs respected and cared for. The difference between the two is that the IEEE code extends</p> |

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| | | | that respect not only to physical property but also to reputations. |
| Sustainability | Protect environment and natural resources locally and globally. | Protect environment and natural resources locally and globally. | <p>1. to accept responsibility in making decisions consistent with the safety, health, and welfare of the public, and to disclose promptly factors that might endanger the public or the environment;</p> <p>Similarly to the NSPE canon the IEEE code acknowledges people have a responsibility to respect the environment. Where the IEEE code differs is that it connects the idea of protecting the environment ultimately as an ends to protecting people, instead of something that should be pursued in it of itself.</p> |
| 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. | <p>9. to avoid injuring others, their property, reputation, or employment by false or malicious action;</p> <p>Both state that engineers must act as honorably, responsibly, and ethically as to upkeep the honor of engineering as a</p> |

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| | | | <p>profession.</p> <p>They differ in the fact that the NPSE Canon specifically calls out the honor of the profession, where the IEEE code does not.</p> |
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5.2 PROJECT SPECIFIC PROFESSIONAL RESPONSIBILITY AREAS

For each of the professional responsibility area in Table 1, discuss whether it applies in your project's professional context. Why yes or why not? How well is your team performing (High, Medium, Low, N/A) in each of the seven areas of professional responsibility, again in the context of your project. Justify.

| Area of Responsibility | Application to our project |
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| Work Competence | <p>This applies to our group because we're designing an application and we want it to perform its function well so it can hopefully be used. Currently our team is performing medium at this responsibility because we have not gotten to the design phase yet, but we are conducting research so that we will be competent in the area we are working in.</p> |
| Financial Responsibility | <p>This responsibility applies less to our group as our project is focused more on research into 5G technology rather than delivering a financially reasonable project.</p> <p>So far, we have had medium performance in this category. We have not investigated the financial costs of our potential projects. This will be important to improve upon and monitor as we begin to develop our project.</p> |
| Communication Honesty | <p>This applies to our team as we have a responsibility to the rest of the team as well as our project stakeholders to be truthful about the progress we've made.</p> <p>We have so far been performing high in this category. We have all been honest about what we do or do not have backgrounds in and honest about the feasibility of our project. It is important for us to have open communication with everyone to maximize our teamwork and efficiency.</p> |
| Health, Safety, Well-Being | <p>This moderately applies to our project because our focus is on 5G applications in agricultural and rural areas. We want to make sure our project does not jeopardize the well-being of the people in those areas as well as the crop and livestock we will be dealing with.</p> <p>Our Team is performing high in this area by researching in great depths about farming practices and how we can maintain the well-being of crops as well as how we can improve upon farming processes.</p> |
| Property Ownership | <p>Since our product will be used by others, we want to make sure that it does no harm to farmers' property or crop.</p> <p>Our team is performing low in this area now because we are still in the process of focusing on the scope of the project. We will need to increase our focus in this area once we begin the development phase of our project to</p> |

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| | make sure that we are meeting property ownership standards. |
| Sustainability | <p>This applies to our group because we are working with agricultural communities and have a responsibility to make sure our work is environmentally sustainable.</p> <p>Our team is performing high in this area by making sure all the ideas we come up with are safe and sustainable for the environment</p> |
| Social Responsibility | <p>This applies to our group as we are trying to produce a product that will benefit rural communities and improve their lives</p> <p>Our team is performing high in this area. We've been researching and brainstorming ideas designed to provide ease of life to agricultural and rural communities</p> |

5.3 MOST APPLICABLE PROFESSIONAL RESPONSIBILITY AREA

Identify one area of professional responsibility that is both important to your project, and for which your team has demonstrated a moderate or high level of proficiency in the context of your project. Briefly describe what this responsibility means to your project, the ways in which your team has demonstrated the responsibility in the project, and specific impacts to the project that you have observed

One area of professional responsibility that is both important to our project of 5G application in rural/agricultural communities and one that we have demonstrated with a high level of proficiency these past few weeks is social responsibility.

We are currently still in the process of defining our project, only being restricted to the use of the ARA Network and benefiting rural/agricultural communities. As a part of social responsibility, we want to create a product that will benefit these communities. Instead of seeing how we could apply drones, automation, or XR, we are taking a step back to ensure we are making a meaningful impact in society and communities. We have taken these past few weeks to research current issues within agriculture such harmful radiation, heavy metals in soils and irrigation issues to name a few. When we find ourselves looking into applications that already exist, we also want to ensure that we are improving this technology.

A great example we have recently come across is the concept of soil sensors utilizing 5G for predictive harmful heavy metal detection or irrigation issues. Another use-case was the application of 5G to livestock with smart collars for biometrics. Will the information/data this provides benefit agricultural communities? How is this better than current technology? As a part of social responsibility, we challenged each other.