APPLES Reflection 1

You are developing software for an organization that needed some help. Some of these organizations are non-profits, some are university entities, some are creating a business that meets an unfilled need. You have now spent over a month working with this client and should understand their goals and how your project fits into these goals. All of them have the intention of making a difference. As part of the service-learning component of this course, you are to **identify what the goals and values of your project are**. *Clearly, not all of the projects are out to solve world hunger but they are all meeting some population's needs.* **Identify the need that you are meeting.** *If you are supporting researchers, you can explain why the research that they are doing is important and whom it affects.* **Explain the importance of this need and how the work that you are doing will impact it.**

The primary goal of our project is to make robotics education more accessible and understandable for beginners by providing easy-to-use, interactive visualization tools for key concepts such as PID (Proportional, Integral, Derivative) control and bug algorithms. The existing resources in this field are often cluttered with jargon and difficult to use, which can be intimidating for those new to the subject.

The need we are addressing is the lack of user-friendly and engaging educational tools in the field of robotics. By making these concepts more approachable, we aim to support educators in this rapidly growing field and broaden participation in STEM, particularly for those who may have limited access or feel excluded.

PID control is an essential concept in robotics, responsible for maintaining a system's stability and performance. However, it can be challenging to grasp without prior knowledge or experience. By creating an interactive visualization tool for PID, we are enabling users to better understand and experiment with the concept, allowing them to apply their learning to real-world scenarios more effectively.

Bug algorithms are another area where interactive visualization tools are surprisingly scarce. These algorithms are relatively intuitive but still require a clear and accessible means of teaching. Our project aims to bridge this gap and make it easier for users to visualize, learn, and apply bug algorithms in their own robotic projects.

In summary, our project's importance lies in its ability to make robotics education more accessible and engaging for learners of all backgrounds. By developing interactive visualization tools, we support educators and empower students, fostering a more inclusive learning environment in STEM fields. Ultimately, this work contributes to the advancement of robotics research and its applications in solving real-world problems.