

ENGR 10: Designing Across the Lifespan Robot Design in the Context of Human Development

This reflection addresses

Area E GE Learning Outcome #1– Recognize the interrelation of the physiological, social/cultural, and psychological factors on their development across the lifespan.

Guidelines

Deliverable: Each student in your robot design project group will prepare a 400 to 500 word (about 1 page single spaced) reflection plus appropriate references. The reflection will link your experience designing and building a robot to selected research and best practices that examine human's experience of robots at different points in the lifespan. Each student will upload a reflection to Canvas.

Overview: As you have been designing and building your robot, you have been considering the particular tasks your robot must complete, but likely you have put little emphasis on design features related to the interaction of the robot with its user. Understanding human development is essential to best serving the user. Designers might want to consider issues that range from how much a robot looks like a person, to the size and color of the control buttons, to how big the letters are on the display, to how sound is used to engage the user. In addition, issues such as safety or collaboration among users might come into the design specifications. Finally, designs should consider a user's cultural background, because culture affects, for example, language or perceptions of how to interpret emotions or physical characteristics, which in turn influence the way a user interacts with a robot. And the list goes on. The goal of this reflection is to examine how human development affects our decisions as engineers. That is, how do we specify our engineering designs so that we best serve the cognitive, social/emotional, and physical needs and limitations of the users of our designs?

Assume that you have been asked to redesign your robot for multiple audiences. You are asked to reflect on design considerations for two stages of life 1) childhood and 2) late adulthood (65+ years old). Identify three aspects of a robot design that you would need to consider to serve these two types of users. For each aspect you have selected, describe

- Developmental issues you need to consider for each group (for example mobility or motor skills or familiarity with technology)
- How you would design your robot to address each issue

Your discussion must be based on information from reliable sources. We have posted a number of articles about these two populations on Canvas (see DESIGNING ACROSS THE LIFESPAN: Robot Readings). You may use these as a starting point, or find your own sources.

The reflection should be **single spaced**, 1 inch margins all around and 12 point font with references and in-text citations in correct **APA format** (APA format is discussed in the *The Everyday Writer* that all students at SJSU should have purchased at the Bookstore or online). The paper should be **at least 400 words** (not counting title or references) and is worth **5 laboratory points**.

The reflection paper format:

[A] Introduction (1 paragraph)

You will start with an introduction that: (a) presents the issue of designing to meet the physical, emotional, social and/or cognitive needs of the user, (b) briefly introduces the three design issues that will be presented (c) provides a succinct, but comprehensive, overview of what the paper will do.

[B] Body

The main body of your paper will focus on presenting the three design issues (one paragraph each) and how the robot would need to be adapted to the two types of users (children and older adults). Do not just make this up, but instead cite reliable sources such as the papers posted on the Canvas web site to support your reasoning as to why and how to address specific developmental stages.

Avoid direct quotes – Summarize everything in your own words. If you must quote, you need a reference plus page number in text (e.g., Hogan et al, 2013, pg. 298) as well as a full reference in the reference section at the end.

[C] Conclusion

In your conclusion, **briefly** summarize the key design issues that you have identified for these two populations and additional knowledge, data, or other resources you might need to best design for these two groups.

[D] References

Provide a separate page that lists **in APA format** the references for each article and web-site cited in the paper.