

POV and Problem Statement

Due Date/4/13/23

1 POV Statement

Welders need real-time data feedback because it will enhance the welders' skills and reduce waste/time.

2 Problem Statement

The current welding process often lacks real-time feedback and monitoring, which can result in welds with poor quality and durability. The lack of immediate feedback on weld characteristics such as arc length, electrode angle, and travel speed can lead to inefficiencies and costly errors. [2] Traditional methods of providing feedback, such as visual inspection or external measuring devices, can be time-consuming, impractical, and expensive. The evidence of these issues can be seen in our observations and interviews with people in the field. [3] With the arc created during the welding process if you try to take a picture or record anything with a normal camera it will become distorted and unusable causing us to come up with different methods. [1] [3] Therefore, the objective of this project is to develop a mobile application that connects to the main computer on the welder that handles the signals. That will then be passed to the users headphones for real time feedback. The application will provide audio signals to alert welders when there are deviations from the desired welding conditions, allowing them to make immediate adjustments to their welding techniques. The application will also have a database to store information about the welds, providing welders with a historical record of their welding work. Ultimately, the project aims to improve the efficiency and effectiveness of stick welding by providing real-time feedback to welders. The stakeholders for this project are the group members and our advisors. The users for this product would be new welders or welders that want to get better and know the soundness of their welds.

References

- [1] A Adan et al. *Fusion of thermal imagery and LiDAR data for generating TBIM models*. 2017. ISBN: 9781509010127. URL: <https://ieeexplore.ieee.org/document/8234261>.
- [2] Ario Sunar Baskoro and Irwan Haryanto. “Development of travel speed detection method in welding simulator using augmented reality”. In: *ICAC-SIS 2015 - 2015 International Conference on Advanced Computer Science and Information Systems, Proceedings*. Institute of Electrical and Electronics Engineers Inc., Feb. 2016, pp. 269–273. ISBN: 9781509003624. DOI: 10.1109/ICAC-SIS.2015.7415194. URL: <https://ieeexplore.ieee.org/document/7415194>.
- [3] Mengmeng Li et al. “Experimental Research on Welding Defect Detection Based on Thermal Imaging”. In: *IMCEC 2022 - IEEE 5th Advanced Information Management, Communicates, Electronic and Automation Control Conference*. Institute of Electrical and Electronics Engineers Inc., 2022, pp. 836–840. ISBN: 9781665479677. DOI: 10.1109/IMCEC55388.2022.10019863.