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COMP-3301
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Project Proposal

13th October 2023

OVERVIEW

Using computer vision and machine learning to recognise hand gestures. Specifically, looking to recognise patterns from American Sign Language.

READINGS

1. Chapter 12, Object Recognition. Gonzalez, Rafael C., and Richard Eugene Woods. *Digital Image Processing*. 3rd ed., Prentice Hall, 2008.
2. Brownlee, Jason. "A Gentle Introduction to Object Recognition With Deep Learning" *Machine Learning Mastery*, 27 January 2021, https://machinelearningmastery.com/object-recognition-with-deep-learning/. Accessed 11 October 2023.
3. "Computer vision with TensorFlow." *TensorFlow*, 11 August 2023, https://www.tensorflow.org/tutorials/images. Accessed 11 October 2023.
4. Cheok, M.J., Omar, Z. & Jaward, M.H. A review of hand gesture and sign language recognition techniques. *Int. J. Mach. Learn. & Cyber.* 10, 131–153 (2019). https://doi.org/10.1007/s13042-017-0705-5

SPECIFICATIONS

We aim to explore the implementation of Google's mediapipe framework (or other similar framework) combined with computer vision techniques. The goal is successful initial recognition of ASL alphabets followed by more complicated word gestures. Tensorflow for training the machine learning model, Mediapipe for hand recognition, OpenCV for image manipulation are some of the recognized tools at this stage of development.

The techniques and framework to be used for this project will be modified or might even be changed as the project progresses.

CONTRIBUTIONS

Trishir & Farhan : Equal Contribution

- Short listed topics
- Researched and went through readings
- Made the proposal