Evaluation of OCR Accuracy by Removing Motion Blur with Generative Adversarial Networks and Noise Reduction Using LPFs KYOUNGWAN WOO, Phillips Exeter Academy, RICHARD KYUNG, CRG-NJ — In the context of assistive technology, OCR(Optical Character Recognition) can translate photos to text to speech, which enables individuals with visual impairment and/or linguistic deficiency to gain better access to the information within street signs, physical books, and other forms of common text. However, the program does not take into account vertical and lateral motion blur caused by spontaneous vibrations, hand movement. breathing, and other issues commonly associated with photography This research attempts to remove motion blur from images and increase the accuracy resulting from common OCR programs. The photos were taken in a way that resembled images taken by individuals suffering from muscle sclerosis and/or HAVS(Hand-arm vibration syndrome), and passed through a derivative of a generative adversarial network. The final photos were visually checked, then fed into an OCR(Text to Speech) program to test for accuracy compared to the original unblurred photos. Also, using the MATLAB program, Low Pass Filters (LFPs) were applied to the same images tested above to examine their effect on the digital imaging process. Comparisons of the functions that helped to determine the most effective filter, which was used to create a noise reduction model, has been made.

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