This folder includes all the MATLAB files to run the gamma correction we proposed in the paper.

The following is the pseudo-codes of conducting gamma correction for **R, G, and B channels (chromatic stimulus) of VR display**.

1. Run MATLAB and Arduino

SaveMeasuredLuminanceForNormalDisplay('R');

SaveArduinoValuesForNormalDisplay('R');

SaveMeasuredLuminanceForNormalDisplay('G');

SaveArduinoValuesForNormalDisplay('G');

SaveMeasuredLuminanceForNormalDisplay('B');

SaveArduinoValuesForNormalDisplay('B');

1. Run Unity and Arduino

SaveArduinoValuesForVRDisplay('R');

SaveArduinoValuesForVRDisplay('G');

SaveArduinoValuesForVRDisplay('B');

SavePhotometerValuesForVRDisplay('R');

SavePhotometerValuesForVRDisplay('G');

SavePhotometerValuesForVRDisplay('B');

1. Run MATLAB

SaveGammaTableForVRDisplay('R');

SaveGammaTableForVRDisplay('G');

SaveGammaTableForVRDisplay('B');

CreateLUTTextureForUnity(1);

The following is the pseudo-code of conducting gamma correction for **RGB channels (achromatic stimulus) of VR display**.

1. Run MATLAB and Arduino

SaveMeasuredLuminanceForNormalDisplay('RGB');

SaveArduinoValuesForNormalDisplay('RGB');

1. Run Unity and Arduino

SaveArduinoValuesForVRDisplay('RGB');

SavePhotometerValuesForVRDisplay('RGB');

1. Run MATLAB

SaveGammaTableForVRDisplay('RGB');

CreateLUTTextureForUnity(0);

**Attention:**

***InterX*** function in the “Needed function files” is a function created by others. Please check the following citation for this function.

NS (2023). Curve intersections (https://www.mathworks.com/matlabcentral/fileexchange/22441-curve-intersections), MATLAB Central File Exchange. Retrieved May 19, 2023.

***rgb2lut*** function in the “Needed function files” is a function created by Murray et al. (2022). Please check the following citation for this function.

Murray, R. F., Patel, K. Y., & Wiedenmann, E. S. (2022). Luminance calibration of virtual realitydisplays in Unity. *Journal of Vision*, *22*(13), 1. https://doi.org/10.1167/jov.22.13.1

***PresentOnNormalDisplay\_RGB*** function in the “Needed function files” is a revised function based on *CalibrateMonitorPhotometer* function in *Psychtoolbox-3*. Please refer to the following link for a detailed understanding.

http://psychtoolbox.org/docs/CalibrateMonitorPhotometer