

# Research Log - Week 02

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May 22, 2016    Added more to thesis document.

Worked on singular-value of previous blending equation. where:

$$\begin{bmatrix} x_{uv} & 0 \\ 0 & y_{uv} \end{bmatrix} = \begin{bmatrix} \mathbf{u} & \mathbf{0} \\ \mathbf{0} & \mathbf{u} \end{bmatrix}^T \begin{bmatrix} \mathbf{M} & \mathbf{0} \\ \mathbf{0} & \mathbf{M} \end{bmatrix}^T \begin{bmatrix} \mathbf{X} & \mathbf{0} \\ \mathbf{0} & \mathbf{Y} \end{bmatrix} \begin{bmatrix} \mathbf{M} & \mathbf{0} \\ \mathbf{0} & \mathbf{M} \end{bmatrix} \begin{bmatrix} \mathbf{v} & \mathbf{0} \\ \mathbf{0} & \mathbf{v} \end{bmatrix}$$

where

$$\mathbf{u} = \begin{bmatrix} u \\ 1 \end{bmatrix}, \mathbf{v} = \begin{bmatrix} v \\ 1 \end{bmatrix}, \mathbf{X} = \begin{bmatrix} x_{00} & x_{01} \\ x_{10} & x_{11} \end{bmatrix}, \mathbf{Y} = \begin{bmatrix} y_{00} & y_{01} \\ y_{10} & y_{11} \end{bmatrix}, \text{ and } \mathbf{M} = \begin{bmatrix} -1 & 1 \\ 1 & 0 \end{bmatrix}$$

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May 23, 2016    Read [Chen1993] [1] section 2.4 on *Block Compression*.

**SUMMARY:** Blocks are established by *threshold* where each block contains pixels that are *offset by no more than the threshold*, allowing all pixels to be offset at once.

**Question for Kamangar:** Doesn't this assume that all pixels in the block have a uniform offset?

Working on MatLab program to perform pixel offsets of corresponding points (i.e. assign corresponding points to pixels in MatLab by non automatic methods)

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May 24, 2016    Read following sections from [Chen1993] [1]:

- Implementations (3)
  - Preprocessing (3.1)
  - Interactive Interpolation (3.2)
  - Examples (3.3)
- Applications (4)
  - Virtual Reality (4.1)
  - Motion Blur (4.2)

**Question for Kamangar:** With regards to Section 3.1 and Section 1, why is a graph structure needed? Why is it a lattice?

**Question for Kamangar:** With regards to Section 4.1, I don't understand the concepts of *temporal anti-aliasing* and *super-sampling*?

Made additional changes / added material to thesis document.

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May 25, 2016 Was using figures from <http://www.robots.ox.ac.uk/~vgg/hzbook/hzbook2/HZfigures.html> as test images, which may not be best source as there white borders, appear to be up-sampled, and do not contain (extrinsic) calibration info. Consider using images located at <http://vision.middlebury.edu/stereo/data/scenes2014/> that contain meta-info including (intrinsic) calibration info.

## References

- [1] Shenchang Eric Chen and Lance Williams. View interpolation for image synthesis. In *Proceedings of the 20th Annual Conference on Computer Graphics and Interactive Techniques*, SIGGRAPH '93, pages 279–288, New York, NY, USA, 1993. ACM.