Biweekly report

Guo Yu
In global optimization, render whole data many times.
- Different volume structures share same albedo correction.
\( \alpha_n \)

- Global optimization -> Local optimization
- Different volume structures using different albedo correction.

\( \alpha_k < \alpha_i \) (\( k = 1,2,...,n \))
Question: how to get $\alpha_k$?

• First idea: checking frequency domain, try to find relations between frequency and $\alpha_k$. (higher $f$ need larger correction)
$\alpha_n$

Second idea

\[ \begin{array}{cccccc}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \alpha_5 & \alpha_6 \\
\alpha_7 & \alpha_8 & \alpha_9 & \alpha_{10} & \alpha_{11} & \alpha_{12} \\
\alpha_{13} & \alpha_{14} & \alpha_{15} & \alpha_{16} & \alpha_{17} & \alpha_{18}
\end{array} \]

\[ > \]
Question: how to get $\alpha_k$?

• First idea: checking frequency domain, try to find relations between frequency and $\alpha_k$. (higher $f$ need larger correction)

• Second idea: simple optimize each sub-volume, but make the whole appearance to dark. (over-correct $\alpha_k$)
- In global optimization, render whole data many times. (not solve)
- Different volume structures share same albedo correction. (kind of solve)
Question: how to get $\alpha_k$?

• First idea: checking frequency domain, try to find relations between frequency and $\alpha_k$. (higher $f$ need larger correction)

• Second idea: simple optimize each sub-volume, but make the whole appearance to dark. (over-correct $\alpha_k$)

• Third idea: divide volume data only in vertical direction. (just for verification, improve a little, still data dependent)
Forth idea: NN
- In global optimization, render whole data many times. (after building NN model, no more rendering needed)
- Different volume structures share same albedo correction. (solved)
Question: how to get $\alpha_k$?

- First idea: checking frequency domain, try to find relations between frequency and $\alpha_k$. (higher $f$ need larger correction)
- Second idea: simple optimize each sub-volume, but make the whole appearance to dark. (over-correct $\alpha_k$)
- Third idea: divide volume data only in vertical direction. (just for verification, improve a little, still data dependent)
- Forth idea: NN (input: image patch + albedo + scale + density in z-direction, output: albedo correction)

Synthetic data: works fine; real data: ....