Supplementary Material

In this material, we provide comparison of performance for different settings of parameters in our paper. All experiments are implemented on the curtain sequence.

First, we show different choices of parameters $\alpha$ and $d$ in Prac-ReProCS algorithm. Recall that every $\alpha$ frames we do a subspace update using the previous $d$ estimates $\hat{L}_t$. Fig.1 and Fig.2 show that the algorithm is not very sensitive to the choices of $\alpha$ and $d$ as long as $d$ is large enough (compared to $\hat{r}$) and $\alpha$ is small enough. We choose $\alpha = 50$ and $d = 10\hat{r}$ ($d \geq 4\hat{r}$ is safe) in our experiment.

Second, we test different parameter settings in GRASTA. Some parameters in the algorithm are: $r$ (estimated rank), Training-Size (size of training set) and SAMPLING (use how much information to track the subspace). The authors didn’t provide method for setting those. We simulate GRASTA using the default parameters as in the demo\(^1\), as well as some other options:

I $r = 5$, Training-Size = 100, SAMPLING = 0.2 (Default setting in the demo code).
II $r = 5$, Training-Size = All frames available, SAMPLING = 1 (We use this choice in our paper).
III $r = \hat{r}$, Training-Size = All frames available, SAMPLING = 1, where $\hat{r}$ is the estimated rank from ReProCS.

As can be seen from Fig.3, there are no clear difference among the options.

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\(^1\)Downloaded from https://sites.google.com/site/hejunzz/grasta

Fig. 1. Comparison of parameter $\alpha$ while $d$ is fixed. First row: original video frames at $t = 60, 120, 199, 445, 475, 500, 1128, 1148$. Next 3 rows: foreground layer estimated by ReProCS with $d = 10\hat{r}$, and $\alpha = 25, 50, 100$, respectively.
Fig. 2. Comparison of parameter $d$ while $\alpha$ is fixed. First row: original video frames at $t = 60, 120, 199, 445, 500, 1128, 1148$. Next 4 rows: foreground layer estimated by ReProCS with $\alpha = 50$, and $d = 3\hat{r}, 4\hat{r}, 5\hat{r}, 10\hat{r}$, respectively.

Fig. 3. Comparison of parameters in GRASTA. First row: original video frames at $t = 60, 120, 199, 445, 500, 1128, 1148$. Next 3 rows: foreground layer estimated by GRASTA using parameter option I, II, III, respectively.