Deep Multi-scale Convolutional Neural Network for Dynamic Scene Deblurring

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Supplementary Material – Deblurring Result Comparison

Deblurring Result Comparison
of Loss terms

Loss Comparison

- Multi-scale content loss
  - $\mathcal{L}_{cont} = \frac{1}{2K} \sum_{k=1}^{K} \frac{1}{c_k w_k h_k} \left\| L_k - S_k \right\|^2$

- Adversarial loss
  - $\mathcal{L}_{adv} = \mathbb{E}_{S \sim p_{sharp}(S)} [\log D(S)] + E_{B \sim p_{blurry}(B)} \left[\log \left(1 - D(G(B)) \right) \right]$

- Combined loss
  - $\mathcal{L}_{total} = \mathcal{L}_{cont} + \lambda \mathcal{L}_{adv}, \lambda = 1 \times 10^{-4}$

Test Image 1

Blurry Input

Test Image 1

Our Result (MSE)

Test Image 1

Our Result (MSE + Adversarial)

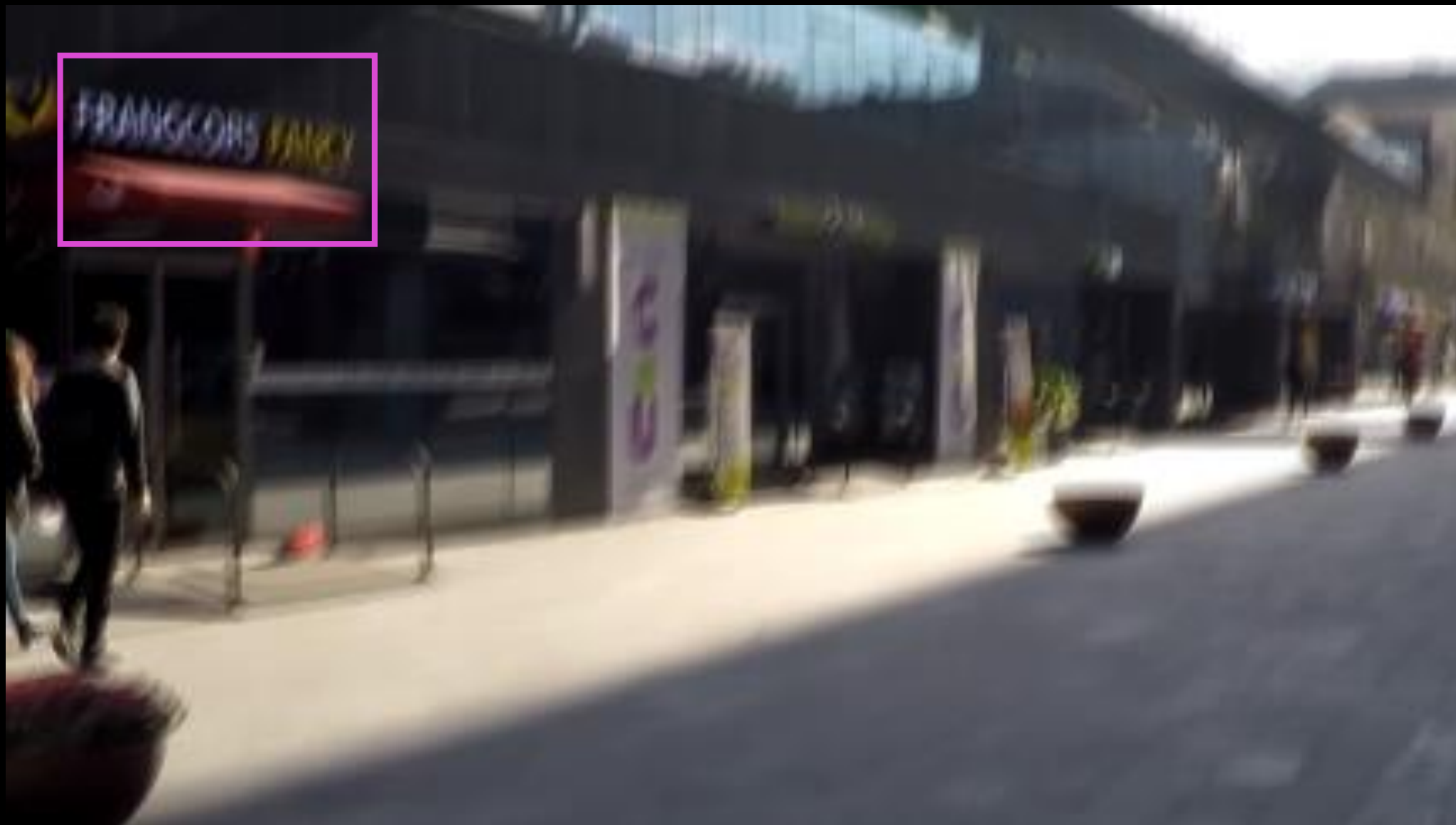Test Image 2

Blurry Input

Test Image 2

Our Result (MSE)

Our Result (MSE + Adversarial)

Test Image 3

Blurry Input

Test Image 3

Our Result (MSE)

Test Image 3

Our Result (MSE + Adversarial)

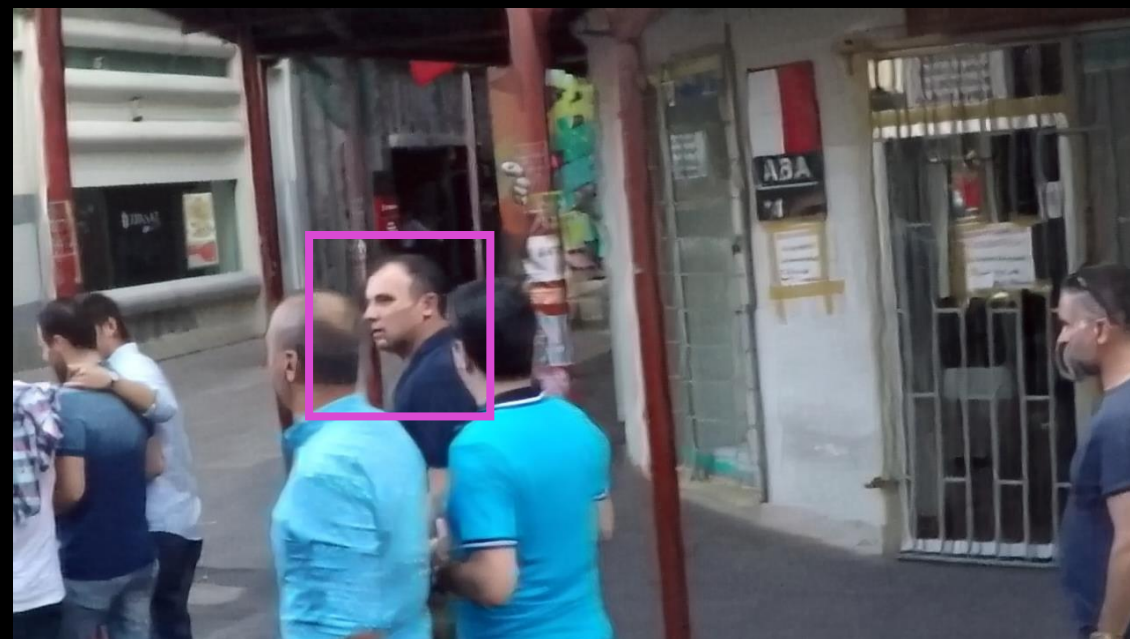# Deblurring Result Comparison
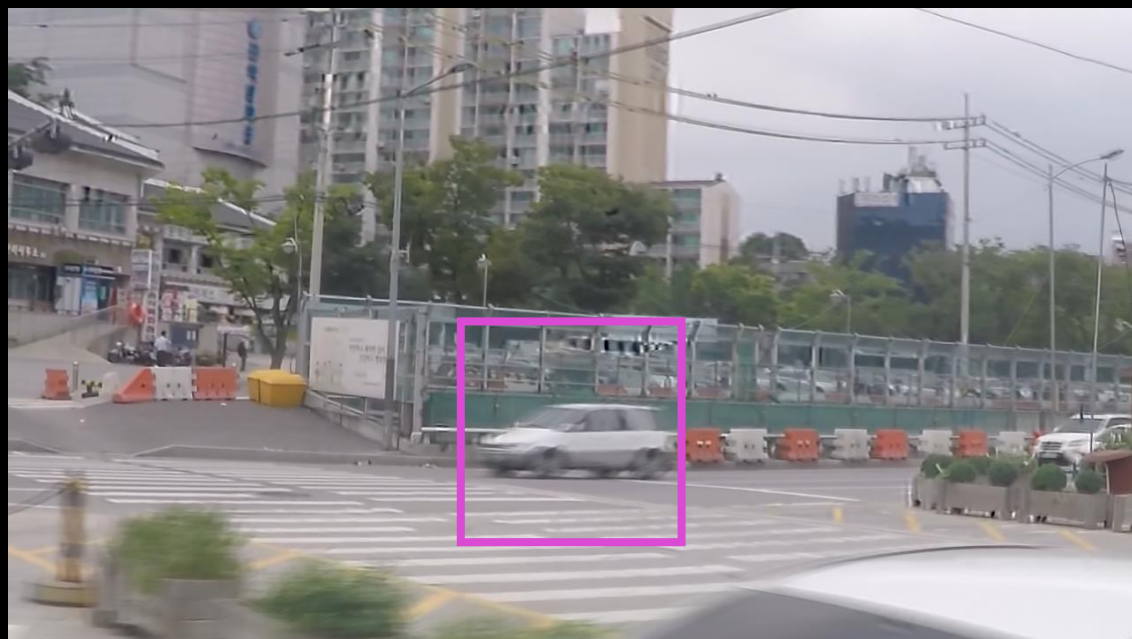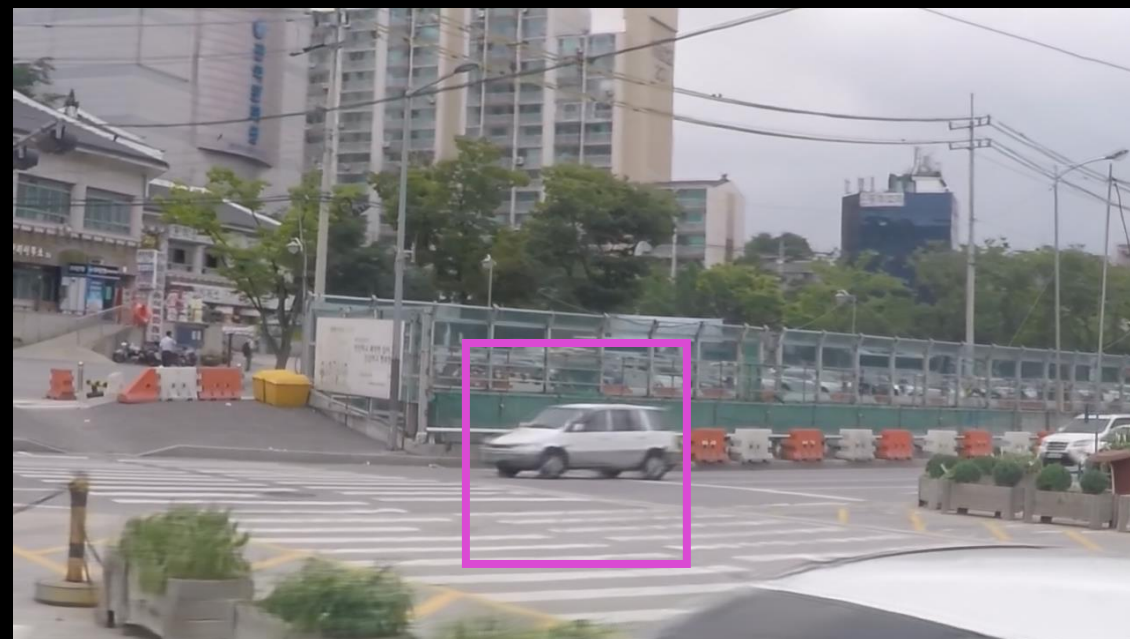## on Our Test Dataset

Blurry

Kim and Lee [15]

Sun et al. [27]

Ours

Blurry
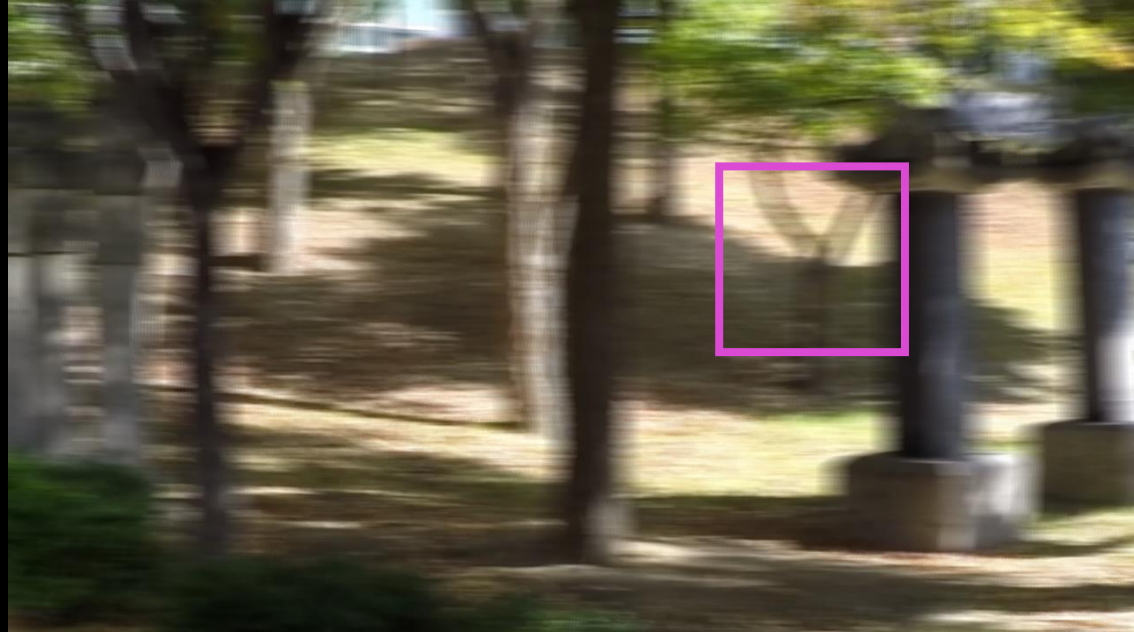
Kim and Lee [15]

Sun et al. [27]

Ours

Blurry

Kim and Lee [15]

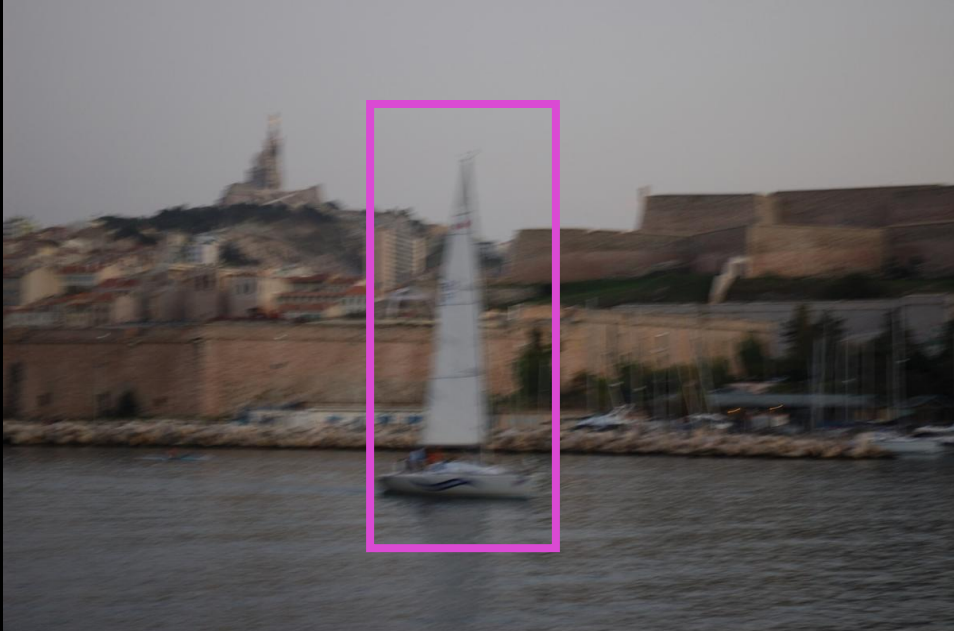Sun et al. [27]

Ours

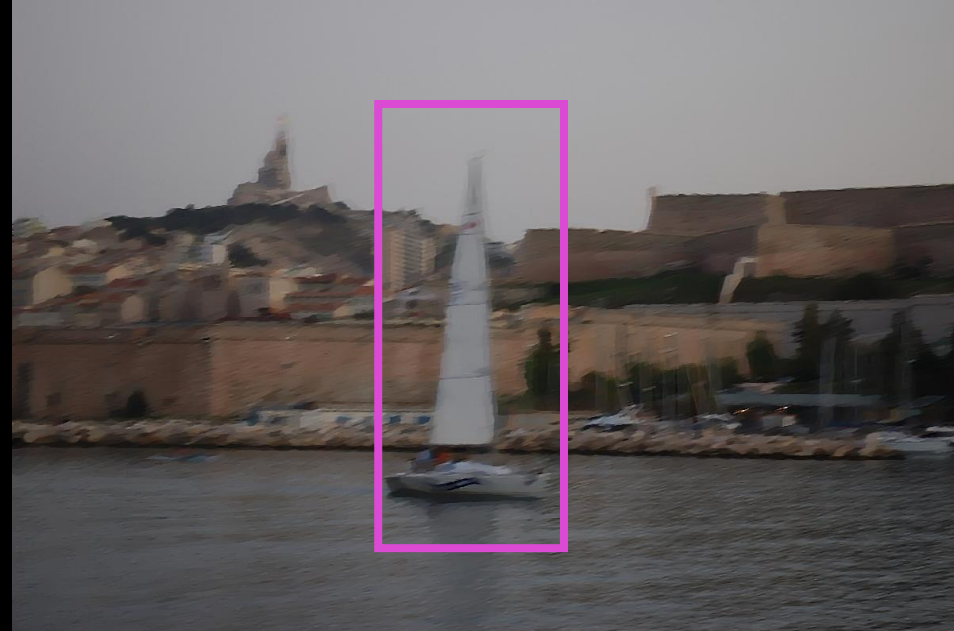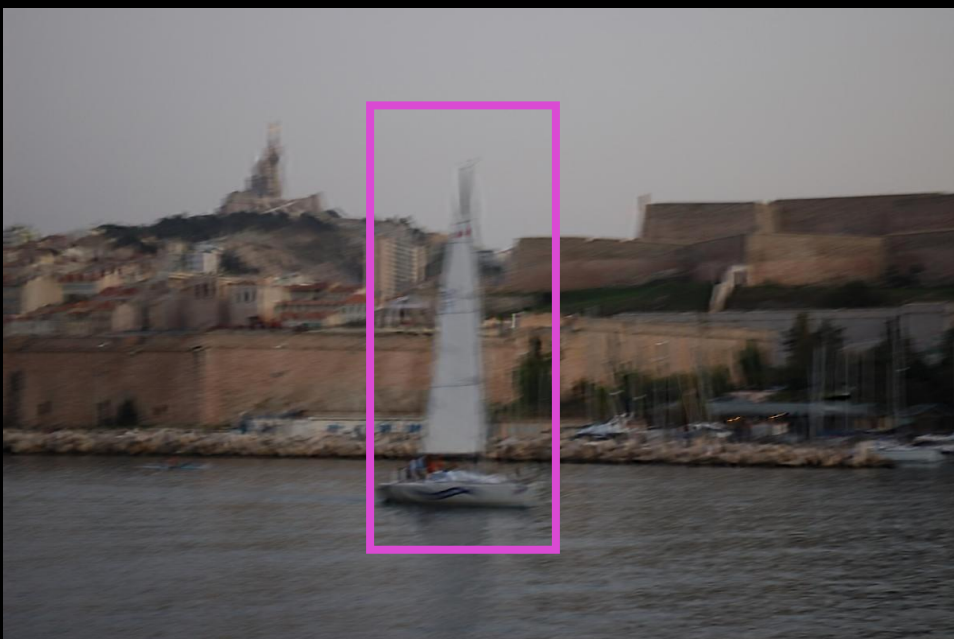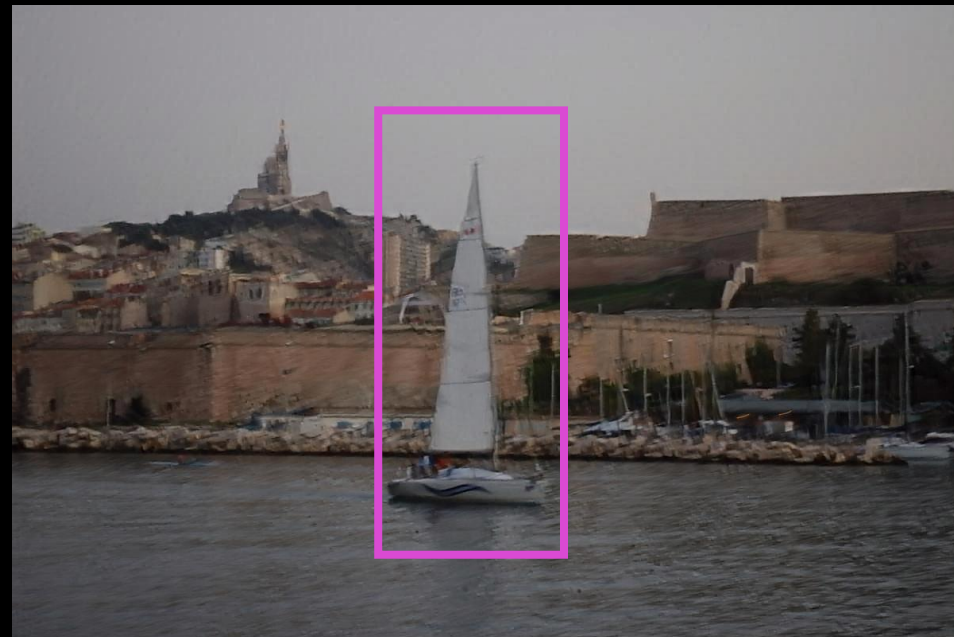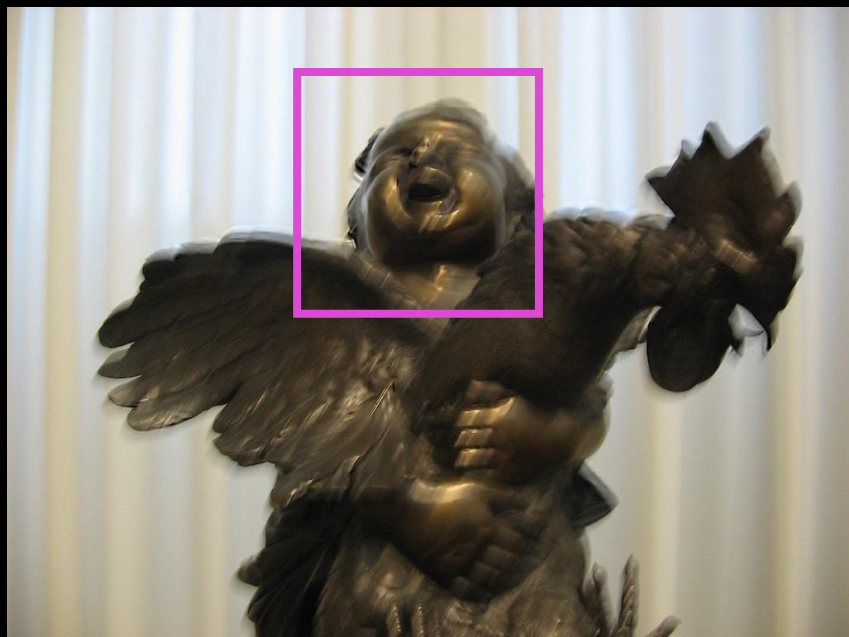Blurry

Kim and Lee [15]

Sun et al. [27]

Ours

Deblurring Result Comparison
on Lai et al.[20] Dataset

Blurry

Kim and Lee [15]

Sun et al. [27]

Ours

Blurry

Kim and Lee [15]

Sun et al. [27]

Ours
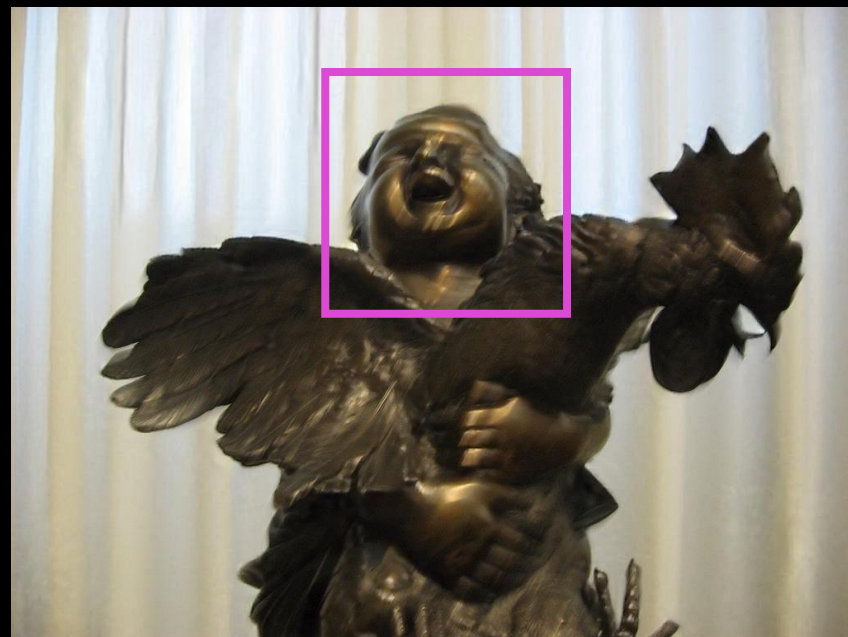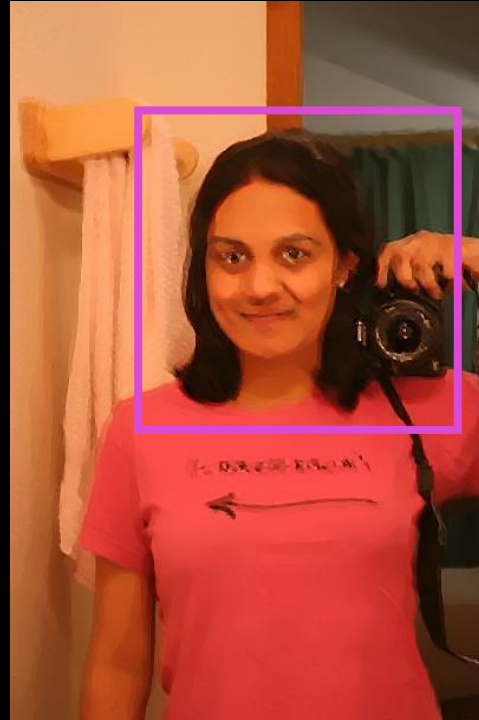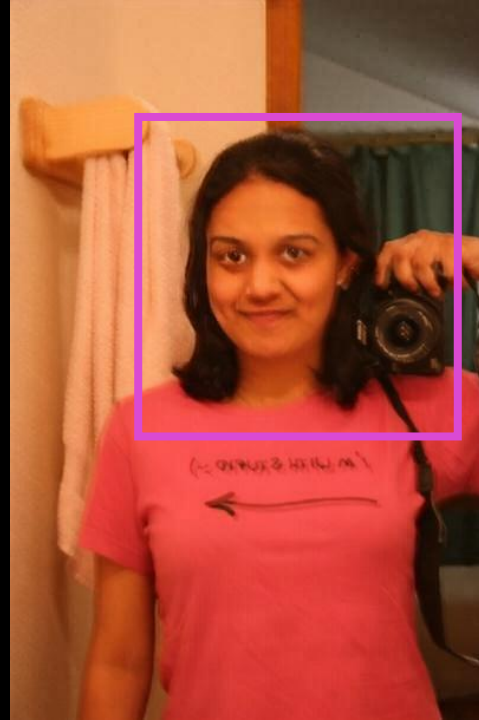
Blurry

Kim and Lee [15]

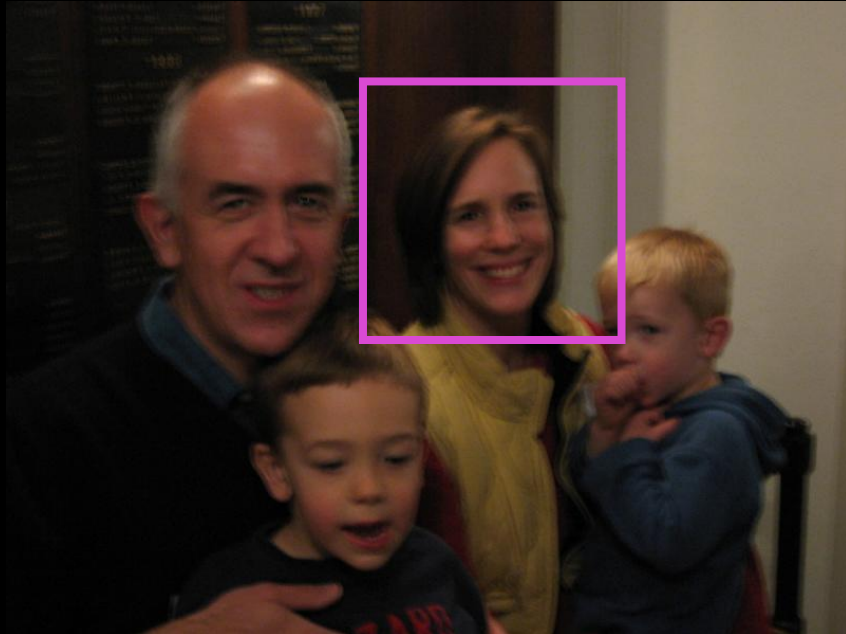Sun et al. [27]

Ours

Blurry

Kim and Lee [15]

Sun et al. [27]

Ours

Blurry

Kim and Lee [15]

Sun et al. [27]

Ours

Deblurring Result Comparison
on Real Dynamic Scenes

Blurry

Kim and Lee [15]

Sun et al. [27]

Ours

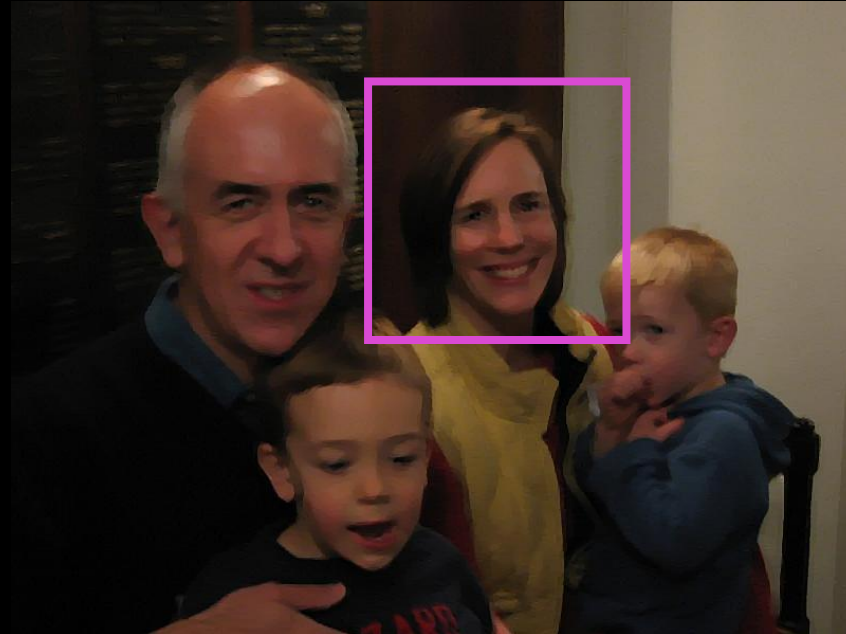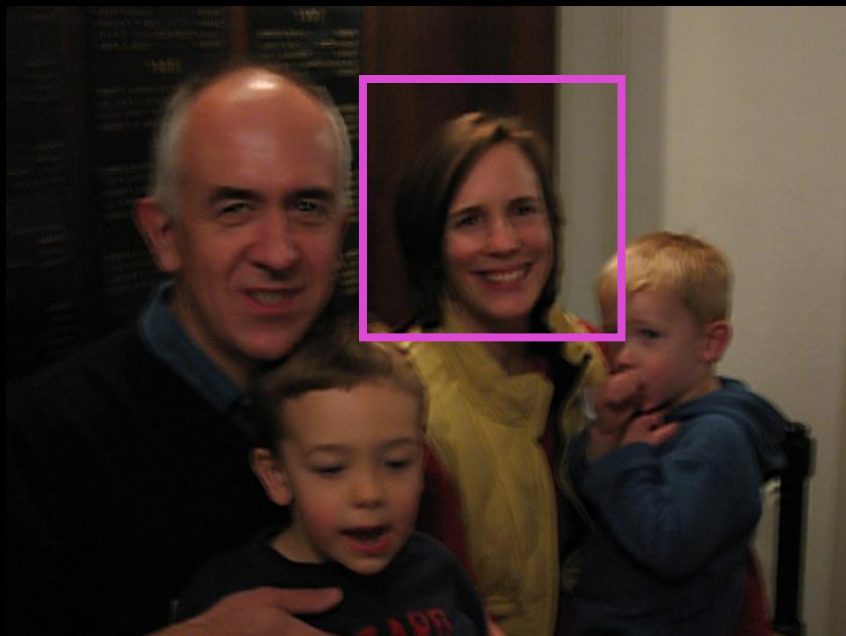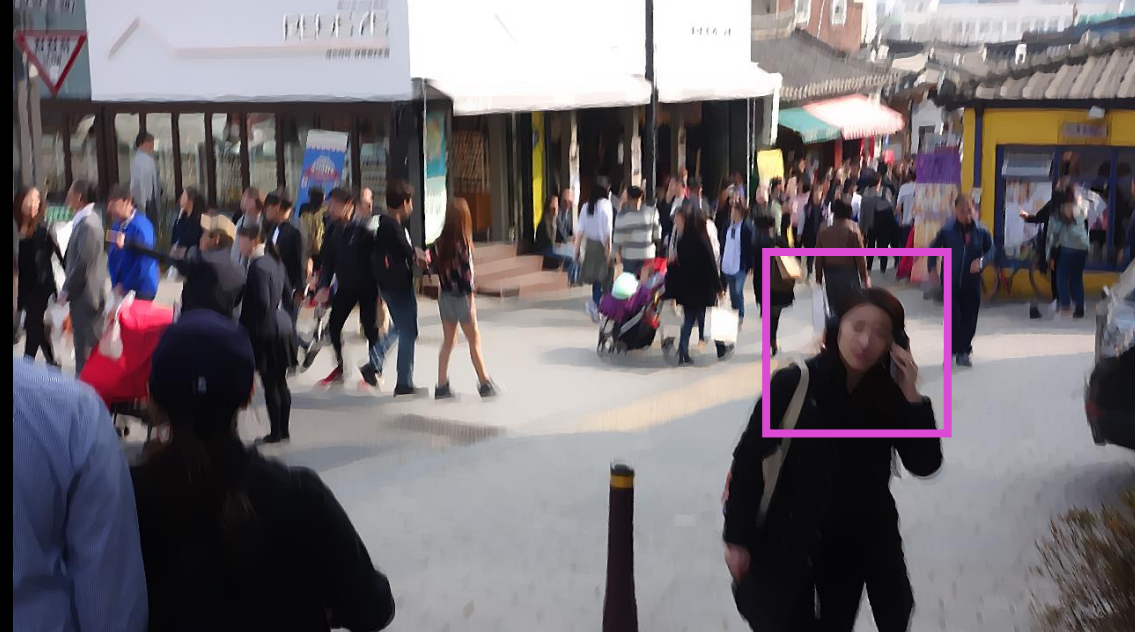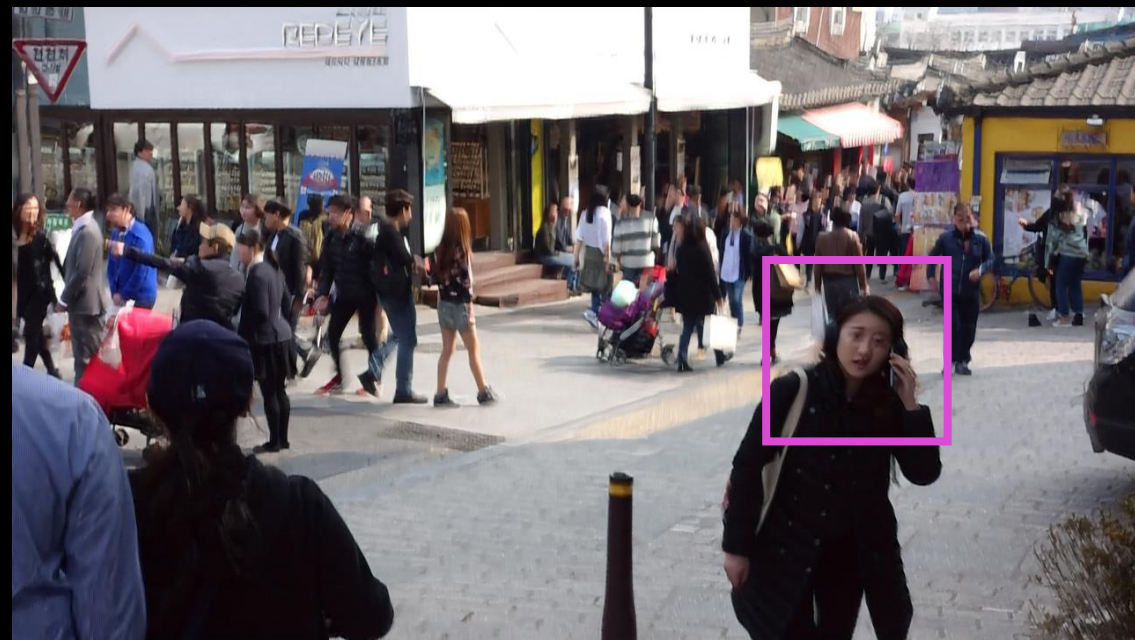Blurry

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Blurry

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Ours

Blurry
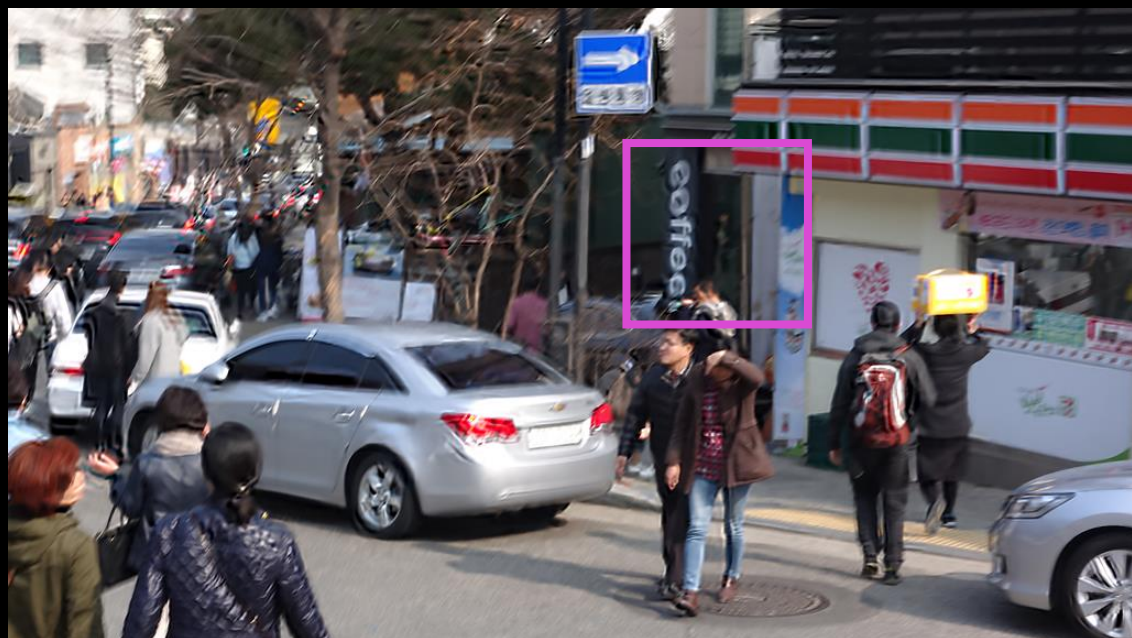
Kim and Lee [15]

Sun et al. [27]

Ours

Blurry

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Sun et al. [27]

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Sun et al. [27]

Ours

Blurry

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Sun et al. [27]

Ours

References

- J. Sun, W. Cao, Z. Xu, and J. Ponce. Learning a convolutional neural network for non-uniform motion blur removal

- T. H. Ki and K. M. Lee. Segmentation-free dynamic scene deblurring.

- W.-S. Lai, J.-B Huang, Z. Hu, N. Ahuja, and M.-H. Yang. A comparative study for single image blind deblurring.