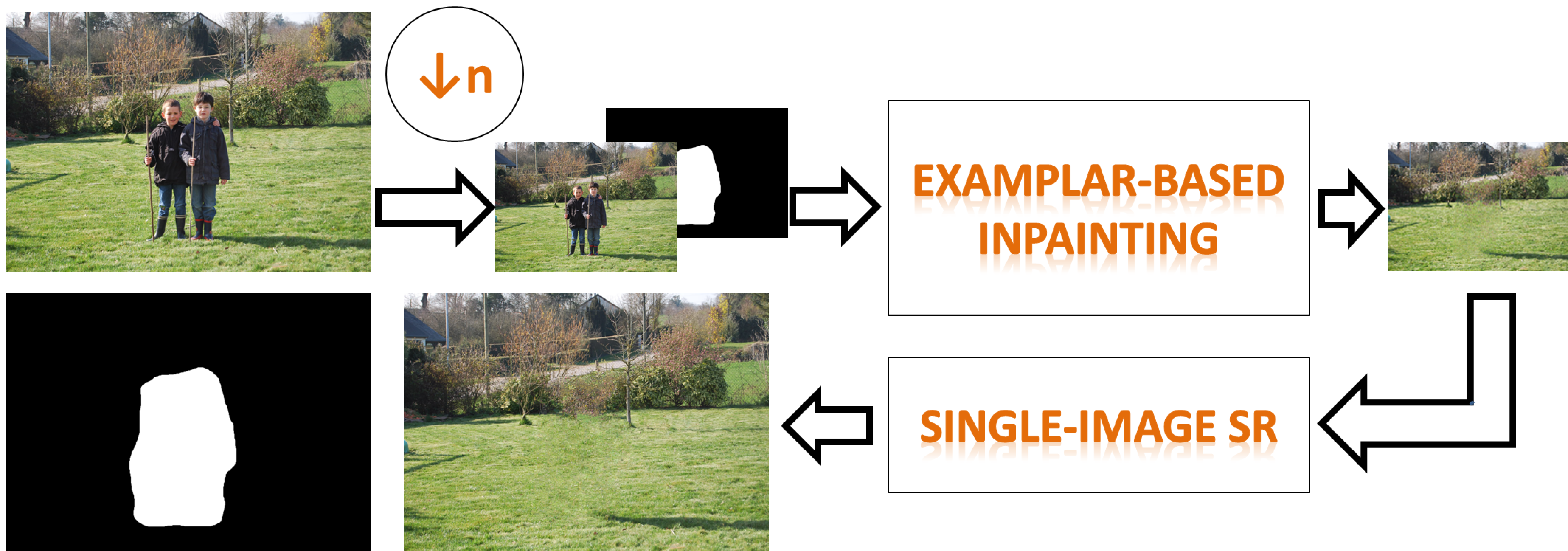


SUPER-RESOLUTION-BASED INPAINTING

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Main idea

- ▶ The picture to be inpainted is first down sampled
- ▶ Exemplar-based inpainting is applied to fill-in the missing parts
- ▶ A single image super-resolution (SR) algorithm is used to retrieve the details

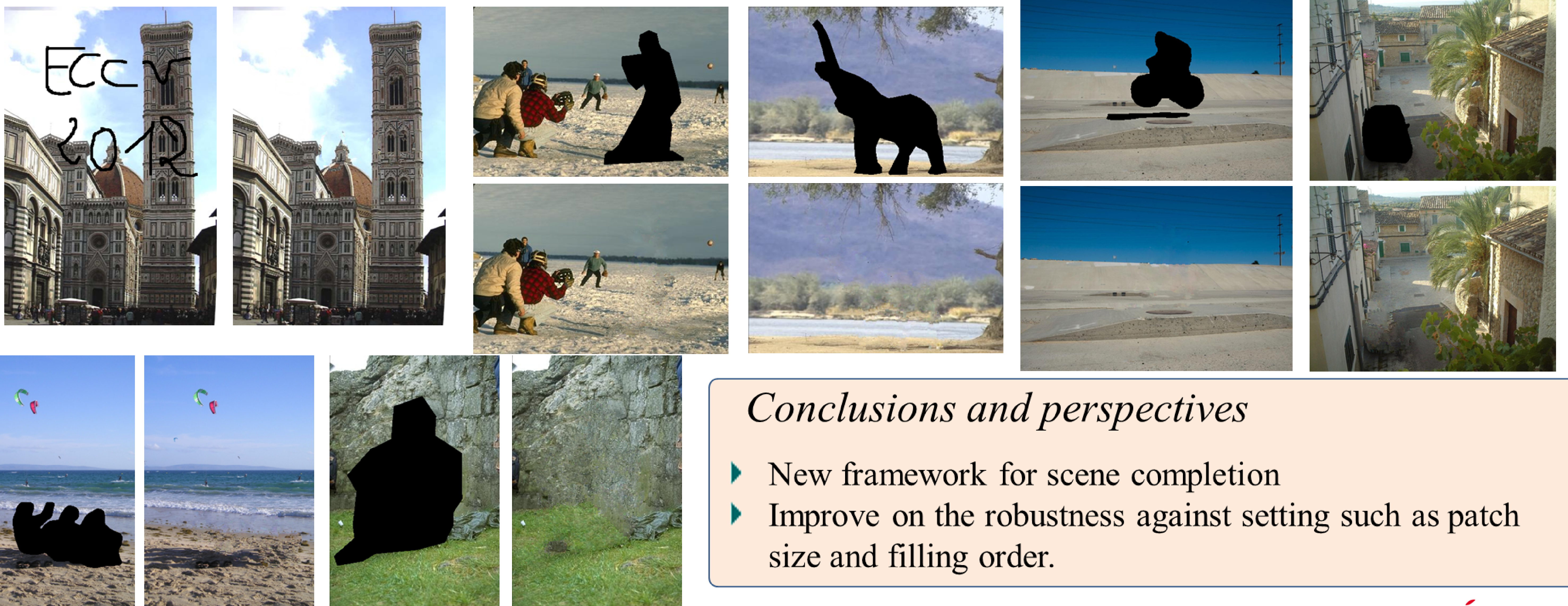
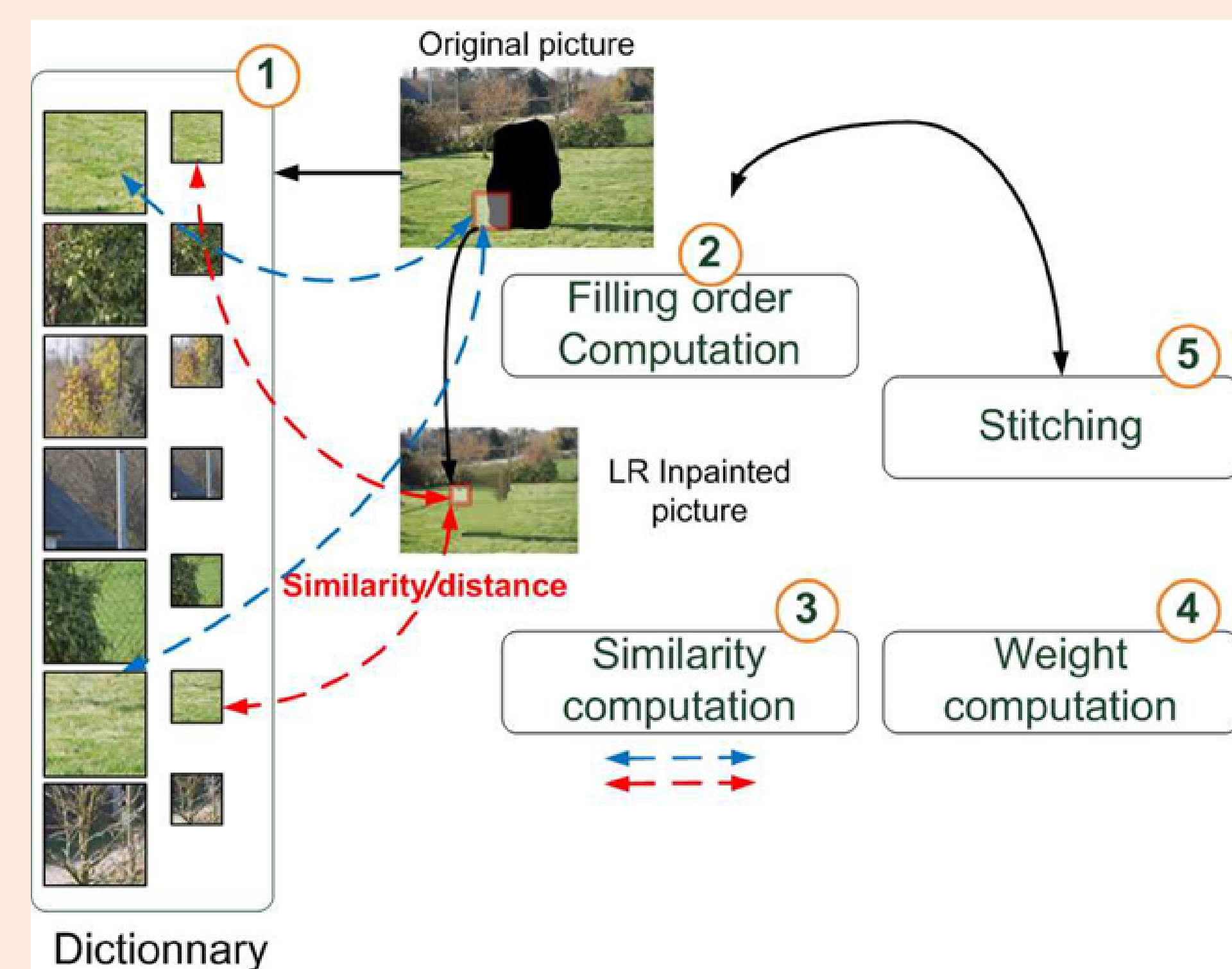


Exemplar-based inpainting based on [1]

- ▶ Priority term using a sparsity-based data term [2]
 - ▶ New similarity metric based on a weighted Bhattacharya distance (adaptation of [3])
- $$d(\varphi_p, \varphi_q) = SSD(\varphi_p, \varphi_q)[1 + BC(\varphi_p, \varphi_q)]$$
- ▶ Linear combination of the K most similar patches. Weights are computed by a Non Local Means Filter.

Single-image Super-Resolution

- ▶ Dictionary
- ▶ Filling order
- ▶ Similarity computation
- ▶ Blending



Conclusions and perspectives

- ▶ New framework for scene completion
- ▶ Improve on the robustness against setting such as patch size and filling order.

More results and software on:
<http://www.irisa.fr/temics/staff/lemeur/>

[1] A. Criminisi et al., *Region filling and object removal by exemplar-based image inpainting*, IEEE TIP, vol. 13, pp. 1200–1212, 2004.
[2] Z. Xu, and J. Sun, *Image inpainting by patch propagation using patch sparsity*, IEEE TIP, vol. 19, pp. 1153–1165, 2010.
[3] A. Bugeau et al., *A comprehensive framework for image inpainting*, IEEE TIP, vol. 19, pp. 2634–2644, 2010.