

Dear Editors:

Here within enclosed is our paper for consideration to be published in the IET Image Processing. The title is “**Face Super Resolution with a High Frequency Highway**”.

Our manuscript studies the problem of super-resolving low-resolution faces to high-resolution ones with a large magnification factor. The main contributions are as follows:

- (1) We explain the role of face priors in face SR as providing high frequency signals, which motivates H2F, the first to construct an HF face directly from the face priors via a high-frequency highway. H2F can produce explainable results that edit the final SR face by manipulating the face priors, thereby simplifying the understanding HF information gain.
- (2) Following an in-depth exploration of two questions, we propose an innovative framework, H2F, indeed an attempt to better utilize prior information for face SR. With its dual-reconstruction learning mechanism, H2F dynamically decomposes a final SR face into a coarse SR face and an HF face, which effectively prevents the smoothing of HF details during learning.
- (3) We conduct extensive experiments to evaluate the performance of H2F and show that H2F outperforms state-of-the-art methods in the quality of SR images and is robust to dataset mismatch and pose variations. Moreover, H2F is general in supporting many existing SR models as the texture branch model and is easy to train.

We confirm that this submission is our original work and has not been published previously. Code required to reproduce our experiment results is available at link: <https://github.com/danzeng1990/H2F-FaceSR>.

We deeply appreciate your consideration of our manuscript, and we look forward to receiving comments from the reviewers. If you have any queries, please do not hesitate to contact me at the address below.

Thank you very much for your time and consideration.

Yours sincerely,

Dan Zeng on behalf of all authors

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