1108-41-61   **Weihong Guo*** (`wxg49@case.edu`), 10900 Euclid Avenue, Cleveland, OH 44106, and **Liangjian Deng** (`liangjian1987112@126.com`) and **Ting-Zhu Huang** (`tingzhuhuang@126.com`). *Single image super-resolution via an iterative reproducing kernel Hilbert space method.* Preliminary report.

Image super-resolution, a process to enhance image resolution, has important applications in satellite imaging, high definition television, medical imaging, etc. Many existing approaches use multiple lowresolution images to recover one high-resolution image. In this paper, we present an iterative scheme to solve single image super-resolution problems. It recovers a high quality high-resolution image from solely one low-resolution image without using a training data set. We solve the problem from image intensity function estimation perspective and assume the image contains smooth and edge components. We model the smooth components of an image using a thin-plate reproducing kernel Hilbert space (RKHS) and the edges using approximated Heaviside functions. The proposed method is applied to image patches, aiming to reduce computation and storage. Visual and quantitative comparisons with some competitive approaches show the effectiveness of the proposed method. (Received December 18, 2014)