Exploiting Deviations from Ideal Visual Recurrence

Visual repetitions are abundant in our surrounding physical world: small image patches tend to recur within a natural image, and across different rescaled versions thereof. Similarly, semantic repetitions appear naturally inside an object class within image datasets, as a result of different views and scales of the same object. In my thesis I studied deviations from these expected repetitions, and demonstrated how this information can be exploited to tackle both low-level and high-level vision tasks. These include "blind" image reconstruction tasks (e.g. dehazing, deblurring), image classification confidence estimation, and more.