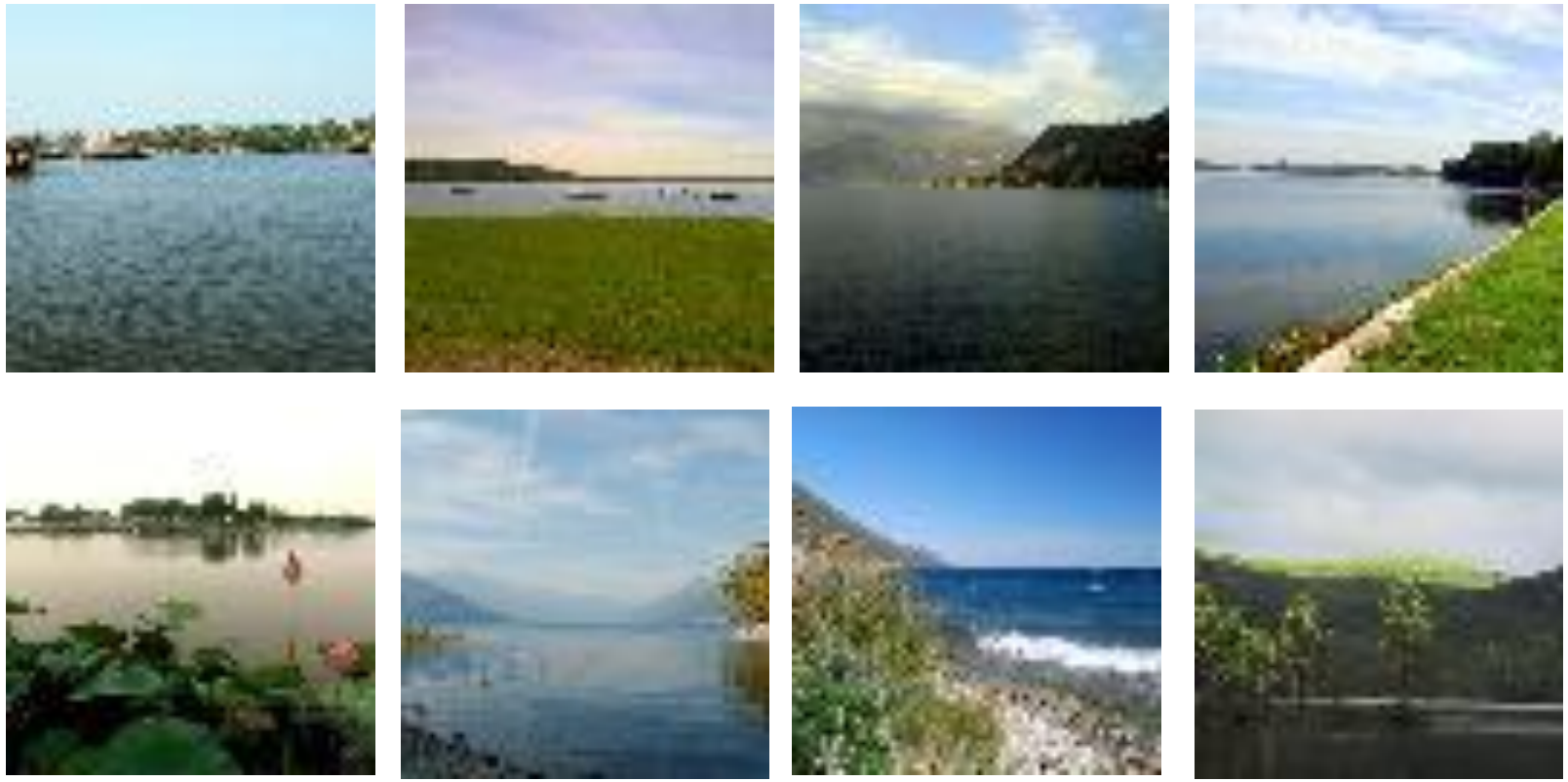
Investigate why data augmentation may worsen performance

1) Train photos were generally taken from various angles already, extra rotation has little impact on regularization

- e.g. class 132 = poles/pillar

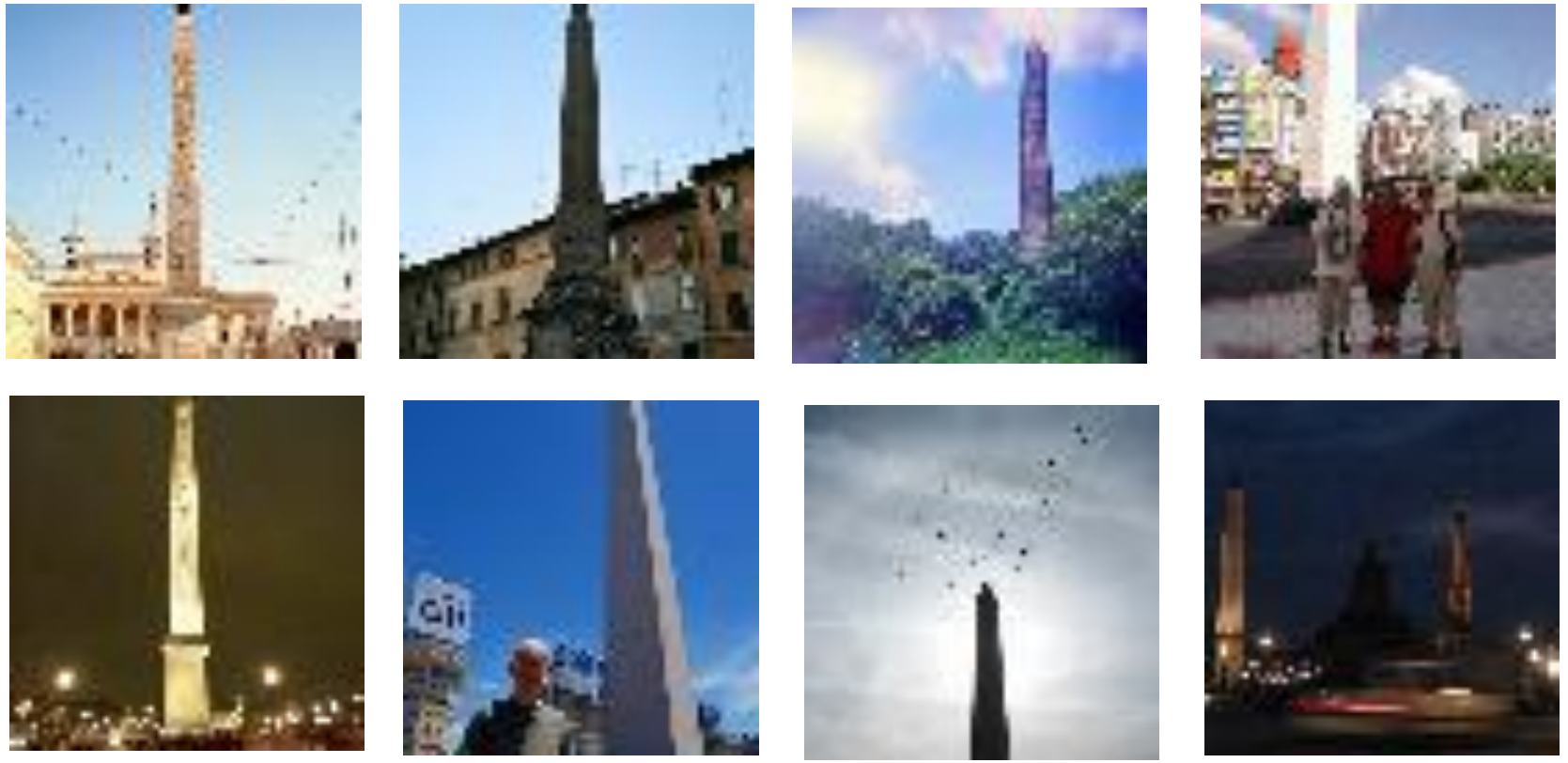
2) In large-object classes, e.g. scenic view, photos are always taken horizontally, rotation will distort flat feature of water surface

- e.g. class 197 = lake/ocean



3) Input photos have various brightness/contrast already, additional contrast adjustment may have little impact.

- e.g. class 124 = pillar monument

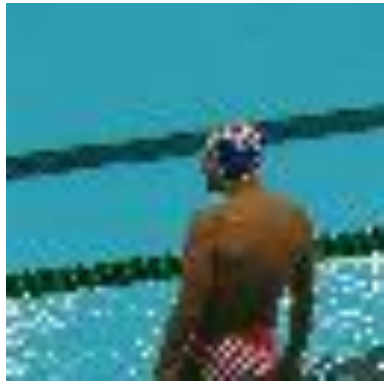
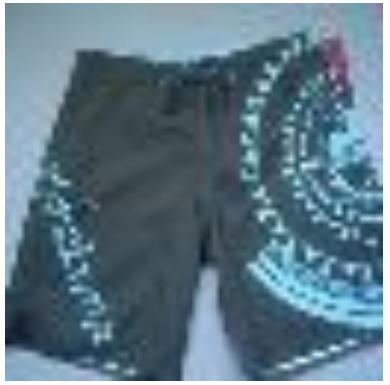


4) Key features are not suitable to be augmented, e.g. when cropped/translated, main features could be distorted/removed

- e.g. class 42 = grasshopper




- class 158 = swimming pants

By skimming trough some of input train images, we observe that:

1. Many input photos were taken from various angles/perspectives/ distances already; thus, extra data augmentation may have little impact
2. Some classes have unique direction of main features; e.g. flat water surface of lake/ocean, and vertical feature of pillar monument; introducing augmentation like rotation will worsen such unique features.

From above combined with poorer classification performance from data augmentation, we believe it is reasonable not to implement augmentation since it will worsen rather than improve classification accuracy.