GALA: Toward Geometry-and-Lighting-Aware Object Search for Compositing

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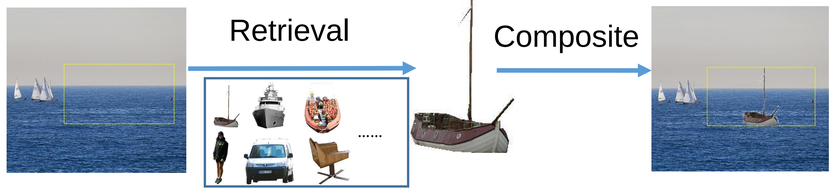
Introduction

- Given a background image, our objective is to retrieve the most compatible foreground images in a reference database, so that realistic composite images can be generated with simple harmonization techniques.
- Even if the users do not provide any bounding box, our method can automatically retrieve possible objects and find the best location/scale to place the object.

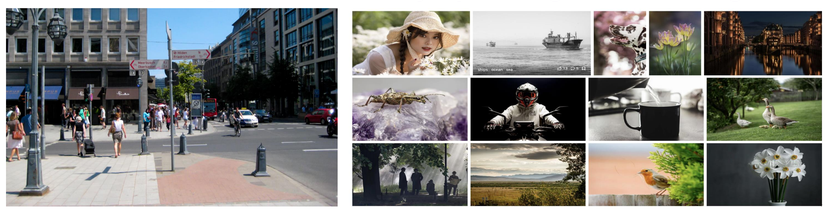


GALA vs Previous Works

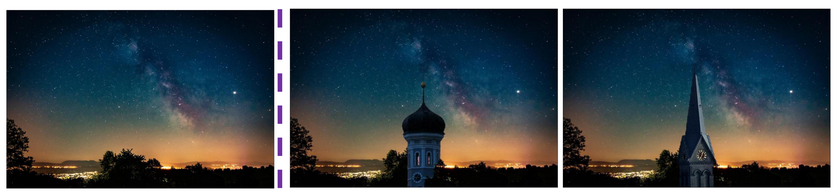
- **Geometry-and-Lighting Awareness**

- **Explore High Quality Photo, Open-world Setting**

COCO ~ 80 categories Pixabay/Open Images ~ 1000 categories

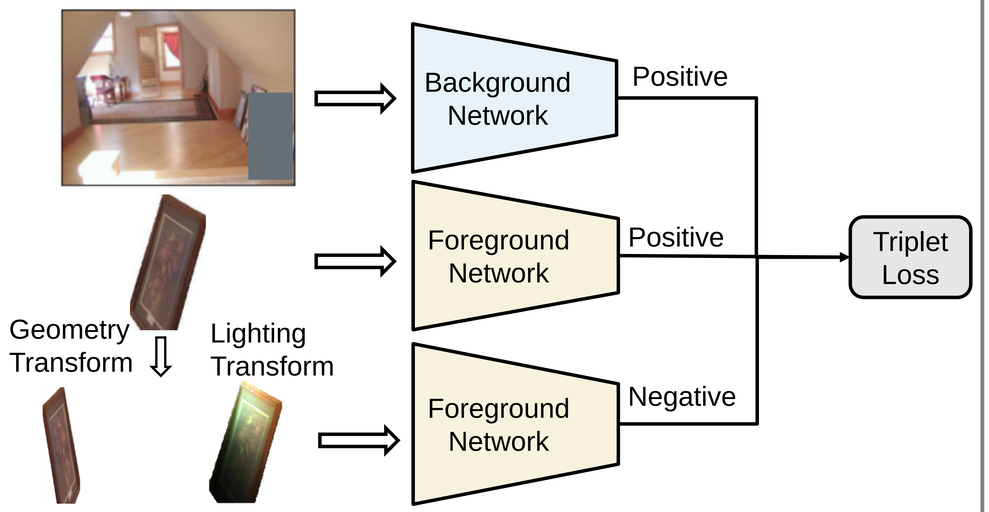


- **Non-box Scenarios – Query w/o Bounding Box**



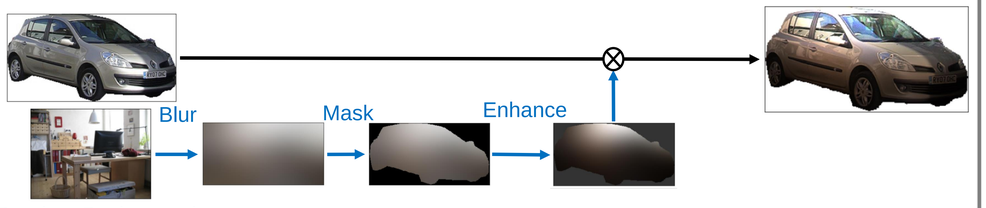
Contrastive Learning with Transformation

- Increase the sensitivity to geometry and lighting change



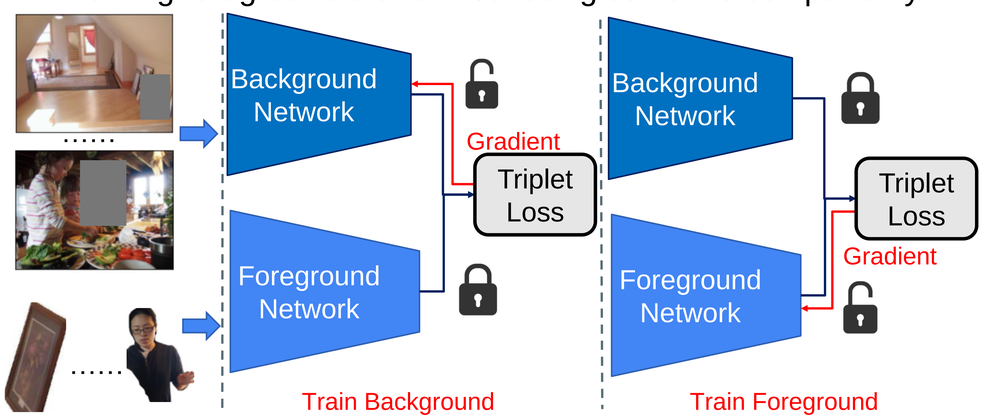
- **Geometry Transform**

- **Lighting Transform**



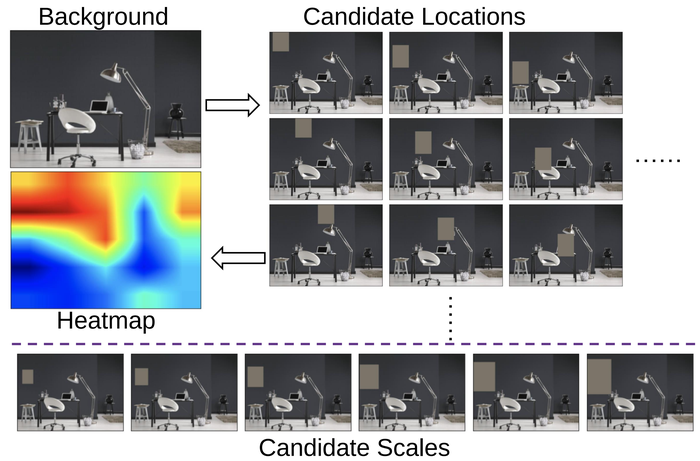
Alternating Training

- Training foreground branch w/o losing semantic compatibility



Non-box Scenarios

- Find the best location and scale with sliding-window search.



Qualitative Results