Efficient Large-scale Localization by Global Instance Recognition

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• Motivation
  • Exhaustive search in coarse & fine localization is inefficient and inaccurate
  • Some landmarks are robust for both coarse & fine localization

• Contribution
  • Hierarchical localization by recognizing global instances
  • Progressive reference search to handle recognition errors
  • Efficient two-step pose estimation

Global instance definition
  • Discriminative landmarks, e.g., buildings
  • Automatic labeling

Architecture
  • Global feature
  • Local feature
  • Instance recognition

Localization by recognition
  • Global instance recognition
  • Progressive search
  • Geometric verification
  • Pose refinement

Results on Aachen Day-Night dataset

Qualitative results

References
  • NetVLAD, Relja Arandjelovic, et al., CVPR 2016
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  • Hloc, Paul-Edouard Sarlin, et al., CVPR 2019
  • Global unique instance segmentation, Ignas Budvytis, et al., BMVC2 019
  • R2D2, Jerome Revaud, et al., NeurIPS 2019