we introduce a new approach to interactive image search that enables users to provide feedback via natural language, allowing for more natural and effective interaction.

CONTRIBUTIONS

New vision/NLP task for interactive image search, where the dialog agent learns to interact with a human user, and the user gives feedback in natural language.

A deep dialog manager architecture: the network is trained end-to-end based on an efficient policy optimization strategy.

Novel vision task (relative image captioning), where the generated captions describe the salient visual differences between two images, and a new dataset, which supports further research on this task.

Policy Learning

SL: supervised learning where the agent is trained only using triplet loss;

RL-SCST: policy learning using Self-Critical Sequence Training after pre-training using SL.

Effectiveness of Natural Language Feedback

Attr and Attr (deep): dialog managers trained with relative attribute feedback [1]. A rule-based feedback generator concatenates respective attribute words with “more” or “less”, a denotes the number of attributes used in each feedback, such as “more shiny and less sporty.”

RL-based methods resulted in improved retrieval ranking percentile than triplet loss.

Dialog-based feedback is more effective than attribute feedback using a limited vocabulary.

RESULTS AND EVALUATION

• Dialog-based feedback is more natural compared to selecting attributes from a pre-defined list.

• Coarse to fine feedback as dialog progresses.

 USER DIALOGS

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• Coarse to fine feedback as dialog progresses.

Dialog-based Interactive Image Retrieval

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