Summary

Image Description Task
- A learner is asked to produce a sentence that describes an image

Grammatical Error Correction (GEC)
- Task to correct grammatical errors in a sentence
- GEC system cannot correct specific errors in image description tasks (i.e., semantic or pragmatic errors)

Contributions
1) Dataset Construction
   - Construct a new dataset for automatic assessment of image description
2) Error Correction
   - Propose a novel task of automatic error correction for image description

Dataset Construction
- Conduct the exercises with Japanese high school students who learns English
- As a result, collected 651 sentences for 120 images

Experiments

Data Limitation
- Constructed LLID size is limitation
  • Generate synthetic dataset on the corrected sentence to pre-train the model

Synthetic Error Generation
- Follow the existing approach [Awasthi+, IJCNLP19] and apply it on MS-COCO captions

Dataset
- Pre-train: MS-COCO Captions + Synthetic Captions
- Fine-tune: Learner Sentence + Correctness on LLID

Model
- L-C: Generate a corrected sentence (C) from a learner sentence (L) w/o an image
- LI-C: Generate a corrected sentence (C) from a learner sentence (L) w/ an image (I)

Quantitative Evaluation

Ablation Study

Qualitative Evaluation

GECforR 0.367 0.116 0.236 0.268
LI-C Global 0.147 0.168 0.151 0.263
LI-C Bottom-up 0.165 0.190 0.170 0.284

Model Image Features Synthentic Dataset ERRANT EERANT GLEU