Paired-D GAN for Semantic Image Synthesis
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**MOTIVATION**
- **Problem**: Source image
- **Applications**: Foreground Discriminator: matching text description. Background Discriminator: retaining background information.
- **Challenges**: Matching text description, retaining background in source image, synthesizing realistic images.

**EXPERIMENTS**
- **Source image**: Paired-D GAN, Dong (ICCV'17)

**PROPOSED METHOD**
- **Source image**: Synthesized image
- **Text description**: A bird with blue head and breast.
- **Image Encoder**: VGG-16
- **Decoder**: Full-connected
- **Network**: Paired-Discriminator
- **Adversarial learning**: Generator loss = Foreground loss + Background loss + Reconstruction loss.

**EVALUATION METRICS**
- **Inception score (IS)**: Synthesized images
- **Foreground score (FGS)**: Text description, Visual-text shared-space, Euclidean distance
- **Background score (BGS)**: Source image, Ablation study

**CONCLUSION**
- GAN based end-to-end network for semantic image synthesis:
  - Foreground discriminator: matching text description.
  - Background discriminator: retaining background information.

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