高　月

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教育背景

北京大学 硕士 信息科学技术学院 王选计算机研究所 计算机应用技术 2018.09 - 2021.07

- 导师: 肖建国教授; GPA: 95.3/100; 排名: 3/25; 研究方向: 计算机视觉, 风格迁移, 生成对抗网络。

北京理工大学 本科 计算机学院 物联网工程 2014.09 - 2018.06

实习科研经历

Microsoft Research Asia - IEG Mentors: 魏芳芸，鲍建敏，陈栋 2020.06 至今

- 基于生成对抗网络的**人脸编辑（Face Editing）系统**，提出了一种新型的基于小波变换的人脸编辑框架，HifaFace，实现了高保真和任意的人脸编辑，并能够作为数据增强的方式应用于各种人脸相关任务中；
- 由于属性标注人脸数据集 CelebAHQ 数据量不足，本系统基于半监督学习与伪标签引入了大规模无标注人脸数据集 FFHQ，显著提升了编辑质量；为了将系统迁移到连续空间，实现任意程度编辑人脸，本工作提出了 Attributes Regression Loss；
- 本人负责部分想法的构思、所有代码实现及实验，以及主要论文写作。

Apple 2020.03 - 05

- 基于目标检测和识别的**发票验证系统**，根据用户上传的发票图片确定发票是否合法；
- 为实现多发票单图片的验证，本人基于 Faster R-CNN 和 FPN 开发了发票页面检测子系统；本人优化了模型 Backbone、 FPN 特征图选取与 Proposals 数量设定以及利用了量化技术，提升了 CPU 推理速度；并开发了 Web 程序接口，完成了线上部署。

基于语意属性的字体生成与编辑 （hologerry.github.io/Attr2Font） 2019.08 - 2020.02

- 为了启发设计师创造新的字体以及让普通用户也能够创造字体，本工作首次建立了从描述性语意属性到字形图片的映射关系；
- 本系统使用语意属性值作为生成模型的条件信息，合成符合语意属性值的字体；本工作设计了半监督学习方案和属性注意力机制， 显著地提高了生成的字形图片质量以及字体风格迁移能力；
- 本人负责模型整体框架和核心模块设计，所有代码实现、实验和数据结果处理，以及线上演示系统的开发；
- 此工作以会议论文发表在了 SIGGRAPH 2020，并与方正字库设计团队开展了相关合作。

基于单阶段少量样本学习的艺术特效字体生成 （hologerry.github.io/AGIS-Net） 2018.09 - 2019.07

- 本工作旨在减少字体设计师的重复工作，首次实现了任意语言的基于少量样本的特效字体生成；
- 本方法基于生成对抗网络和风格迁移，将目标字符和特效字体风格参考集合作为输入，生成风格化目标字符；此工作提出了新颖的计算高效的损失函数 Local Texture Refinement Loss，提升了生成样本的局部纹理细节；并且构建了一个新的大规模中文字形图片数据集，以促进中文特效字体生成领域的发展；
- 本人负责所有模型设计、代码实现、实验和数据结果处理，以及部分论文写作；
- 此工作以会议论文发表在 SGGRAPH Asia 2019，并申请了发明专利一份。

基于深度学习的图像内容描述 2018.03 - 06

- 为了辅助视障人士认知世界，本任务将图片转化为描述文本；
- 本工作基于 CNN 提取输入图片全局视觉特征、LSTM 解码特征生成描述文本的思路，复现了经典模型 im2txt；并利用定位模型抽取图片中主要对象的局部视觉特征，将其与全局视觉特征结合，保证了主要对象在描述文本中的完整性，从而在部分评估指标上有一定提升效果；
- 此工作获得了本科优秀毕业论文。

论文与专利

- High-Fidelity Arbitrary Face Editing in the Wild
  Yue Gao, Fangyun Wei, Jianmin Bao, Shuyang Gu, Dong Chen, Fang Wen, Zhouhui Lian. **CVPR 2021** in submission
- Attribute2Font: Creating Fonts You Want From Attributes
  Yizhi Wang*, **Yue Gao***, Zhouhui Lian. **ACM Transactions on Graphics (SIGGRAPH 2020)**
- Artistic Glyph Image Synthesis via One-Stage Few-Shot Learning
  Yue Gao*, Yuan Guo*, Zhouhui Lian, Yingmin Tang, Jianguo Xiao. **ACM Transactions on Graphics (SIGGRAPH Asia 2019)**
- 专利：一种基于单阶段少量样本学习的艺术字体自动生成方法
  连宙辉，**高月**，郭远，唐英敏，肖建国。（专利号：201910670478.8）
- (* denotes equal contribution)

技能

工具： Git, Docker, Visual Studio Code, Xcode; **语言**： C/C++, Python, Java, Shell, HTML; **框架**： PyTorch, TensorFlow, NumPy.

荣誉

硕士： 北京大学三好学生， 王选计算机技术研究所优秀学生； **本科**： 优秀学习奖学金五次。

Yue Gao

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Education

Peking University **M.E.** School of EECS Computer Application Technology 09/2018 - 07/2021

- Supervisor: Prof. Jianguo Xiao, GPA: 95.3/100, Rank: 3/25, Research topics: Computer Vision, Style Transfer, Generative Adversarial Nets.

Beijing Institute of Technology **B.E.** School of Computer Science Internet of Things 09/2014 - 06/2018

Internships & Projects

Microsoft Research Asia - IEG Mentors: Fangyun Wei, Jianmin Bao, Dong Chen 06/2020 - Present

- **Face Editing System** based on GANs, we propose a novel wavelet-based face editing framework, HifaFace, for high-fidelity and arbitrary face editing, which can also be applied to face related tasks as a data augmentation method.
- Since the labeled dataset CelebAHQ has limited variance comparing to real world faces, this work proposed to utilizing the large-scale unlabeled dataset FFHQ based on semi-supervised learning and pseudo label, which significantly improves the editing quality. In order to migrate the system to continuous space and editing face at any degree, the Adaptive Margin Triple Loss is proposed.
- I am responsible for some ideas, all code implementation and experiments, as well as the main thesis writing.

Apple 03 - 05/2020

- **Invoice Verification System** based on object detection and recognition, which determines whether the uploaded invoices are legal.
- In order to realize the verification of multi-on-one invoice images, I developed an invoice page detection subsystem based on Faster R-CNN and FPN. I optimized the model backbone, FPN feature map selection and the setting of proposals, and used quantitative technology to improve the CPU inference speed. The web program interface is developed to deployed this system online.

Semantic Attributes based Font Generation and Editing (hologerry.github.io/Attr2Font) 08/2019 - 02/2020

- In order to inspire designers to create new fonts and enable ordinary users to create fonts, the mapping relationship from descriptive semantic attributes to glyph images is established for the first time.
- The system uses semantic attribute values as the condition information of the generative model to synthesize fonts that meet the semantic attribute values. In this work, a semi-supervised learning scheme and the Attribute Attention Mechanism are designed to significantly improve the quality of the generated glyph images and the ability of font style transfer.
- I am responsible for the overall framework and core module design of the model, all code implementation, experiments and data processing, as well as the development of online demonstration system.
- This work was published in SIGGRAPH 2020 as a conference paper and cooperated with Founder font design team.

Artistic Glyph Image Synthesis via One-Stage Few-Shot Learning (hologerry.github.io/AGIS-Net) 09/2018 - 07/2019

- The purpose of this work is to reduce the repetitive work of font designers. It is the first time to realize the generation of artistic fonts based on a small number of samples in any language.
- This method is based on GAN and style transfer, using the target character and artistic font style reference set as input to generate stylized target characters. In this work, a novel computational efficient loss function Local Texture Refinement Loss is proposed to improve the local texture details of the generated sample. And a new large-scale Chinese is constructed to promote the development of Chinese special effect font generation field.
- I am responsible for all model design, code implementation, experiments and data processing, as well as part of the thesis writing.
- This work was published in SIGGRAPH Asia 2019 as a conference paper and applied for an invention patent.

Deep Learning based Image Captioning 03 - 06/2018

- In order to assist the visually impaired to recognize the world, this task aims to transform pictures into descriptive texts.
- Based on the idea of CNN extracting global visual features of input images and LSTM decoding the features to generate description text, this work re-implemented the classical model im2txt. The localization model extracts the local visual features of the main objects in the image, and they are concatenated to the global visual features to ensure the integrity of the main objects in the description text. There is a certain improvement effect on the evaluation metrics.
- This work has obtained the undergraduate excellent graduation thesis.

Publications

- High-Fidelity and Arbitrary Face Editing
  Yue Gao, Fangyun Wei, Jianmin Bao, Shuyang Gu, Dong Chen, Fang Wen, Zhouhui Lian. **CVPR 2021** in submission
- Attribute2Font: Creating Fonts You Want From Attributes
  Yizhi Wang*, **Yue Gao***, Zhouhui Lian. **ACM Transactions on Graphics (SIGGRAPH 2020)**
- Artistic Glyph Image Synthesis via One-Stage Few-Shot Learning
  Yue Gao*, Yuan Guo*, Zhouhui Lian, Yingmin Tang, Jianguo Xiao. **ACM Transactions on Graphics (SIGGRAPH Asia 2019)**
- *Patent*: An Automatic Generation Method of Artistic Font Based on One-Stage Few-Shot Learning
  Zhouhui Lian, **Yue Gao**, Yuan Guo, Yingmin Tang, Jianguo Xiao (CN.201910670478.8)
- (* denotes equal contribution)

Skills

Tools: Git, Visual Studio Code, Xcode; **Languages**: C/C++, Python, Java, Shell, HTML; **Frameworks**: PyTorch, TensorFlow, NumPy.

Honors

Graduate: Merit Student of Peking University, Outstanding Student of Wangxuan Institute of Computer Technology.

Undergraduate: 5 Times of Study Excellence Scholarship.