Shuya Zhao

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Education

Ph.D. in Computer Science, **New York University**, NY — Sept. 2019 - May. 2024
M.S. in Computer Science (GPA: 4.0), **Rutgers University**, NJ — Sept. 2017 - May. 2019
B.Eng. in Information Engineering (GPA: 3.7), **NUAA**, China — Sept. 2013 - Jun. 2017
visiting program in Electrical Engineering (GPA: 3.7), **UC Riverside**, CA — Aug. 2016 - Jun. 2017

Skills

Programming Languages:Python,Java,JavaScipt,C#, C/C++,MATLAB
Tools:TensorFlow, PyTorch, Scikit-learn, Keras, SQL/MySQL, Spark, Latex, Unity
Knowledge:Computer Vision(Image-to-Image Translation, Object Recognition, Image-caption Generation), Language Synthesis(RNN, LSTM, GRU), Machine Learning(SVM, Bayesian Models), Big Data(Recommender system, similarity algorithm), Data Visualization

Projects

Matched Image-Title Synthesis, Group Project — Oct. 2019-present

- Designed an **image-text** generator developed by Python (**TensorFlow**) to synthesize a pair of matched birds image and caption with same input.
- Used two **autoencoders (TAE & IAE)** to improve the generation of texts and images. Strengthened the strong correlation between a pair of image and text by using an **attention network** to measure their **cosine similarity**.
- Trained image-text generator in **GAN** to generate birds images with meaningful matched captions.

Exploring Echo Chamber in E-commerce, Submitted Paper — June 2019 - Oct. 2019

- Detected the existence of **Echo Chamber Effect** in Real-world E-commerce Recommender System, not only in Social Networking Sites, by measuring polarization and content diversity in **user interests** with Python (**Scikit-learn,SciPy**).
- Analyzed polarization in user preference on a population level by applying **cluster validity indexes** in user latent vector space. And examined **Filter Bubble** by measuring the reduction in content diversity of recommended items to users.
- Found that **Echo Chamber** appears in the users who take the recommendations but not in the users who do not via comparison between two groups in each step of analysis.

Image Style Transfer, Master Thesis — Sept. 2018 - Mar. 2019

- Designed an image generator conditioned style feature vectors with Python (**PyTorch**) to transfer landscape photos into multiple styles by employing pre-trained style encoder and training the generator in **GAN** .
- Encoding images' style into 100-length vector instead of labeling them to extract more characteristics from images via building encode and classifier branches in the style encoder network, avoiding the influence from image contents.
- Added **cross-cycle consistency loss** in **GAN** training to strengthen both content learning and style transfer.
- Completed **bidirectional** style transfer with 50% fewer parameters than the **ResNet** models by sharing parameters of whole generator in two directions.

Pet Auto-Feeding machine, Senior Project — Sept. 2016- Mar. 2017

- Designed a pet auto-feeding system including mechanical structure of food feeding switch, hardware module of sensors and software module, which could complete **remote control**, **auto-feeding**, **health monitoring**, and dog recognizing.
- Designed automatic sensor modules based on **Arduino** and **Raspberry Pi** to measure food consumption speed using C and detect dog tag color using Python.
- Developed Android APP with JAVA to customize the feeding settings, remotely control auto-feeding system and monitor dog health status.
- Completed the data transmission operation using **web server** and **database** with SQL, which transmits the data measured by sensors to APP.

Experience

Rutgers University,New Brunswick, NJ — Sept. 2018 - May 2019

Grader for graduate courses

- Graded assignments and term projects in Course Computer Graphics which covers a wide range of topics such as rigid body dynamics, volumetric elastic solids, and incompressible fluids.
- Instructed students in Physics-based animation techniques using **C++** and hardware circuit design using **C**.