Shuo Chen

PhD Candidate, UvA

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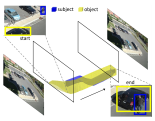
Education

2018 - Now **PhD Candidate**, *Intelligent Sensory Information Systems, University of Amsterdam*.

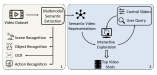
2014 - 2017 **Master of Engineering**, *Department of Electronic Engineering, Tsinghua University*.

2010 - 2014 **Bachelor of Engineering**, *School of Internet of Things, Nanjing University of Posts and Telecommunications*.

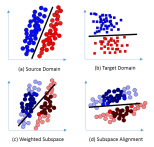
Publications (Google Scholar)



Interactivity Proposals for Video Surveillance
Shuo Chen, Pascal Mettes, Tao Hu and Cees Snoek.
Submitted to WACV 2020.



Interactive Exploration of Journalistic Video Footage through Multimodal Semantic Matching
Sarah Ibrahimi, Shuo Chen, Devanshu Arya, Arthur Camara, Yunlu Chen, Tanja Crijns, Maurits van der Goes, Thomas Mensink, Emiel van Miltenburg, Daan Odijk, William Thong, Jiaojiao Zhao,and Pascal Mettes
ACM International Conference on Multimedia (**ACMMM**), 2019 paper



Visual Domain Adaptation using Weighted Subspace Alignment
Shuo Chen, Fei Zhou, and Qingmin Liao
IEEE International Conference on Visual Communications and Image Processing (**VCIP**), 2016 paper

Research Interests

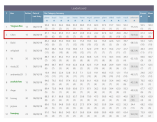
I am interested in the area of computer vision and machine learning including:.

- visual relationship reasoning
- action detection and recognition
- object detection
- domain adaptation

Research Experience

01/2018-Now **Intelligent Sensory Information Systems, University of Amsterdam**
PhD Candidate, Advisor: Prof. Cees Snoek and Prof. Pascal Mettes

Project: **Deep Intermodal Video Analytics (DIVA)**
The DIVA program seeks to develop robust automatic activity detection for a multi-camera streaming video environment. We introduce spatio-temporal interactivity proposals for this dataset. Rather than focusing solely on actions performed by subjects, we explicitly include the objects the subjects interact with. Besides, I implement several state-of-the-art temporal activity detection methods and an object detection and tracking algorithm on this dataset.



Project: **Visual Domain Adaptation Challenge 2018**
The goal of this challenge is to develop a method of unsupervised domain adaptation for image classification. I'm the main contributor in the team. I designed the algorithm and wrote the code myself. In this challenge our final submission ranked **2nd** place with respect to unknown-class recognition on the test set.

11/2016-01/2018 **Multimedia Research Center, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences**
Visiting Student, Advisor: Prof. Yu Qiao and Prof. Yali Wang

Project: **Action Recognition from Web Videos**
We want to leverage web videos to help action recognition in public dataset. To deal with noisy labels of web videos, we designed an attention scheme and added it to the two-stream deep neural network. The two-stream network includes temporal network (RGB images) and spatial network (flow images). The attention scheme could learn weights that tell us which parts of the frames are beneficial for classification.

02/2015-06/2017 **Visual Information Processing Lab, Graduate School at Shenzhen, Tsinghua University**
Research Assistant, Advisor: Prof. Qingmin Liao and Prof. Fei Zhou

Project: **Visual Domain Adaptation**
Visual domain adaptation methods attempt to learn a classifier on a labeled source domain and transfer it to a target domain. In this project, we designed a new algorithm based on subspace alignment and implemented the algorithm using Matlab. We gave each source sample a weight and then performed weighted PCA to obtain subspace. The weight was calculated based on the distance.

Practical Project Experience

2019

Improving deep neural networks by hpyerparameter tuning, regularization, and optimization algorithms
Goal: Improving the performance of deep neural networks.
Contribution: I implement the following methods using NumPy. To break symmetry and make sure different hidden units can learn different things, I implement He initialization with ReLU activations. I implement L2 regularization and Dropout to reduce overfitting. Besides, I implement gradient checking to verify closeness between the gradients from backpropagation and the numerical approximation of the gradient. I implement the optimization methods Momentum and Adam, too.

Implementation of convolutional neural networks
Goal: Implementing convolutional neural networks from scratch through NumPy.
Contribution: I implement a convolutional neural network with batch normalization from scratch through NumPy, including convolution and pooling layers as well as forward and backward propagation.

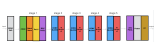
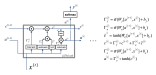


Image classification by residual networks
Goal: Implementing Residual Networks.
Contribution: I Implement the basic building blocks of ResNets. Then I put together these building blocks to implement and train a state-of-the-art neural network for image classification.

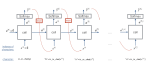
Autonomous driving - Car detection
Goal: Developing a car detector.
Contribution: I apply the very powerful YOLOv2 model to car detection. Also, I implement a basic filter and Non-Maximum Suppression algorithm to select the correct car bounding boxes.

Face Verification and Face Recognition
Goal: Building a face recognition system.
Contribution: I implement the triplet loss function. Then I use a pretrained model to map face images into 128-dimensional encodings. Finally I use these encodings to perform face verification and face recognition.

Art generation with Neural Style Transfer
Goal: Implementing a neural style transfer algorithm to generate artistic images.
Contribution: I compute the "content cost" using TensorFlow. First I implement a function that computes the Gram matrix of a matrix. And I compute the style cost. Then I implement the total cost function which includes both the content cost and the style cost. Finally I implement the whole model to generate artistic images.



Implementation of Recurrent Neural Networks
Goal: Building a recurrent neural network.
Contribution: Using NumPy, I code the RNN-cell from scratch, including the forward and backward propagation. I also implement the forward and backward propagation of the LSTM cell.



Character-level language modelling by long short-term memory (LSTM)
Goal: Generating poems through the character-level language model.
Contribution: I store text data for processing using an RNN. Then I build a character-level text generation recurrent neural network.

Internships

03/2016-07/2016 **Shenzhen Cloudream Technology Co., Ltd.**.

Algorithm Developer Intern
- Designed and wrote algorithms to remove seams in stitched face images with-OpenCV using C++.

Professional Development

Coursera

Deep Learning Specialization
- Neural Networks and Deep Learning
- Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
- Structuring Machine Learning Projects
- Convolutional Neural Networks
- Sequence Models

Instructor: Andrew Ng, deeplearning.ai

TensorFlow in Practice Specialization

- Instroduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning
- Convolutional Neural Networks in TensorFlow
- Natural Language Processing in TensorFlow
- Sequences, Time Series and Prediction

Instructor: Laurence Moroney, Google Brain

Computer Skills

Deep learning framework	Programming language	Operating system
PyTorch	Python	Linux
TensorFlow	C++	Windows
Keras	MATLAB	
Caffe		

Honorary Awards

10/2016 **Guanghua Scholarship** (second prize)

12/2015 **Foxconn Scholarship** (second prize)

11/2013 **School Club Contribution Award**

12/2012 **School Club Contribution Award**