Xiaoyu Liu

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Technical Skills

- **Languages**: Python, C/C++, Matlab, HTML, VHDL
- **Operating System**: Windows, Linux CentOS, Linux Ubuntu
- **Tools**: Caffe, PyTorch, Vim

Work Experience

Computer Vision Research Intern Jan 2017 to Present
Sengled Technologies of Canada Ltd.
Downtown Vancouver, BC, CA

- Realized bidirectional pedestrian flow counting on real-time surveillance video provided by Sengled with Caffe and Python.
- Combining crowd density map estimation as well as counting with PyTorch and Python.

Research Assistant Jan 2016 to Jan 2017
The Vision and Media Lab, *Simon Fraser Univerisity*, Burnaby, BC, Canada
Project: Flexible constrained clustering based on Network Feature Learning

- Came up with an active learning like method to combine constrained clustering with feature learning based on AlexNet.
- Made use of deep learning framework Caffe to realize the network, and created new layer written in Python.
- Conducted quantitative experiments demonstrate the effectiveness of constraints as well as feature learning on improving clustering performance.

Reviewer Jan 2016
IEEE Winter Conference on Applications of Computer Vision 2016
Lake Placid, NY, USA

- Provided the overall rating of papers and detailed comments to help program chair make the final decision.

Teaching Assistant Sept 2015 to Dec 2015
Intelligent Systems
Simon Fraser Univerisity

- Conducted student consultations, graded homework and examinations.

Project Experience

Facial Key Point Detection Using Convolutional Neural Network Nov 2015 to Dec 2015
Machine Learning, *Simon Fraser University*

- In a team of three to propose a regression model based upon convolutional neural net-work (CNN) to localize facial key points using Lasagne library with Python and Theano
- Implemented a considerably shallower convolutinal neural network of only three convolutional layers to predict 15 key points simultaneously with relatively high accuracy(ranked 33 then) on Kaggle dataset
- Combined a multi-face detector with our facial key point detection model to realize real-time facial key point detection

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Missing Words Prediction Nov 2015 to Dec 2015
Introduction to Data Mining, *Simon Fraser University*

- Independently predicted the top 5 missing words for each article provided by instructor, making use of collaborations of authors of provided articles, and words existing in each article.
- Transformed the matrix containing unique words in each essay into a sparse matrix and implemented different algorithms using Matlab to select 5 words with highest probability for each essay.
- Made use of algorithms including K-Nearest Neighbors, Words frequency, Clustered words frequency and Bagging tree with linear SVM to obtain the probabilities.

Smart Gadget and Technologies for Personal Safety Oct 2014 to Jun 2015
Innovation and Design Course
University of Science & Technology of China – Hefei, Anhui, China

- Acted as a group leader of four to design a wearable bracelet for protecting women's safety by reminding potential danger around with low safety score
- Engaged in designing and implementing of an Android APP using JAVA and the design of corresponding bracelet

Image-based Research about Facial Score Calculation and Prediction Mar 2015 to Jun 2015
University of Science & Technology of China – Hefei, Anhui, China

- Independently implemented four different algorithms written in C++ to calculate facial scores based on a sparse matrix containing results of comparisons of face pairs
- Applied Convolutional Neural Network(CNN) implemented by Matlab and Local Binary Patterns(LBP) to predict facial scores

Volunteer

- IEEE Conference on Computer Vision and Pattern Recognition Area Chair Workshop Feb 2016
  - AC meeting general help

Education

Master of Science in Computing Science Sept 2015 to Present
Simon Fraser Univerisity, Burnaby, BC, Canada

- Specialization: Machine Learning & Computer Vision

Bachelor of Engineering Sept 2011 to Jun 2015
University of Science & Technology of China – Hefei, Anhui, China

- Specialization: Automation