Luxin Zhang

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Education

Carnegie Mellon University (CMU), Pittsburgh, PA 2018 – present

School of Computer Science (SCS)

Master of Science in Computer Vision (MSCV), The Robotics Institute, expected December 2019

Peking University (PKU), Beijing, China 2014 – 2018

School of Electronic Engineering and Computer Science (EECS)

Bachelor of Science, Department of Intelligence Science

- Cumulative GPA: 3.56 / 4.00
- Junior GPA: 3.70 / 4.00

Selected Coursework:

- **General computer science:** Practice of Programming in C&C++, Data Structure and Algorithm, Algorithm Design and Analysis, Computer Organization, Computer Net and WEB Technology, Principle of Programming Languages
- **Artificial Intelligence:** Introduction to Pattern Recognition, Introduction to Artificial Intelligence, Machine Learning, Introduction to Intelligent Robots, Human-Computer Interaction, Intelligent Information System
- **Math:** Advanced Mathematics, Advanced Algebra, Set Theory and Graph Theory, Probability Theory and Statistics, Signals and Systems, Information Theory

Teaching & Work

- Intern, Big Data Mining Group, **Microsoft Research Asia** 09/2017 – 01/2018
- Research Intern, Department of Computer Science, **The University of Texas at Austin** 07/2017 – 09/2017
- Teaching Assistant, Introduction to Computer Systems, **Peking University** 09/2016 – 12/2016
- Vice-Minister, Literature and Art Department, the Student Union of EECS 09/2015 – 06/2016

Publications

- Ruohan Zhang, Zhuode Liu, **Luxin Zhang**, Karl Muller, Mary Hayhoe and Dana Ballard. "Visual Attention Guided Deep Imitation Learning" accepted as a spotlight paper by *NIPS 2017 Cognitively Informed Artificial Intelligence workshop*, Dec. 2017.
- **Luxin Zhang**, Ruohan Zhang, Zhuode Liu, Mary Hayhoe and Dana Ballard. "Learning Attention Model from Human for Visuomotor Tasks" accepted by *AAAI 2018 Student Abstract and Poster Program*, Feb. 2018.
- Ruohan Zhang, Zhuode Liu, **Luxin Zhang**, Jake Whritner, Karl Muller, Mary Hayhoe and Dana Ballard. "AGIL: Learning Attention from Human for Visuomotor Tasks" accepted by *ECCV 2018*, Sep. 2018.

Research Experience

Modeling human attention for deep imitation learning 07/2017 – 06/2018

Vision, Cognition, and Action VR Lab, The University of Texas at Austin

- Collected eye tracking data from human experts playing Atari video games.
- Predicted human attention from the data using a multi-channel deep neural network that takes game image, optical flow, and saliency information as inputs, and obtained a high AUC of 0.96.
- Showed that the learned human attention model could help an agent imitate human and play games better.
- Demo video can be found on YouTube: `https://www.youtube.com/watch?v=-zTX9VFSFME`

Text effects transfer 03/2017 – 06/2017

Institute of Computer Science and Technology, PKU

- Given a source stylized image S' and the target text image T, then automatically generates the target stylized image T' with the special effects as in S'.
- Tried different image segmentation methods, like KNN clustering based on pixels' feature vectors and level set segmentation based on shape priors.

Cultural heritage protection based on virtual reality 03/2016 – 06/2016

Key Laboratory of Machine Perception, PKU

- Repaired the face of a Buddha using archived photos and displayed on a virtual reality system.
- Responsible for implementing gesture recognition based user interaction for the display system.
- Implemented the Baum-Welch algorithm to train Hidden Markov Models and Viterbi algorithm to decode the hand motion, where the inputs are 3D points coordinates of the motion trace.
- Achieved an accuracy of 96% on recognizing gestures.

Course Projects

Static and dynamic gesture recognition 05/2017

Python, Keras

- Implemented static gesture recognition using a convolutional neural network, obtained 90% accuracy on Sebastien Marcel Static Hand Posture Database (6 categories).
- Implemented dynamic gesture recognition using a two-stream 3D convolutional neural network, obtained 91% accuracy on Sheffield KInect Gesture (SKIG) Dataset (10 categories).

Text and image classification 04/2017

Python, scikit-learn, Keras

- Implemented text classification using scikit-learn. Compared the performance of different classifiers (Naive Bayesian, SVM, SGD, Decision Tree, KNN, K-means), achieved 85% accuracy (9 categories).
- Implemented images classification using Keras on a subset of ImageNet, achieved 80% accuracy (19 categories).

Human face detection and recognition 11/2016 – 01/2017

Python, Dlib

- Detected faces in given images, matched the faces to examples in a given photo gallery and identified the person.
- Face detection and alignment processes are implemented in Dlib. Face recognition uses a deep learning model that is fine-tuned from *Deeply learned face representations are sparse, selective, and robust*.

Visualizing the Bank Marketing Data Set 06/2017

JavaScript, HTML, D3, Python, flask

- Developed a client, server and database system to visualize the Bank Marketing Data Set, with an interactive interface that allows users to customize the visualization.

Design and control robots in simulation 11/2016 – 12/2016

C, Webots Team Leader

- Designed a multi-robot system on Webots where a team of robots are instructed to perform a set of navigation and interaction tasks.

Honors & Awards

- PKU Wu Si Scholarship 2015 – 2016, Top 10% 09/2016
- PKU Excellent Research Award 2015 – 2016 09/2016
- PKU EECS Chang Fei Scholarship 2016 – 2017 09/2017

Skills

- **Programming:** C/C++, C#, Python, Linux, Assembly, MATLAB, Verilog, Git, HTML/CSS, JavaScript, SQL, LaTeX
- **English Proficiency:**

  TOEFL Total: 107 Reading: 30 Listening: 27 Speaking: 22 Writing: 28

  GRE Verbal: 161 (88%) Quantitative: 169 (96%) Analytical Writing: 4.0 (60%)

Interests

- Music, Dancing, Movies, Traveling