

## EDUCATION

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| <b>Simon Fraser University</b>   | <b>Burnaby, Canada</b> | <b>Sept. 2016 – Present</b> |
| <ul style="list-style-type: none"><li>• B.Sc of Engineering from the School of Computing Science</li><li>• Researches on Computer Vision and Machine Learning, advised by Prof.Greg Mori</li><li>• Researches on 3D Computer Vision, advised by Prof.Yasutaka Furukawa</li><li>• Researches on Big Data Systems, advised by Prof.Ryan Shea</li><li>• SFU-ZJU Dual Degree Program, GPA: 4.18/4.33</li></ul> |                        |                             |
| <b>Zhejiang University</b>   | <b>Hangzhou, China</b> | <b>Sept. 2014 – Present</b> |
| <ul style="list-style-type: none"><li>• B.Sc of Engineering from the College of Computer Science</li><li>• SFU-ZJU Dual Degree Program, GPA: 3.93/4.0</li></ul>  |                        |                             |

## PUBLICATIONS

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### Conference Papers

- [1] **Probabilistic Neural Programmed Networks for Scene Generation.** *Advances in Neural Information Processing Systems (NIPS'18 spotlight, 3.5% in all submissions)*  
Zhiwei Deng, **Jiacheng Chen**, Yifang Fu and Greg Mori.  
Proposed a programmatic generative model with reusable neural modules under VAE framework for complex scene generation with high generalizability
- [2] **Adaptive Appearance Rendering.** *British Machine Vision Conference (BMVC'18)*  
MengyaoZhai, Ruizhi Deng, **Jiacheng Chen**, Lei Chen, Zhiwei Deng and Greg Mori.  
Designed an adaptive pose-to-image generation framework for producing high-quality human image constrained by pose input
- [3] **Scalable Distributed Visual Computing for Line-Rate Video Streams.** *ACM Multimedia Systems Conference (ACM MMSys'18)*  
**Jiacheng Chen\***, Chen Song\*, Ryan Shea, Andy Sun, Arrvinth Shriraman and Jiangchuan Liu.  
Designed a scalable online computing framework for processing video streams efficiently

### Preprints

- [4] **Learning to Forecast Videos of Human Activity with Multi-granularity Models and Adaptive Rendering.**  
Mengyao Zhai, **Jiacheng Chen**, Ruizhi Deng, Ligeng Zhu, Lei Chen and Greg Mori.  
Proposed a hierarchical dynamic RNN framework for human skeleton prediction, together with a skeleton-to-image module for video generation

## RESEARCH EXPERIENCE

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### Indoor Scene Understanding from RGBD Images, Advisor:Prof.Yasutaka Furukawa

- Current research target: Developing a general algorithm which handles floorplan estimation for complex non-Manhattan indoor structures.
- Explored Indoor floorplan reconstruction based on CNN and PointNet.
- Processed raw RGB-D images to get global point cloud and panoramas, and cleaned crude human annotations to get valid training data.

### Neural Inverse CAD on Outdoor Building Structures, Advisor:Prof.Yasutaka Furukawa

- Current research target: Robust topology inference for building exteriors from RGBD input
- Annotated part of building datasets, cleaned data and annotations
- Explored Graph Neural Networks (GNNs) for heuristic-less topology inference, implemented several variants of GNNs with various message passing mechanisms and used them for inferring building structures

**Generative Models for Complex Conditional Scene Generation [1]**, Advisor:Prof.Greg Mori

- Assisted in refining the idea of Probabilistic Neural Programmed Networks and implementing several variants of the model for thorough experiments
- Generated new version of CLEVR and MNIST datasets for the task of complex scene generation, and designed experimental settings for measuring model's generalizability
- Reviewed generative models from different families, implemented typical models of each family and tested them on our own datasets
- Designed Detector Scores, a metric for evaluating the semantic correctness of generated images, and implemented it based on Faster-RCNN

**Scalable Distributed System for Video Stream Processing [3]**, Advisor:Prof.Ryan Shea

- Explored Apache Hadoop, Spark and Spark Streaming by going through materials of Simon Fraser University's graduate-level Big Data course.
- Designed and implemented a framework combining Spark Streaming with OpenCV for processing video streams using advanced computer vision algorithms on a distributed system
- Deployed and tested the proposed system on Simon Fraser University's cloud for processing and analyzing school's monitoring video streams, this might benefit school's security department by enabling easier anomaly detection in the future
- Evaluated the performance of the proposed system on both CPU clusters and GPU clusters to investigate the hardware constraints of the system

**Forecast Videos for Human Activity [2][4]**, Advisor:Prof.Greg Mori

- Improved the Volleyball Dataset with extracted human pose sequences using OpenPose
- Designed and implemented a dynamic multi-granularity RNN for multi-person pose prediction, the model is actually a variant of Graph Neural Network with dynamic message passing mechanism.
- Designed a simple yet effective neural network architecture for pose-guided human image generation, and tested in on both Volleyball Dataset and Fashion Dataset to show its effectiveness

**HONORS AND AWARDS**

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<b>2017 Academic Year</b>	<b>Meritorious Prize in Mathematical Contest in Modeling(MCM)</b> Top 7% in all participants of the competition
<b>2017 Academic Year</b>	<b>First Class Entrance Scholarship of Simon Fraser University</b> The scholarship rewards top 10% students in SFU-ZJU Dual Degree Program
<b>2017 Academic Year</b>	<b>Scholarship for Outstanding Students of Zhejiang University</b> The scholarship rewards students with good overall performance over the year
<b>2016 Academic Year</b>	<b>First Prize Academic Scholarship of Zhejiang University</b> The scholarship rewards the top 5% student according to academic behavior

**SKILLS**

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**Programming Languages** C/C++, Python, Matlab, Java, x86 Assembly  
**Tools/Frameworks** Pytorch, Tensorflow, Hadoop, Spark, Git,  $\LaTeX$ , Django  
**Hobbies** soccer, tennis, video games

**STANDARDIZED TEST SCORES**

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**GRE® General Test**

Verbal Reasoning: 158/170, Quantitative Reasoning: 170/170, Analytical Writing: 4.0/6.0

**TOEFL® iBT**

Reading: 29/30, Listening: 29/30, Speaking:24/30, Writing:26/30