

# WEI JIANG

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I am a 3rd year PhD student in hyperparameter tuning under the supervision of Prof. Kwang Moo Yi. I focus on computer vision, computer graphics, and 3d vision. I want to help machines to perceive the 3d world better through engineering and research.

## Education

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### University of British Columbia

PhD in Computer Science

Vancouver, Canada

September 2020 — Present

### University of Victoria

~~PhD in Computer Science~~(Transferred to UBC since Sept. 2020), GPA: 9.0/9.0

Victoria, Canada

September 2018 — August 2020

### Boston University

MS in Computer Science, GPA: 3.8/4.0

Boston, MA

January 2017 — May 2018

### Zhejiang University of Technology

BS in Software Engineering

Hangzhou, China

September 2012 — June 2016

**Coursework:** Image and Video Computing, Machine Learning, AI, Data Mining, Computer Graphics, Animation, Data Visualization, Operating Systems, Programming Languages, Algorithms, Data Structure, Numerical Modeling and Simulation, Computer Networks, Cloud Computing.

## Publications

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### Attentive Context Normalization for Robust Permutation-Equivariant Learning

CVPR 2020

Weiwei Sun, **Wei Jiang**, Eduard Trulls, Andrea Tagliasacchi, Kwang Moo Yi

- A simple yet effective technique to build permutation-equivariant networks robust to outliers. Local and global information are combined to find the essential data points in high-dimensional space;

### Optimizing Through Learned Errors for Accurate Sports Field Registration

WACV 2020

**Wei Jiang**, Juan Camilo Gamboa Higuera, Baptiste Angles, Weiwei Sun, Mehrsan Javan, Kwang Moo Yi

- Developed an optimization-based framework to register sports field templates onto broadcast videos. The framework can provide highly accurate template-frame registration;

### Linearized Multi-Sampling for Differentiable Image Transformation

ICCV 2019 Oral

**Wei Jiang**, Weiwei Sun, Andrea Tagliasacchi, Eduard Trulls, Kwang Moo Yi

Acceptance rate: 4.3%

- Developed a novel image sampling method for differentiable image transformation in deep neural networks. The sampling method can provide better gradients with respect to the grid coordinates;

### Depth-aware Image Vectorization and Editing

CGI 2019

Shufang Lu, **Wei Jiang**, Xuefeng Ding, Craig S. Kaplan, Xiaogang Jin, Fei Gao, Jiazhou Chen

- Developed an image vectorization algorithm that operates on RGBD images and uses both color and depth edges to define vectorized paths. The algorithm can keep the contours of the objects in the scene, thus provide a better image reconstruction;
- Developed the prototype of an object level diffusion curve image editor;

## Experiences

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### Research Intern

— Fast human pose estimation

Huawei, Noah's Ark Lab

May 2020 — September 2020

- Worked on human pose estimation and tracking in videos.

### Teaching Assistant

— CSC 684B Introduction to Deep Learning for Computer Vision

University of Victoria

January 2020 — April 2020

- Updated the skeleton code and solution in Python;
- Developed the unittest module for grading;

## Teaching Assistant

— CSC 305 Introduction to computer graphics

University of Victoria

January 2019 — April 2019

- Prepared tutorial materials, designed and developed the skeleton code in C# with Unity, and delivered the lab;
- Topics including ray tracing, texture mapping, procedural terrain generation, flocking simulation, and more;

## Algorithm Development Intern

KATVR

— Motion capture system development

May 2018 — August 2018

- Preprocessed a synthetic dataset, used CycleGAN to add realism to the images, added random background during training. Implemented a variant of FCN in PyTorch to segment human body parts in the depth map;
- Developed a multi-task CNN model to segment human body parts and regress joint locations, implemented a multi-constrain loss function to improve the performance. Trained model has good generalization on real data;
- Developed a pipe based IPC, transport image data from C++ to Python and inferred joint location data from Python back to C++. This architecture achieved real-time inference, and VR game interaction(walk);

## Backend Development Intern

AdaptiveAlgo Systems Inc.

— Back-end development for QuSandbox website.

May 2017 — August 2017

- Developed a service that can dynamically deploy Jupyter-notebook-based containers on AWS for education purposes, implemented a RabbitMQ-based load balancer for concurrent access and the customized back-end logic for spawning and authentication procedures;
- Developed a pipeline that automatically deploy the customized containers to provide machine learning as a service via RESTful APIs;

## Skills

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**Languages:** Python, Processing, C++

**Libraries:** Numpy, Pytorch, OpenCV, PCL, CGAL, Eigen, GLM, OpenGL

**Tools:** Git, Docker, AWS, Linux

**Contributor:** Kornia, VisPy, ATS3D