

Zhiyang Huang

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Area of Expertise

Computational Geometry

3D Vision

Applied Machine Learning

Education

Ph.D. in Computer Science

Aug. 2014 - May 2019

Research Focus: Computer graphics

Advisor: Prof. Tao Ju

Washington University in St. Louis, St. Louis, MO

Bachelor of Engineering

Sep. 2010 - Jun. 2014

University of Science and Technology of China, Hefei, China

Interested Position

Algorithm Engineer/Researcher.

3D vision, computer graphics related field particularly on Autonomous Driving, AR/VR.

Publication

Variational Implicit Point Set Surfaces

Zhiyang Huang, Nathan Carr, Tao Ju

ACM Transactions on Graphics (Proc. ACM SIGGRAPH 2019)

Repairing Inconsistent Curve Networks on Non-parallel Cross-sections

Zhiyang Huang, Michelle Holloway, Nathan Carr, Tao Ju

Computer Graphics Forum (Proc. Eurographics 2018)

Robust Optimization for Topological Surface Reconstruction

Roe Lazar, Nadav Dym, Yam Kushnirsky, Zhiyang Huang, Tao Ju, Yaron Lipman

ACM Transactions on Graphics (Proc. ACM SIGGRAPH 2018)

Topology-controlled Reconstruction of Multi-labelled Domains from Cross-sections

Zhiyang Huang, Ming Zou, Nathan Carr, Tao Ju

ACM Transactions on Graphics (Proc. ACM SIGGRAPH 2017)

Extrinsically smooth direction field

Zhiyang Huang, Tao Ju

Computers & Graphics (58) (Shape Modeling International 2016)

Internship Experience

Apple Inc., Sunnyvale, CA, USA

May. 2018 – Aug. 2018

* Intern of software engineering in 3D Vision team in Apple Map.

* Develop deep learning algorithm for point set reconstruction involving VAE-GAN and PointNet.

Adobe Inc., San Jose, CA, USA

Sep. 2017 – Dec. 2018

- * Research Intern in Creative Intelligence Lab, working with Nathan Carr.
- * Work on deep learning project associated with curve and surface.

Research Experience

Washington University in St. Louis

Sep. 2018 – Jan. 2019

Variational Implicit Point Set Surfaces

- * Propose a new method for reconstructing an implicit surface from an un-oriented point set, which is robust under sparse and non-uniform inputs.
- * Submitted to SIGGRAPH 2019.

Adobe & Washington University in St. Louis

Sep. 2017 - present

CurveNet: Surfaces and 3D Curve Networks

- * Use deep learning to solve two problems in computer graphics simultaneously: reconstructing surfaces from 3D curve networks and generating descriptive curve networks from surfaces.
- * Apply cycle consistency and PointNet into the framework.

Washington University in St. Louis

Feb. 2017 – Oct. 2017

Repairing Inconsistent Curve Networks on Non-parallel Cross-sections

- * Present the first algorithm for restoring consistency between curve networks on non-parallel cross-section by formulating it into a disjunctive programming.
- * Propose an effective solution for the specified highly non-convex optimization problem.
- * This work was presented in Eurographics 2018.

Washington University in St. Louis

Jun. 2016 – Jan. 2017

Topology aware multiple-material surface reconstruction

- * Provide topological control for multiple-material surface reconstruction from a set of planar cross-section.
- * Simple user interfaces for topology correction.
- * This work was presented in SIGGRAPH 2017.

Washington University in St. Louis

May 2015 - May 2016

Extrinsically smooth direction field

- * Provide theoretical analysis of extrinsically smooth direction field for different problem settings.
- * Introduce a unified optimization framework that works on curves, surfaces and volume domain.
- * This work was presented in SMI 2016.

Engineering Project

Washington University in St. Louis

Nov. 2014 - Apr. 2015

Holes detection and measurement in skull using CT data

- * Automatically detect and measure the topological holes in skull reconstruct from CT data.
- * A friendly user interface was provided for viewing the reconstructed skull and holes detected.

University of Science and Technology of China

Jan. 2014 - Jun. 2015

Real-time pedestrian detection

- * Build up a system for real-time and automatic detection of pedestrian on videos based on aggregation channel feature and additive boost.
- * Integrate multiple techniques for speeding up the processing including fast feature pyramid, soft cascade and positive window locating.

Frame interpolation for fast moving object on low frame rate video

* Implement frame interpolation based on extraction, matching and transformation of motion regions for fast moving and deforming objects.

Technical Skills

Programming Languages:

C/C++ (9 years), Matlab (9 years), Python (4 years), Mathematica, Java

APIs, libraries and tools:

Tensorflow (2 years), OpenGL, Qt, OpenCV, Gurobi, Eigen

Talk

“Topology-controlled Reconstruction of Multi-labelled Domains from Cross-sections”

ACM SIGGRAPH 2017

Los Angeles, USA, 8/2017

“Extrinsically smooth direction field”

The International Geometry Summit 2016 (IGS2016)

Berlin, German, 6/2016

Reference

Tao Ju

Professor at Washington University in St. Louis

Vice Dean for Research at School of Engineering & Applied Science

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Nathan Carr

Principal Scientist & Research Manager at Adobe USA

Email: ncarr@adobe.com

Yasutaka Furukawa

Assistant Professor at Simon Fraser University

Principal Research Scientist at Zillow Group

Email: furukawa@sfu.ca